Intl. Journal of Clinical and Experimental Hypnosis, 62(1): 29–49, 2014

ISSN: 0020-7144 print / 1744-5183 online
DOI: 10.1080/00207144.2013.841473

Routledge
Taylor & Francis Group

HYPNOSIS, ATTACHMENT, AND OXYTOCIN: *An Integrative Perspective*[1]

Vladimir Zelinka[2]

European Centre for Medical Psychology "PsyPluriel," Brussels, Belgium

Yann Cojan

University of Buenos Aires, Buenos Aires, Argentina

Martin Desseilles[3]

University of Liège, Belgium; and University of Montreal, Canada

Abstract: This article considers links between clinical hypnosis, attachment theory, and oxytocin. First, it proposes that commonalities between clinical hypnosis and attachment theory may improve our understanding of the hypnotherapeutic process. Then, it suggests that an integrative model unifying clinical hypnosis and attachment theory may constitute a link between clinical hypnosis and a neurobiological factor such as oxytocin. Finally, it discusses the implications of these hypotheses for clinical practice and future researches.

Nowadays an abundant scientific literature acknowledges the therapeutic value of clinical hypnosis (for a review, see Barabasz, Olness, Boland, & Kahn, 2010; Michaux, 2007; Spiegel & Spiegel, 2004; Yapko, 2003). However, the reasons for its therapeutic effectiveness are still debated. That ongoing debate involves many fields and explores various theoretical directions (Alladin, 2007; Bioy & Michaux, 2007; Chertok, 2006; Lynn & Rhue, 1991).

Manuscript submitted May 23, 2012; final revision accepted November 30, 2012.

[1]This research was supported by the Fonds National de la Recherche Scientifique (FNRS) Belge, the Fondation Médicale Reine Elisabeth (FMRE), and the Research Fund of the University of Liège. MD is supported by the F.N.R.S. Additional supports come from the Fonds Leon Fredericq.

[2]Address correspondence to Vladimir Zelinka, Centre Européen de Psychologie Médicale "PsyPluriel," Av Jacques Pasture 47a, 1180 Bruxelles, Belgium. E-mail: vladimir.zelinka@gmail.com; or to Martin Desseilles, Psychology Department, University of Namur Medical School, Rue de Bruxelles, 61, B-5000 Namur, Belgium. E-mail: martin.desseilles@unamur.be

[3]Martin Desseilles is now at the University of Namur Medical School, Belgium.

The present article suggests that attachment theory provides an interesting perspective on the therapeutic effectiveness of clinical hypnosis and may inform our understanding of its neurobiological correlates.

Because addressing all available information about clinical hypnosis, attachment theory, and oxytocin would exceed the limits of this article, we have chosen to focus on the data we believe are the most relevant to our hypotheses. Moreover, we are aware of the risk of error and misunderstanding when one tries to extrapolate specific concepts beyond the limits of the theoretical framework where they originated. We hope that the reader's awareness of that issue (inevitable in cross-theoretical reflection) will protect him or her from its misleading impact.

Attachment Theory

Basic Concepts

Attachment theory is a stream of developmental psychology providing an organized body of knowledge about human development, interindividual relationships, and their impact on health and well-being. Initially conceived to explain emotional and behavioral disorders detected in relationally isolated children (Ainsworth, 1963; Bowlby, 1958), the concepts of attachment theory have been extended to the study of romantic and therapeutic relationships in adulthood (Hazan & Shaver, 1987; Obegi & Berant, 2009a; Shaver & Mikulincer, 2009; Slade, 2008; Wallin, 2007).

The originators of the theory observed that, in time of distress, many infants tend to achieve physical proximity with a "stronger and wiser" other liable to provide care and protection (Ainsworth & Bell, 1970). Most of the time, that role is played by the mother, but that function may also be held by anyone who behaves in a mothering way over a period of time. In that context, the one who provides care is called the caregiver, whereas the one who seeks help and protection is called the care seeker (Bowlby, 1969, 1988; Cassidy, 2008; Mikulincer & Shaver, 2010).

It has also been hypothesized that the motivational potency of that innate need for safety prevails over sexual and alimentary drives of human functioning and has a hierarchical primacy in determining subject's behavior and thoughts with regard to relationships (Bowlby, 1973; Cassidy, 2008; Harlow, 1958, 1959; Mikulincer & Schaver, 2010). However, because of life circumstances, the care seeker may be confronted with an incompetent caregiver, which may impair the care seeker's feeling of safety and disrupt his or her later capability to get help (Fonagy, Gergely, & Target, 2008; Mikulincer, Shaver, Cassidy, & Berant, 2009; Weinfield, Sroufe, Egeland, & Carlson, 2008). Hence, it has been proposed that repeated failures in caring processes may weaken

the care seeker's coping abilities and may lead to individual differences in relational functioning and emotional regulation (e.g., avoidance of relational interactions, difficulties coping with social rejection, overestimation of environmental dangers; Cassidy, 2008).

These individual differences have been classified in four attachment styles: one secure and three insecure. There is a relative consensus regarding the fundamental characteristics of the secure attachment style. However, names and distinctive characteristics of the three insecure styles may vary according to the authors, as well as the instruments devised to examine the relational interactions. The description of these subtle differences would largely exceed the limits of this article. (For a review, the reader may consult Ainsworth, Blehar, Waters, & Wall, 1978; Bartholomew & Horowitz, 1991; Crowell, Fraley, & Shaver, 2008; Hesse, 2008; Main & Salomon, 1986; Mikulincer & Schaver, 2010.)

Although proximity-seeking behaviors are usually more visible in childhood (Ainsworth et al., 1978), researchers in adult attachment noticed similar phenomena in adulthood (Hazan & Shaver, 1987). Drawing upon animal studies and empirical findings, they proposed that proximity with a competent caregiver was instinctively associated with security over a lifetime (Fraley & Shaver, 1998; Harlow, 1958, 1959; Mikulincer & Shaver, 2010; Obegi & Berant, 2009b).

Attachment and Health

What matters from a clinical point of view is that secure attachment style has been associated with health and effective emotional regulation (Berlin, Cassidy, & Appleyard, 2008; Schore, 1994; Sroufe, 1997), while insecure attachment has been identified as a risk factor for psychopathologies (Bowlby, 1973, 1988; DeKlyen & Greenberg, 2008; Dozier, Stovall-McClough, & Albus, 2008; Thompson, 2008). In addition, secure attachment style has been associated with greater trust during relational interactions (Mikulincer & Shaver, 2010) and increased therapeutic compliance (Cortina, 1999; Mikulincer et al., 2009), which are known to favor therapeutic success (Gelso & Carter, 1985; Horvath & Greenberg, 1994; Orlinsky, Ronnestad, & Willutski, 2004).

It has also been hypothesized that confident expectation of adequate care in times of need permits securely attached individuals to take risks and to try new alternatives to solve problems, believing that competent help will be provided if needed (Bowlby, 1988; Mikulincer & Shaver, 2010). Consequently, securely attached individuals may be more likely to explore new aspects of their inner world and to disclose difficult feelings in therapy (Obegi & Berant, 2009b), knowing that relief is possible in the case that an unacceptable distress would occur (Wallin, 2007).

Furthermore, it has been proposed that a secure attachment may lead to a biochemical and neurological environment favoring optimal autonomic regulation and immunological functioning (Cozolino, 2010;

Fox & Hane, 2008). Insecure attachment styles, on the other hand, would correlate with a higher frequency of physical and emotional illness and have been proposed as unspecific risk factors in diverse relational disorders and stress-related psychopathologies (Bowlby, 1958; DeKlyen & Greenberg, 2008; Dozier et al., 2008; Thompson, 2008).

Attachment style classification, however, is neither a diagnostic tool nor a psychopathologic classification (Berlin et al., 2008; Bowlby, 1969; Mikulincer & Shaver, 2010). It may predict care seeker's vulnerability in the face of negative life events, but there is no evidence that attachment style in infancy necessarily determines emotions and behavior in adult life. Indeed, clinical observations indicate that relational experiences and life events may have a modulating effect on attachment styles during one's lifespan (Magai, 2008; van IJzendoorn & Sagi-Schwartz, 2008).

Finally, due to its connections with health and well-being, attachment theory has been applied to the field of medical care. In that context, a patient may be compared to a care seeker looking for adequate care, while a therapist may be compared to a caregiver whose behaviors are liable to satisfy the care seeker's demands for help and relief (Bowlby, 1988; Slade, 2008; Wallin, 2007). From that point of view, a therapist displaying the characteristics of a secure caregiver may favor the development of a patient's secure attachment style, eliciting the associated beneficial consequences, not only during the therapeutic session but also beyond it, through the long-lasting neurobiological changes that it presumably generates (Bowlby, 1988; Slade, 2008; Wallin, 2007).

Integrative Perspective

Since secure attachment is known to favor health and well-being, hypnotic suggestions that favor secure attachment could play an important role in therapy.

Wording suggestions and attachment behavior. Our review of the literature indicates that one of the links unifying clinical hypnosis and attachment theory is the peculiar nature of the hypnotic communication.

It is well known that wording hypnotic suggestions within the frame of a therapeutic context involves reciprocal exchanges of information and requires an interaction between a sender and a receiver (Salem & Bonvin, 2004). Moreover, it is usually accepted that when there is communication, there is interaction; and when there is interaction, a relationship may be developed between the interacting individuals (Watzlawick, Helmick Beavin, & Jackson, 1972).

The relationship that stems from the use of hypnotic suggestions has already been documented by several authors (for a review, see Diamond, 1987; also, Banyai, 1998; Bioy & Keller, 2009), and the nature

of its different characteristics has been examined from the standpoint of various psychotherapeutic schools (for a review, see Bioy & Michaux, 2007; Nash & Barnier, 2008). Over time, that issue has been theorized in terms of transference and object relations (Brown & Fromm, 1986; Smith, 1981), working alliance and empathy (Palaci, 1993; Petot, 2006); motivation and social influence (Kihlstrom, 1985; Orne, 1966; Spanos, 1982), regression and symbiosis (Frauman, Lynn, Hardaway, & Molteni, 1984; Lutz & Fix, 2007) to name just a few.

In our opinion, attachment theory may also provide an interesting point of view on the relational interactions resulting from the use of hypnotic suggestion and may shed a supplementary light on the hypnotherapeutic process. Indeed, several authors have proposed that the quality of communication may influence relationship intimacy (Florsheim & McArthur, 2009; Halfon, 2007; Teyber, 2006) and may confer security to the therapeutic interaction (Balken, 2004; Wallin, 2007). According to Banyai (1998), for example, "characteristic hypnosis styles resemble the styles of the most important relationships in life that have regulatory functions" (pp. 58–59). Interestingly, from the perspective of attachment theory, the most important relationships in life are those developed in times of need, between a care seeker and his or her caregiver (Bowlby, 1969, 1988; Johnson, 2009; Mikulincer & Shaver, 2010; Schaffer, 2007).

However, according to attachment theory, not all forms of human interaction lead to a secure attachment. In order to build a secure attachment, a caregiver should respond to a care seeker's demands in an *attentive, responsive, sensitive, available,* and *benevolent* manner over a sufficient period of time (Ainsworth et al., 1978; Berlin et al., 2008; Bowlby, 1988; Cassidy, 2008; Mikulincer & Shaver, 2010).

Drawing upon these elements, we propose that wording hypnotic suggestions in accordance with the *utilization* approach may fulfill the relational characteristics that favor secure attachment and may lead to the associated beneficial consequences for health and well-being. Indeed, pronouncing suggestions based on utilization principles may convey a nonverbal meaning parallel to, but different from, the verbal one. That nonverbal meaning may depend on the structure of the hypnotic suggestions and may have an implicit relational impact independent of the explicit semantic content of the pronounced words.

In fact, it has been proposed that hypnotic suggestions may simultaneously communicate several meanings processed separately at different neurocognitive levels loosely divided into conscious and unconscious (Hilgard, 1974; Watzlawick, 1978; Watzlawick et al., 1972). It is therefore possible that a therapist's verbal behavior may have a nonverbal meaning transmitted simultaneously as the verbal one but with different implications.

Let us take an example. When pronouncing the sentence "I'm *not* talking right now!," the speaker conveys simultaneously several messages. One of them is conveyed by the meaning of words and the other by the behavior of the speaker. In our example, what is done contradicts what is said in order to illustrate the fact that the meaning conveyed by the act of speaking may be different from the meaning conveyed by the words constituting the speech.

In a similar way, several types of hypnotic suggestions may simultaneously convey verbal information about the patient's hypnotic experience (e.g., bodily sensations, visualized events) and nonverbal information about the therapist's state of mind with regards to the relational interaction (e.g., attentive, responsive, benevolent).

Indeed, a therapist applying the *utilization* approach notices, comments, accepts and uses whatever may arise from the patient in order to elicit, to maintain, and to guide the patient's hypnotic experience. It's a continuous adaptation to the patient's subjectivity (Erickson, 1959; Erickson & Rossi, 1979; Rossi, 1980). By doing so, the therapist shows that he or she notices even the slightest, spontaneous, and unforeseeable patient reactions that were not sometimes perceived by the patient him or herself before being pointed out by the therapist.

In addition, the adequate use of the utilization approach requires a focus not only on the part of the patient but also on the part of the therapist (Hammond, 1990a). Indeed, during a hypnotic session including the utilization technique, while the patient focuses on his or her experience, the therapist focuses on the patient. Most of all, the therapist makes his or her attentiveness apparent by noticing and commenting *out loud* whatever may arise during the hypnotic session so as to guide the patient's hypnotic experience toward a therapeutic change. As a result, the patient may conclude more or less implicitly that the therapist is *attentive, responsive, sensitive, and available*, since he or she behaves that way. Furthermore, since the relational interaction occurs in a therapeutic context, the therapist may a priori appear as *benevolent*.

Moreover, since the therapist's attentive and benevolent comments on a patient's ongoing experience are the essential ingredients of many hypnotic suggestions, implicit facilitators of secure attachment may be retrieved within the structure of various hypnotic strategies such as signaling, pacing and leading, ratification, body scan, and many others (Hammond, 1990a).

Therefore, many suggestions destined to elicit, to maintain, and to use hypnotic experience may *simultaneously* contribute to the construction of a secure attachment relationship by conferring on the therapist the behavioral characteristics of a *secure caregiver*. That may have a modulatory effect on the quality of the experienced care, the level of the patient's sense of safety, as well as his or her health and well-being

(Ainsworth et al., 1978; Bowlby, 1988; De Wolff & IJzendoorn, 1997; Slade, 2008; Thompson, 2008; Wallin, 2007).

Hypnotic metaphors and attachment themes. In our opinion, not only the structure but also the content of hypnotic suggestions may constitute a link between clinical hypnosis and attachment theory. Indeed, different types of hypnotic metaphors seem built with the themes and concepts belonging to the theoretical framework of attachment theory.

For example, terms referring more or less explicitly to a "safe haven" or a "protective caregiver" abound within hypnotic scripts as well as attachment theory handbooks (Cassidy & Shaver, 2008; Erickson & Rossi, 1980; Hammond, 1990b; Kluft, 1990; Salem & Bonvin, 2004; Virot & Bernard, 2010). Habitually, these concepts refer to symbolic places (e.g., safe place) or imaginary personages (e.g., February man) supposed to provide comfort, protection, and help in order to facilitate patient's therapeutic change.

Moreover, since several attachment researchers have suggested that anxiety may be partly relieved by mental representations of symbolic sources of protection (Granqvist & Kirkpatrick, 2008; Mikulincer & Shaver, 2010), and since certain hypnosis scholars consider that a patient's unconscious mind may be seen as an inner ally and protective immaterial entity (Comstock, 1991; Melchior, 1998), it may be proposed that the metaphor of the *benevolent unconscious mind*, developed by Erickson (1983; Rossi, 1980; Yapko, 2003), may be compared to a *symbolic caregiver* and may have similar beneficial effects on the patient.

Indeed, when the patient's unconscious mind is presented by the therapist as the main agent of the patient's automatic behaviors, physiological responses, and therapeutic outcomes, it may be perceived as a "stronger and wiser" other, dissociated from the patient's self and able to accomplish what is unfeasible for the therapist's or patent's willpower. Usually, that suggestion is proposed to the patient in an indirect way and consists of portraying the unconscious mind as an intermediary between the patient and the patient's untapped positive resources to which the unconscious mind is supposed to give access. In addition, the human characteristics regularly attributed to the unconscious mind (e.g., "your unconscious mind listens, knows, helps to,") favor personification (Melchior, 1998) and may elicit the feeling of reciprocal interaction that is necessary for the development of an attachment relationship. Moreover, suggesting that a patient's experience of relaxation, comfort, and relief are facilitated by the unconscious mind may make it appear as benevolent.

Hence, the patient may develop an attachment relationship not only with the therapist but also with his or her own unconscious mind perceived more or less explicitly as an inner caregiver. That symbolic relationship may be an important ingredient of the therapeutic effect

of clinical hypnosis and may constitute the relational dimension of self-hypnosis.

In sum, visualizing secure attachment figures, imagining a comfortable safe haven, and perceiving the actions of a symbolic caregiver such as the benevolent unconscious mind seem to be the components of many hypnotic methods (Hammond, 1990b; Rossi, 1980). Therefore, attachment themes might be naturally present at the core of various hypnotic suggestions.

Hypnotic experience and experience of attachment. Another link connecting clinical hypnosis to attachment theory may be the resemblance between the peculiar nature of the hypnotic experience and the peculiar nature of the experience of attachment.

Attachment theory assumes that attachment mechanisms are innate and potentially active since the earliest moments of life (Bowlby, 1988; Mikulincer & Shaver, 2010). Consequently, the first relational interactions shaping an individual's attachment style occur during an infant's preverbal period and have a nonverbal form. In addition, it has been suggested that the first relational interactions are the most influential in the development of an infant's secure attachment style (Berlin et al., 2008; Thompson, 2008; Wallin, 2007), even though it may vary during his or her lifespan in response to significant life events and relational circumstances (Bowlby, 1988; Magai, 2008).

As a result, hypnotic suggestions that resemble the nonverbal interactions that promote secure attachment in infancy could also promote secure attachment in adulthood.

The role of attachment mechanisms in the field of clinical hypnosis has already been addressed by several authors (Bioy, Wood, & Célestine-Lhopiteau, 2010; Colombo, 2007; Michaux, 2007). Their hypotheses refer to the beneficial effect of what might be called a "corrective relational experience." It consists of a patient's therapeutic change through the beneficial effects of a secure relationship. From the perspective of attachment theory, it means that when a therapist fulfills the characteristics of a secure caregiver, the patient may have a relational experience that is healing in its own right.

Drawing upon these elements, we propose that hypnotic suggestions conferring a secure quality to the nonverbal meaning of the therapist's verbal communication may generate a relational experience similar to the one that should have been experienced during infancy in order to build a secure attachment style. As we have seen, the secure quality of therapist's communication may stem from the use of hypnotic suggestions based on the utilization approach (e.g., pacing and leading, ratification, signaling). Hence, detailed descriptions and accepting comments of a patient's ongoing hypnotic experience may be instinctively perceived as a competent caring attitude and may facilitate the experience of a secure attachment.

Furthermore, during a hypnotic experience, time proximity and coexistence between the therapist's words and patient's corresponding perceptions may create the belief that several aspects of the patient's internal experience are elicited by the therapist, as if he or she was a part of the patient's inner world (Diamond, 1987). That sense of connectedness and intimacy seems similar to the one resulting from the *relational attunement* experienced with the primary caregiver during infancy and may contribute to the mental incorporation of the caregiver's symbolic representation (Baker, 1982; Banyai, 1998; Diamond, 1987). That process is called *symbiotic* or *fusional alliance* and has been proposed to explain several effects observed during the hypnotic experience, such as coregulation of emotions, external regulation of internal process, and coconstruction of meaning (Balken, 2004; Banyai, 1998; Diamond, 1987, 1988; Fogel, 1993; Lutz & Fix, 2007).

Overlapping theoretical framework and conceptual similarities. Finally, one of the most visible points of contact between clinical hypnosis and attachment theory is their overlapping theoretical framework. For example, both clinical hypnosis and attachment theory refer to several concepts of humanistic psychology, such as the unconditional positive regard, the nonpathologizing view of individuals, and the subject-centered attitude in therapy (Bioy & Michaux, 2007; Lynn, Barnes, Deming, & Accardi, 2010; Mikulincer & Shaver, 2010; Megglé, 2002; Rogers, 1942, 1966). Moreover, both fields insist on the critical importance of affective attunement, mirroring, and tailoring in the construction of adequate relational contexts (Ainsworth et al., 1978; Halfon, 2007; Spiegel & Spiegel, 2004; Wallin, 2007).

In addition, Bowlby, Rogers, and Erickson believed in an innate tendency propelling people toward health and improvement (Johnson, 2009; Rossi, 1980). They also had complementary views on people's need for safety and acceptance, encouraging exploration and human development (Bioy & Keller, 2009; Johnson, 2009). Furthermore, concepts of empathy and a holding environment may have much in common with the concepts of the *secure base* developed by Bowlby, as well as the utilization approach advocated by Erickson (Bowlby, 1988; Diamond, 1987, 1988; Florsheim & McArthur, 2009; Kohut, 1959; Winnicott, 1971).

Not to mention the psychoanalytic and cognitive-behavioral influences on the theoretical development of both fields (Collot, 2007; Fonagy et al., 2008; Mikulincer & Shaver, 2010; Palaci, 1991; Thioly, 2007).

Clinical Hypnosis and Oxytocin

Data indicate that hypnotic suggestions may have biological (LaBaw, 1992; Torem, 2007; Wood, Bughi, Morrison, Tanavoli, & Zadeh, 2003)

and physiological (Crasilneck & Hall, 1959; Hoareau, 1992; Wilkinson, 1981) impacts. However, as far as we know, no biological mediator of clinical hypnosis has yet been clearly identified. In our opinion, the links between clinical hypnosis and attachment theory may shed a supplementary light on that issue and may provide a theoretical basis for its empirical exploration.

Oxytocin as a Neurobiological Mediator of Clinical Hypnosis

Oxytocin (OT) is a hormone and neuropeptide synthetized in the pituitary gland, mainly known for its role in animal and human pair-bonding, recognition of nonverbal social stimuli, psychological well-being, and mothering behaviors (for a review, see Ishak, Kahloon, & Fakhry, 2010; Scantamburlo, Ansseau, Geenen, & Legros, 2009; Tom & Assinder, 2010).

Since hypnotic suggestions may involve attachment mechanisms (see above) and since attachment mechanisms are known for being modulated by OT (Buchheim et al., 2009; Carter, 2005; Feldman, Weller, Zagoory-Sharo, & Levin, 2007), it seems natural to examine the relationship between the therapeutic use of hypnotic suggestions and the biological effects of OT.

Several authors have already evoked the idea that OT may play a role in the hypnotic process (Legros, 2002; Uvnäs-Moberg, 1998). In addition, the modulatory effect of exogenous OT on hypnotizability has recently been demonstrated (Bryant, Hung, Guastella, & Mitchell, 2012). These clues suggest that OT may influence the mechanisms responsible for the therapeutic effects of clinical hypnosis.

Drawing upon these elements, we propose that hypnotic suggestions promoting attachment may have a modulatory effect on the endogenous level of OT and may contribute to several therapeutic outcomes observed in the context of clinical hypnosis. We do not suggest that OT is the unique explanation for the therapeutic effects of clinical hypnosis, but we do propose that it may be one of the mediators connecting the language of the therapist and the body of the patient.

Commonalities and Points of Contact

Our review of the literature suggests that the bio-psychosocial effects of OT share several aspects with the bio-psychosocial effects attributed to clinical hypnosis. For example, hypnotic suggestions as well as OT may influence the quality of relational interactions (Banyai, 1985; Ditzen et al., 2009), the level of trust (Alladin, 2007; Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005), and the strength of collaborative alliances (Esch & Stefano, 2005a, 2005b; Ratner, Gross, Casas, & Castells, 1990). In addition, clinical hypnosis and OT are thought to have an effect on pregnancy (Halfon, 2007; Russell, Leng, & Douglas, 2003), pain

threshold (Gimpl & Fahrenholz, 2001; Montgomery, DuHamel, & Redd, 2000), inflammatory reactions (Hoareau, 1992; Petersson, Lundeberg, Sohlström, Wiberg, & Uvnäs-Moberg, 1998), and immunology (Geenen et al., 2000; Wood et al., 2003). Both may have an impact on physiological parameters (Hoareau, 1992; Ishak et al., 2010; Petersson, Alster, Lundeberg, & Uvnäs-Moberg, 1996), sexual issues (Burri, Heinrichs, Schedlowski, & Kruger, 2008; Hall, 1978), and memory (Guastella, Mitchell, & Mathews, 2008; Weitzenhoffer, 2000). Finally, both have shown a modulatory effect on depression (Scantamburlo, Pitchot, Ansseau, & Legros, 2008; Yapko, 2006), anxiety (Bartz & Hollander, 2006; Spiegel & Spiegel, 2004), as well as stress-related diseases (Spiegel & Spiegel, 2004; Uvnäs-Moberg & Petersson, 2005).

Another link between OT and clinical hypnosis may be deduced from animal studies. Animal models have shown that the level of maternal attention (e.g., grooming and petting behavior) may influence an offspring's later ability to cope with stressful events and may partly modify genes responsible for emotional regulation (Fox & Hane, 2008; Meaney, 2004; Meaney & Szyf, 2005; Szyf, McGowan, & Meaney, 2008; Weaver, Meaney, & Szyf, 2006; Weaver et al., 2007). That early mothering attitude has been associated with modifications in offspring's neurobiological environment, including changes in OT receptors (Cozolino, 2006, 2010; Neumann, 2008).

As we have seen, from the perspective of attachment theory, the wording of certain types of hypnotic suggestions may be compared to secure mothering behavior. Consequently, it may have a comparable impact on stress modulation, gene expression, and the endogenous level of OT. To put it differently, in the context of clinical hypnosis, *wording is petting* and may generate similar beneficial consequences.

Interestingly, it has already been proposed that hypnosis may have a modulatory impact on stress management (Spiegel & Spiegel, 2004), gene expression (Rossi, 1986, 2005), as well as OT regulation (Uvnäs-Moberg, 1998).

Moreover, OT release is known to become conditioned to all kinds of social interactions and mental imagery (Cozolino, 2006; Dunbar, 2008; Uvnäs-Moberg, 1997). Since social interactions and mental imagery play an important role in the hypnotic process, hypnotic process based on the visualization of secure relational interactions may modulate endogenous levels of OT. However, mere resemblance between the effects of two distinctive elements is not proof of their causal relationship. Several explanations may be offered for the commonalities that we have exposed. For example, hidden intermediaries may be responsible for the shared aspects and may constitute the actual causal factor explaining their common effects. Furthermore, clinical hypnosis is so heteroclite that it is improbable that one biological mediator could explain its various neurobiological effects. Nevertheless, we believe that links between

clinical hypnosis and OT may further the ongoing reflection about the neurobiological mediators involved in the hypnotherapeutic process.

Discussion and Further Perspectives

Communication and relationship are not only the essential components of clinical hypnosis but also the central element of many psychotherapeutic techniques (Gaylin, 2001; Hubble, Duncan, & Miller, 1999; Messer & Wampold, 2002). Because of that, our hypotheses about attachment and hypnotic suggestions may be extended to several other psychotherapeutic techniques as long as they respect the general principles that have been described.

Furthermore, most of the ideas proposed in this article are purely speculative, meant to encourage reflection about the clinical use of hypnotic suggestions, and remain to be addressed by critical minds and empirical works.

For example, examining a statistical correlation between subjects' attachment style and their degree of hypnotizability may inform our understanding of attachment theory as well as clinical hypnosis. More precisely, cross-checking data belonging to the Adult Attachment Interview (George, Kaplan, & Main, 1996) and the Stanford Hypnotic Susceptibility Scale (Weitzenhoffer & Hilgard, 1962) may provide supplementary information about individual differences with regard to hypnosis.

From a biological perspective, the role of OT in the hypnotic process may be examined thanks to the use of OT antagonists. That is, blocking receptors of OT during a hypnotic session may help to determine the extent to which OT is necessary to the hypnotic experience and its therapeutic effects.

Moreover, the endogenous level of OT could be measured before and after a determined number of hypnotic sessions performed on a randomized group of subjects in order to establish the conditions and the extent to which hypnotic suggestions may modulate that neurobiological factor.

It may also be of interest to determine whether or not a symbolic relationship with one's benevolent unconscious mind, perceived as a spiritual companion, may generate a long-lasting feeling of safety and may lead to a higher level of endogenous OT, a better health or well-being.

Finally, from a neurological perspective, the anterior cingulate cortex (ACC) may constitute another bridge between clinical hypnosis and attachment theory, since it is thought to be involved in social rejection (Cozolino, 2006, 2010; Eisenberger & Lieberman, 2004; Hanson & Mendius, 2009), attachment mechanisms (Neumann, 2008),

and hypnotically modulated pain (Faymonville, Boly, & Laureys, 2006; Faymonville et al., 2003; Vanhaudenhuyse, Boly, Laureys, & Faymonville, 2009). Its implication in social interactions and hypnotic phenomena justify its examination from an integrative perspective.

Conclusion

This article suggests that attachment theory provides a valuable perspective on the therapeutic effectiveness of clinical hypnosis. It proposes that basic tenets of attachment theory are inherent to various hypnotic strategies and that a deliberate integration of attachment concepts within the framework of clinical hypnosis may not only facilitate attachment mechanism but also modulate neurobiological factors associated with health and well-being.

In particular, it proposes that by wording hypnotic suggestions according to utilization approach, a therapist may display the characteristics of an *attentive, responsive, sensitive, available,* and *benevolent* caregiver and hence may facilitate the development of a secure attachment relationship with the patient. Since secure attachment is known to benefit health and well-being, hypnotic suggestions that favor secure attachment could play an important role in therapy.

Furthermore, this article proposes that not only the structure but also the content of many hypnotic suggestions may facilitate secure attachment. For instance, metaphors integrating the concepts of "safe place" and "secure caregiver" may favor patient's feeling of relational safety, may elicit the development of a secure attachment relationship, and may reduce the subject's vulnerability with regard to psychopathologies.

Moreover, because of the commonalities unifying attachment theory and clinical hypnosis, the neurobiological correlates of an adequate attachment may be similar to the neurobiological correlates underpinning the hypnotic process. Hence, attachment mechanisms may constitute a link between clinical hypnosis and a neurobiological factor such as oxytocin. Finally, this article examines the implications of that integrative model for future researches and clinical practice.

References

Ainsworth, M. D. S. (1963). The development of infant-mother interaction among the Ganda. In B. M. Foss (Ed.), *Determinants of infant behavior* (Vol. 2, pp. 67–112). New York, NY: Wiley.

Ainsworth, M. D. S., & Bell, S. M. (1970). Attachment, exploration, and separation: Illustrated by the behavior of one-year-olds in a strange situation. *Child Development*, *41*, 49–67.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Hillsdale, NJ: Erlbaum.

Alladin, A. (2007). *Handbook of cognitive hypnotherapy for depression: An evidence-based approach*. Philadelphia, PA: Lippincott Williams and Wilkins.

Baker, E. L. (1982, October). *Developmental aspects of the hypnotherapeutic relationship: Theoretical, clinical and empirical observations*. Paper presented at the 34th Annual Meeting of the Society for Clinical and Experimental Hypnosis, Indianapolis.

Balken, J. (2004). *Mécanismes de l'hypnose Clinique. Dans le contexte psychotherapeutique* [Mechanisms of clinical hypnosis in the psychotherapeutic context]. Paris, France: Harmattan.

Banyai, E. I. (1985). A social psychophysiological approach to the understanding of hypnosis: The interaction between hypnotist and the subject. *Hypnos: Swedish Journal of Hypnosis in Psychotherapy and Psychosomatic Medicine*, *12*, 186–210.

Banyai, E. I. (1998). The interactive nature of hypnosis: Research evidence for a social-psychobiological model. *Contemporary Hypnosis*, *15*, 52–63.

Barabasz, A. F., Olness, K., Boland, R., & Kahn, S. (Eds.). (2010). *Medical hypnosis primer: Clinical and research evidence*. New York, NY: Routledge.

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, *61*, 226–244.

Bartz, J. A., & Hollander, E. (2006). The neuroscience of affiliation: Forging links between basic and clinical research on neuropeptides and social behavior. *Hormones and Behavior*, *50*, 518–528.

Berlin, L. J., Cassidy, J., & Appleyard, K. (2008). The influence of early attachments on other relationships. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 333–347). New York, NY: Guilford.

Bioy, A., & Keller, P. H. (2009). *Hypnose Clinique et principe d'analogie: Fondements d'une pratique psychotherapeutique* [Clinical hypnosis and principle of analogy: Foundations of a psychotherapeutic practice]. Brussels, Belgium: De Boeck.

Bioy, A., & Michaux, D. (2007). L'hypnothérapie [Hypnotherapy]. In A. Bioy & D. Michaux (Eds.), *Traité d'hypnothérapie: Fondements, méthodes, applications* [Hypnotherapy Treaty: Fundamentals, methods, applications] (pp. 9–18). Paris, France: Dunod.

Bioy, A., Wood, C., & Célestine-Lhopiteau, I. (2010). *L'aide-mémoire d'hypnose: en 50 notions* [Hypnosis checklist: 50 concepts]. Paris, France: Dunod.

Bowlby, J. (1958). The nature of the child's tie to his mother. *International Journal of Psychoanalysis*, *39*, 350–373.

Bowlby, J. (1969). *Attachment and loss. Vol.1: Attachment*. London, UK: Hogarth.

Bowlby, J. (1973). *Attachment and loss: Vol.2: Separation: Anxiety and anger*. New York, NY: Basic Books.

Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. London, UK: Routledge.

Brown, D. P., & Fromm, E. (1986). *Hypnotherapy and hypnoanalysis*. Hillsdale, NJ: Erlbaum.

Bryant, R. A., Hung, L., Guastella, A. J., & Mitchell, P. B. (2012). Oxytocin as a moderator of hypnotizability. *Psychoneuroendocrinology*, *37*, 162–166.

Buchheim, A., Heinrichs, M., George, C., Pokorny, D., Koops, E., Henningsen, P., . . . Gündel, H. (2009). Oxytocin enhances the experience of attachment security. *Psychoneuroendocrinology*, *34*, 1417–1422.

Burri, A., Heinrichs, M., Schedlowski, M., & Kruger, T. H. C. (2008). The acute effects of intranasal oxytocin administration on endocrine and sexual function in males. *Psychoneuroendocrinology*, *33*, 591–600.

Carter, C. S. (2005). Biological perspectives on social attachment and bonding. In C. S. Carter, L. Ahnert, K. E. Grossmann, S. B. Hardy, M. E. Lamb, S. W. Porges, et al. (Eds.), *Attachment and bonding: A new synthesis* (pp. 85–100). Cambridge, MA: MIT Press.

Cassidy, J. (2008). The nature of the child's ties. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 3–22). New York, NY: Guilford.

Cassidy, J., & Shaver, P. R. (Eds.). (2008). *Handbook of attachment: Theory, research, and clinical applications* (2nd ed.). New York, NY: Guilford.

Chertok, L. (2006). *L'hypnose entre la psychanalyse et la biologie: Le non-savoir des psy* [The unknowing therapist: Hypnosis between psychoanalysis and biology] (3rd ed.). Paris, France: Odile Jacob.

Collot, E. (2007). *Psychothérapie, rituel et alliance thérapeutique* [Psychotherapy, ritual, and the therapeutic alliance]. Paris, France: Albin Michel.

Colombo, S. (2007). Attachement et Hypnose [Attachment and hypnosis]. In A. Bioy & D. Michaux (Eds.) *Traité d'hypnothérapie: Fondements, méthodes, applications* [Hypnotherapy Treaty: Fundamentals, methods, applications] (pp. 149–183). Paris, France: Dunod.

Comstock, C. M. (1991). The inner self-helper and concepts of inner guidance: Historical antecedents, its role within dissociation, and clinical utilization. *Dissociation*, *4*, 165–177.

Cortina, M. (1999). Causality, adaptation, and meaning: A perspective from attachment theory and research. *Psychoanalytic Dialogues*, *9*, 557–596.

Cozolino, L. (2006). *The neuroscience of human relationships: Attachment and the developing social brain*. New York, NY: Norton.

Cozolino, L. (2010). *The neuroscience of psychotherapy: Healing the social brain*. New York, NY: Norton.

Crasilneck, H. B., & Hall, J. A. (1959). Physiological changes associated with hypnosis: A review of the literature since 1948. *International Journal of Clinical and Experimental Hypnosis*, *7*, 9–50.

Crowell, J. A., Fraley, C., & Shaver, P. R. (2008). Measurement of individual differences in adolescent and adult attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 599–634). New York, NY: Guilford.

De Wolff, M. S., & van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Developmen*t, *68*, 571–591.

DeKlyen, M., & Greenberg, M. T. (2008). Attachment and psychopathology in childhood. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: theory, research, and clinical applications* (2nd ed., pp. 637–665). New York, NY: Guilford.

Diamond, M. J. (1987). The interactional basis of hypnotic experience: On the relational dimensions of hypnosis. *International Journal of Clinical and Experimental Hypnosis*. *35*, 95–115.

Diamond, M. J. (1988). Accessing archaic involvement: Toward unraveling the mystery of Erickson's hypnosis. *International Journal of Clinical and Experimental Hypnosis*, *36*, 141–156.

Ditzen, B., Schaer, M., Gabriel, B., Bodenmann, G., Ehlert, U., & Heinrichs, M. (2009). Intranasal oxytocin increases positive communication and reduces cortisol levels during couple conflict. *Biological Psychiatry*, *65*, 728–731.

Dozier, K., Stovall-McClough, C., & Albus, K. E. (2008). Attachment and psychopathology in adulthood. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 718–744). New York, NY: Guilford.

Dunbar, R. I. (2008). The social role of touch in humans and primates: Behavioral function and neurobiological mechanisms. *Neuroscience and Behavioral Reviews*, *34*, 260–268.

Eisenberger, N. I., & Lieberman, M. D. (2004). Why rejection hurts: A common neural alarm system for physical and social pain. *Trends in Cognitive Science*, *8*, 294–300.

Erickson, M. H. (1959). Further clinical techniques of hypnosis: Utilization techniques. *American Journal of Clinical Hypnosis*, *2*, 3–21.

Erickson, M. H. (1983). *Healing in hypnosis*. New York, NY: Irvington.

Erickson, M. H., & Rossi, E. (1979). *Hypnotherapy: An exploratory casebook*. New York, NY: Irvington.

Erickson, M. H., & Rossi E. L., (1980). The February Man: Facilitating new identity in hypnotherapy. In E. L. Rossi (Ed.), *Innovative hypnotherapy: The collected papers of Milton H. Erickson on hypnosis* (Vol. 4, pp. 525–542). New York, NY: Irvington.

Esch, T., & Stefano, G. B. (2005a). Love promotes health. *Neuroendocrinololgy Letters*, *26*, 264–267.

Esch, T., & Stefano, G. B. (2005b). The neurobiology of love. *Neuroendocrinololgy Letters*, *26*, 175–192.

Faymonville, M. E., Boly, M., & Laureys, S. (2006). Functional neuroanatomy of the hypnotic state. *Journal of Physiology-Paris*, *99*, 463–469.

Faymonville, M. E., Roediger, L., Del Fiore, G., Delgueldre, C., Phillips, C., Lamy, M., . . . Laureys, S. (2003). Increased cerebral functional connectivity underlying the antinociceptive effects of hypnosis. *Cognitive Brain Research*, *17*, 255–262.

Feldman, R., Weller, A., Zagoory-Sharo, O., & Levin, A. (2007). Evidence for a neuroendocrinological foundation of human affiliation: Plasma oxytocin levels across pregnancy and the postpartum period predict mother-infant bonding. *Psychological Science*, *18*, 965–970.

Florsheim, P., & McArthur, L. (2009). An interpersonal approach to attachment and change. In J. H. Obegi & E. Berant (Eds.), *Attachment theory and research in clinical work with adults* (pp. 379–409). New York, NY: Guilford.

Fogel, A. (1993). *Developing through relationships: Origins of communication, set and culture*. Chicago, IL: University of Chicago Press.

Fonagy, P., Gergely, G., & Target, M. (2008). Psychoanalytic constructs and attachment theory and research. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 783–810). New York, NY: Guilford.

Fox, N. A., & Hane, A. A. (2008). Studying the biology of human attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: theory, research, and clinical applications* (2nd ed., pp. 217–240). New York, NY: Guilford.

Fraley, R. C., & Shaver, P. R. (1998). Airport separations: A naturalistic study of adult attachment dynamics in separating couples. *Journal of personality and Social Psychology*, *75*, 1198–1212.

Frauman, D. C., Lynn, S. J., Hardaway, R. A., & Molteni, A. L. (1984). Effect of subliminal symbiotic activation on hypnotic rapport and susceptibility. *Journal of Abnormal Psychology*, *93*, 481–483.

Gaylin, W. (2001). *How psychotherapy really works: How it works when it works and why sometimes it doesn't*. New York, NY: McGraw-Hill.

Geenen, V., Martens, H., Brilot, F., Renard, C., Franchimont, D., & Kecha, O. (2000). Thymic neuroendocrine self-antigens: Role in T-cell development and central T-cell self-tolerance. *Annals of the New York Academy of Science*, *917*, 710–723.

Gelso, C. J., & Carter, J. A. (1985). The relationship in counseling and psychotherapy: Components, consequences, and theoretical antecedent. *Counseling Psychologist*, *13*, 155–243.

George, C., Kaplan, N., & Main, M. (1996). *Adult Attachment Interview*. Unpublished manuscript, University of California, Berkeley.

Gimpl, G., & Fahrenholz, F. (2001). The oxytocin receptor system: Structure, function, and regulation. *Physiological Reviews*, *81*, 629–683.

Granqvist, P., & Kirkpatrick, L. A. (2008). Attachment and religious representations and behavior. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 906–933). New York, NY: Guilford.

Guastella, A. J., Mitchell, P. B., & Mathews, F. (2008). Oxytocin enhances the encoding of positive social memories in humans. *Biological Psychiatry*, *64*, 256–258.

Halfon, Y. (2007). Hypnose maternelle et maternité [Motherly hypnosis and motherhood]. In A. Bioy & D. Michaux (Eds.), *Traité d'hypnothérapie: Fondements, méthodes, applications*

[Hypnotherapy treaty: Fundamentals, methods, applications] (pp. 333–340). Paris, France: Dunod.

Hall, J. A. (1978). Hypnotherapy in the treatment of sexual dysfunction. *Texan Medical*, *74*, 45–51.

Hammond, D. C. (1990a). *Handbook of hypnotic suggestions and metaphors*. New York, NY: Norton.

Hammond, D. C. (1990b). The serenity place. In D. C. Hammond, *Handbook of hypnotic suggestions and metaphors* (pp. 130–131). New York, NY: Norton.

Hanson, R., & Mendius, R. (2009). *Buddha's brain: The practical neuroscience of happiness, love & wisdom*. Oakland, CA: New Harbinger.

Harlow, H. F. (1958). The nature of love. *American Psychologist*, *3*, 673–685.

Harlow, H. F. (1959). Love in infant monkeys. *Scientific American*, *200*, 68–86.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, *52*, 511–524.

Hesse, E. (2008). The adult attachment interview: Protocol, method of analysis, and empirical studies. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 552–598). New York, NY: Guilford.

Hilgard, E. R. (1974). Toward a neo-dissociative theory: Multiple cognitive controls in human functioning. *Perspectives in Biology and Medicine*, *17*, 301–316.

Hoareau, J. (1992). *Hypnose clinique* [Clinical hypnosis]. Paris, France: Masson.

Horvath, A. O., & Greenberg, L. (Eds.). (1994). *The working alliance: Theory, research, and practice*. New York, NY: Wiley.

Hubble, M., Duncan, B., & Miller, S. (Eds.). (1999). *The heart and soul of change: What works in therapy*. Washington, DC: American Psychological Association.

Ishak, W. W., Kahloon, M., & Fakhry, H. (2010). Oxytocin role in enhancing well-being: A literature review. *Journal of Affective Disorders*, *130*, 1–9.

Johnson, S. M. (2009). Attachment theory and emotionally focused therapy for individuals and couples: Perfect partners. In J. H. Obegi & E. Berant (Eds.), *Attachment theory and research in clinical work with adults* (pp. 410–433). New York, NY: Guilford.

Kihlstrom, J. (1985). Hypnosis. *Annual Review of Psychology*, *36*, 385–418.

Kluft, R. P. (1990). Containing dysphoria in MPD. In D. C. Hammond (Ed.), *Handbook of hypnotic suggestions and metaphors* (pp. 342–243). New York, NY: Norton.

Kohut, H. (1959). Introspection, empathy and psychoanalysis. *Journal of American Psychoanalytic Association*, *7*, 459–483.

Kosfeld, M., Heinrichs, M., Zak, P. J., Fischbacher, U., & Fehr, E. (2005). Oxytocin increases trust in human. *Nature*, *435*, 673–676.

LaBaw, W. (1992). The use of hypnosis with hemophilia. *Psychiatric Medicine*, *10*(4), 89–98.

Legros, J. J. (2002). Oxytocin: A natural means of treating psychological stress. *Bulletin et Mémoires de l'Académie Royale de Médecine de Belgique*, *157*, 383–389.

Lutz, B., & Fix, C. (2007). Régression et hypnothérapie [Regression and hypnotherapy]. In A. Bioy & D. Michaux (Eds.), *Traité d'hypnothérapie: Fondements, méthodes, applications* [Treaty of hypnotherapy: Fundamentals, methods, applications] (pp. 213–244). Paris, France: Dunod.

Lynn, S. J., Barnes, S., Deming, A., & Accardi, M. (2010). Hypnosis, rumination, and depression: Catalysing attention and mindfulness-based treatments. *International Journal of Clinical and Experimental Hypnosis*, *58*, 202–221.

Lynn, S. J., & Rhue, J. (Eds.). (1991). *Theories of hypnosis: Current models and perspectives*. New York, NY: Guilford.

Magai, C. (2008). Attachment in middle and later life. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 532–551). New York, NY: Guilford.

Main, M., & Solomon, J. (1986). Discovery of an insecure, disorganized/disoriented attachment pattern: Procedures, findings, and implications for the classification of behavior.

In M. Yogman & T. B. Brazelton (Eds.), *Affective development in infancy* (pp. 95–124). Norwood, NJ: Ablex.

Meaney, M. J. (2004). The nature of nurture: Maternal effects and chromatin remodeling. In J. T. Caccioppo (Ed.), *Essays in social neuroscience* (pp. 1–14). Cambridge, MA: MIT Press.

Meaney, M. J., & Szyf, M. (2005). Maternal care as a model for experience dependent chromatine plasticity? *Trends in Neurosciences*, *28*, 456–463.

Megglé, D. (2002). *Erickson, Hypnose et Psychotherapie* [Erickson, hypnosis and psychotherapy]. Paris, France: Retz.

Melchior, T. (1998). *Créer le réel: Hypnose et thérapie* [Create reality: Hypnosis and therapy]. Paris, France: Couleurpsy, Editions du Seuil.

Messer, S. B., & Wampold, B. E. (2002). Let's face facts: Common factors are more potent than specific therapy ingredients. *Clinical Psychology: Science and Practice*, *9*, 21–25.

Michaux, D. (2007). Pratiques de l'hypnotherapie et indications [Hypnotherapy practice and indications]. In D. Michaux, Y. Halfon, & C. Wood (Eds.), *Manuel d'hypnose pour les professions de santé* [Hypnosis handbook for the health professions] (pp. 149–194). Paris, France: Maloine.

Mikulincer, M., & Shaver, P. R. (2010). *Attachment in adulthood: Structure, dynamics, and change*. New York, NY: Guilford.

Mikulincer, M., Shaver, P. R. Cassidy, J., & Berant, E. (2009). Attachment-related defensive processes. In J. H. Obegi & E. Berant (Eds.), *Attachment theory and research in clinical work with adults* (pp. 293–327). New York, NY: Guilford.

Montgomery, G. H., DuHamel, K. N., & Redd, W. H. (2000). A meta-analysis of hypnotically induced analgesia: How effective is hypnosis? *International Journal of Clinical and Experimental Hypnosis*, *48*, 138–153.

Nash, M. R., & Barnier, A. J. (Eds.). (2008). *The Oxford handbook of hypnosis: Theory, research and practice*. New York, NY: Oxford University Press.

Neumann, I. D. (2008). Brain oxytocin: A key regulator of emotional and behavioral and social behaviors in both females and males. *Journal of Neuroendocrinology*, *20*, 858–865.

Obegi, J. H., & Berant, E. (Eds.). (2009a). *Attachment theory and research in clinical work with adults*. New York, NY: Guilford.

Obegi, J. H., & Berant, E. (2009b). Introduction. In J. H. Obegi & E. Berant (Eds.), *Attachment theory and research in clinical work with adults* (pp. 1–14). New York, NY: Guilford.

Orlinsky, D. E., Ronnestad, M. H., & Willutski, U. (2004). Fifty years of psychotherapy process-outcomes research: Continuity and change. In M. J. Lambert (Ed.), *Bergin and Garfield's handbook of psychotherapy and behavior change* (5th ed., pp. 307–390). New York, NY: Wiley.

Orne, M. (1966). Hypnosis, motivation and compliance. *American Journal of Psychiatry*, *122*, 721–726.

Palaci, J. (1991). Psychanalyse, transfert et hypnose [Psycholanalysis, transference, and hypnosis]. In D. Bougnoux (Ed.), *La suggestion, hypnose, influence, transe (colloque de Cerisy)* [Suggestion, hypnosis, influence, trance (Cerisy colloquium)]. Paris, France: Les empêcheurs de penser en rond.

Palaci, J. (1993). Empathie et relation [Empathy and relationship]. In I. Strangers (Ed.), *Importance de l'hypnose* [The importance of hypnosis], (pp. 219–229). Paris, France: Les empêcheurs de penser en rond.

Petersson, M., Alster, P., Lundeberg, T., & Uvnäs-Moberg, K. (1996). Oxytocin causes a long-term decrease of blood pressure in female and male rats. *Physiology & Behavior*, *60*, 1311–1315.

Petersson, M., Lundeberg, T., Sohlström, A., Wiberg, U., & Uvnäs-Moberg, K. (1998). Oxytocin increases the survival of musculocutaneous flaps. *Naunyn-Schmiedeberg's Archives of Pharmacology*, *357*, 701–704.

Petot, J.-M. (2006). L'hypnose et l'alliance thérapeutique: Intérêt et limites de l'utilisation de l'hypnose en thérapie cognitive [Hypnosis and the therapeutic alliance: The importance and limits of using hypnosis in cognitive therapy]. In D. Michaux (Ed.), *Hypnose et dissociation psychique* [Hypnosis and dissociation] (pp. 303–318). Paris, France: Imago.

Ratner, H., Gross, L., Casas, J., & Castells, S. (1990). A hypnotherapeutic approach to the improvement of compliance in adolescent diabetics. *American Journal of Clinical Hypnosis*, *32*, 154–159.

Rogers, C. R. (1942). *Counseling and psychotherapy*. Boston, MA: Houghton Mifflin.

Rogers, C. R. (1966). *Client-centered therapy*. London, UK: Houghton Mifflin.

Rossi, E. (Ed.). (1980). *The collected papers of Milton H. Erickson on hypnosis* (Vols. 1–4). New York, NY: Irving.

Rossi, E. L. (1986). *The psychobiology of mind-body healing: New concepts of therapeutic hypnosis*. New York, NY: Norton.

Rossi, E. L. (2005). Prospects for exploring the molecular-genomic foundations of therapeutic hypnosis with DNA microarrays. *American Journal of Clinical Hypnosis*, *48*, 165–182.

Russell, J. A., Leng, G., & Douglas, A. J. (2003). The magnocellular oxytocin system, the fount of maternity: Adaptations in pregnancy. *Frontiers in Neuroendocrinology*, *24*, 27–61.

Salem, G., & Bonvin, E. (2004). *Soigner par l'hypnose* [Treated with hypnosis](3rd ed.). Paris, France: Masson.

Scantamburlo, G., Ansseau, M., Geenen, V., & Legros, J. J. (2009). Oxytocin: From milk ejection to maladaptation in stress response and psychiatric disorders: A psychoneuroendocrine perspective. *Annales d'Endocrinologie*, *70*, 449–454.

Scantamburlo, G., Pitchot, W., Ansseau, M., & Legros, J. J. (2008). Neurohypophyseal neuropeptides and unipolar depression: Which future? *Revue Medicale de Liège*, *63*, 385–390.

Schaffer, R. (2007). *Introducing child psychology*. Oxford, UK: Blackwell.

Schore, A. N. (1994). *Affect regulation and the origin of the self: The neurobiology of emotional development*. Hillsdale, NJ: Erlbaum.

Shaver, P. R., & Mikulincer, M. (2009). An overview of adult attachment theory. In J. H. Obegi & E. Berant (Eds.), *Attachment theory and research in clinical work with adults* (pp. 17–45). New York, NY: Guilford.

Slade, A. (2008). The implications of attachment theory and research for adult psychotherapy: Research and clinical perspectives. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 762–783). New York, NY: Guilford.

Smith, A. H. (1981). Object relations theory and family systems: Toward a reconceptualization of the hypnotic relationship. *Psychotherapy: Theory, Research and Practice*, *18*, 54–67.

Spanos, N. P. (1982). A social psychological approach to hypnotic behavior. In C. Weary & H. L. Mirels (Eds.), *Integrations of clinical and social psychology* (pp. 231–271). New York, NY: Oxford University Press.

Spiegel, H., & Spiegel, D. (2004). *Trance and treatment: Clinical use of hypnosis* (2nd ed.). Arlington, VA: American Psychiatric.

Sroufe, L. A. (1997). Psychopathology as an outcome of development. *Development and Psychopathology*, *9*, 251–268.

Szyf, M., McGowan, P., & Meaney, M. J. (2008). The social environment and epigenome. *Environmental and Molecular Mutagenesis*, *49*(1), 46–60.

Teyber, E. (2006). *Interpersonal process in therapy: An integrative model* (5th ed.). Belmont, CA: Thomson Brooks/Cole.

Thioly, F. (2007). TCC et hypnose d'inspiration ericksonienne [CBT and Ericksonian hypnosis]. In A. Bioy & D. Michaux (Eds.), Traité d'hypnothérapie: Fondements,

méthodes, applications [Hypnotherapy Treaty: Fundamentals, methods, applications] (pp. 119–147). Paris, France: Dunod.

Thompson, R. A. (2008). Early attachment and later development: Familiar questions and new answers. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: theory, research, and clinical applications* (2nd ed., pp. 348–365). New York, NY: Guilford.

Tom, N., & Assinder, S. J. (2010). Oxytocin in health and disease. *The International Journal of Biochemistry and Cell Biology*, *42*, 201–205.

Torem, M. S. (2007). Mind-body hypnotic imagery in the treatment of auto-immune disorders. *American Journal of Clinical Hypnosis*, *50*, 157–170.

Uvnäs-Moberg, K. (1997). Physiological and endocrine effects of social contact. *Annals of the New York Academy of Science*, *807*, 146–163.

Uvnäs-Moberg, K. (1998). Oxytocin may mediate the benefits of positive social interaction and emotions. *Psychoneuroendocrinology*, *23*, 819–835.

Uvnäs-Moberg, K., & Petersson, M. (2005). Oxytocin, a mediator of anti-stress, well-being, social interaction, growth and healing. *Psychosomatic Medicine and Psychotherapy*, *51*(1), 57–80.

Van IJzendoorn, M. H., & Sagi-Schwartz, A. (2008). Cross-cultural patterns of attachment: Universal and contextual dimensions. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 880–905). New York, NY: Guilford.

Vanhaudenhuyse, A., Boly, M., Laureys, S., & Faymonville, M. E. (2009). Neurophysiological correlates of hypnotic analgesia. *Contemporary Hypnosis*, *26*, 15–23.

Virot, C., & Bernard, F. (2010). *Hypnose, douleurs aiguës et anesthesia* [Hypnosis, acute pain, and anesthesia]. Paris, France: Arnette Blackwell.

Wallin, D. J. (2007). *Attachment in psychotherapy*. New York, NY: Guilford.

Watzlawick, P. (1978). *The language of change: Elements of therapeutic communication*. New York, NY: Basic Books.

Watzlawick, P., Helmick Beavin, J., & Jackson, D. D. (1972). *Une logique de la communication* [A logical communication]. Paris, France: Editions du Seuil.

Weaver, I. C. G., D'Alessio, A. C., Brown, S. E., Hellstrom, I. C., Dymov, S., Sharma, S., . . . Meany, M. J. (2007). The transcription factor nerve growth factor-inducible protein mediates epigenetic programming: Altering epigenetic marks by immediate-early genes. *Journal of Neuroscience*, *27*, 1756–1768.

Weaver, I. C. G., Meaney, M. J., & Szyf, M. (2006). Maternal care effects on the hippocampal transcriptome and anxiety-mediated behaviors in the offspring that are reversible in adulthood. *Proceedings of the National Academy of Sciences U.S.A.*, *103*, 3480–3485.

Weinfield, N. S., Sroufe, L. A., Egeland, B., & Carlson, E. (2008). Individual differences in infant-caregiver attachment: Conceptual and empirical aspects of security. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 78–101). New York, NY: Guilford.

Weitzenhoffer, A. M. (2000). *The practice of hypnotism* (2nd ed.). New York, NY: John Wiley & Sons.

Weitzenhoffer, A. M., & Hilgard, E. R. (1962). *Stanford Hypnotic Susceptibility Scale, Form C*. Palo Alto, CA: Consulting Psychologists.

Wilkinson, J. B. (1981). Hypnotherapy in the psychosomatic approach to illness: A review. *Journal of the Royal Society of Medicine*, *74*, 525–530.

Winnicott, D. W. (1971). *Playing and reality*. London, UK: Tavistock.

Wood, G. J., Bughi, S., Morrison, J., Tanavoli, S., & Zadeh, H. H. (2003). Hypnosis, differential expression of cytokines by T-Cell subsets, and the hypothalamo-pituitary-adrenal axis. *American Journal of Clinical Hypnosis*, *45*, 179–196.

Yapko, M. D. (2003). *Trancework: An introduction to the practice of clinical hypnosis* (3rd ed.). New York, NY: Routledge.

Yapko, M. D. (Ed.). (2006). *Hypnosis and treating depression: Applications in clinical practice*. New York, NY: Routledge.

Hypnose, Anhänglichkeit und Oxytocin: Eine Integrative Perspektive

Vladimir Zelinka, Yann Cojan und Martin Desseilles

Abstrakt: Dieser Artikel prüft Verbindungen zwischen klinischer Hypnose, der Anhänglichkeitstheorie und Oxytocin. Zunächst wird angenommen, daß Gemeinsamkeiten von klinischer Hypnose und der Anhänglichkeitstheorie unser Verständnis des hypnotherapeutischen Prozesses verbessern kann. Außerdem deutet er an, daß ein integratives Modell, das klinisches Hypnose und Anhänglichkeitstheorie vereint, eine Verbindung zwischen Klinischer Hypnose und einem neurobiologischen Faktor wie Oxytocin verbinden könnte. Schließlich diskutiert er die Implikationen dieser Hypothesen im Hinblick auf die klinische Praxis und zukünftige Forschungen.

Stephanie Reigel, MD

Hypnose, attachement et oxytocine: une perspective intégrative

Vladimir Zelinka, Yann Cojan et Martin Desseilles

Résumé: Cet article examine les liens entre l'hypnose clinique, la théorie de l'attachement et l'oxytocine. D'abord, il émet l'hypothèse que les points communs entre l'hypnose clinique et la théorie de l'attachement peuvent nous aider à mieux comprendre le processus hypnothérapeutique. Ensuite, il suggère qu'un modèle intégratif unissant l'hypnose clinique et la théorie de l'attachement peut constituer un lien entre l'hypnose clinique et un facteur neurobiologique tel que l'oxytocine. Enfin, il aborde les implications de ces hypothèses pour la pratique clinique et les recherches futures.

Johanne Reynault
C. Tr. (STIBC)

Hipnosis, apego, y oxitocina: Una perspectiva integradora

Vladimir Zelinka, Yann Cojan, y Martin Desseilles

Resumen: Este artículo considera los vínculos entre la hipnosis clínica, la teoría del apego, y la oxitocina. Primero, propone que las características en común entre la hipnosis clínica y la teoría del apego podrían mejorar nuestro entendimiento del proceso hipnoterapéutico. Luego, sugiere que un modelo integrador que unifique la hipnosis clínica y la teoría del apego podría constituir un vínculo entre la hipnosis clínica y un factor neurobiológico como la oxitocina. Finalmente, discute las implicaciones de estas hipótesis para la práctica clínica y futuras investigaciones.

Omar Sánchez-Armáss Cappello, PhD
Autonomous University of San Luis Potosi, Mexico