

THE INTERACTIVE NATURE OF HYPNOSIS: RESEARCH EVIDENCE FOR A SOCIAL-PSYCHOBIOLOGICAL MODEL

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Abstract

On the basis of 14 years of empirical research conducted in a multidimensional interactional framework, the main characteristics of different hypnosis styles are described. It is suggested that typical hypnosis styles resemble the patterns of basic intimate relationships that have mutual regulatory function. This interpretation may help to understand the healing effects of hypnosis, well known for ages, since more and more data indicate that the quality of intimate relationships plays an important role in the development and maintenance of mental and physical health. The research summarized here support the social psychobiological model of hypnosis, conceptualizing hypnosis as an altered state of consciousness that may have a socially and biologically adaptive value.

Key words: interaction, hypnotic style, maternal hypnosis, paternal hypnosis, social-psychobiological model

Traditional approaches: the focus either on the hypnotist or on the subject

Hypnotic-like states have been described by the ancient Egyptians, and although the modern history of hypnosis is over 200 years old, until now there has been no generally accepted definition of hypnosis. It seems to me that this lack of agreement regarding the definition of hypnosis may be due partly to the fact that historically the hypnosis literature has been concentrating either on the so called ‘magnetic power’ and the skill of the hypnotist (like Mesmer and, recently, the disciples of M.H. Erickson) or on the hypnotic ability and the talent of the subject (like Charcot and the authors of the modern hypnotic susceptibility scales). While this split in the focusing of attention may have had a beneficial effect on data reduction when studying different phenomena of hypnosis, it seems to have an unfortunate theoretical consequence as well. Namely, as a result of placing emphasis either on the hypnotist or on the subject, the cause of hypnotic effects became attributed to only one of them. As Diamond (1984, 1987) so vividly described, there have been a series of pendulum-like swings concerning the causal attribution of hypnotic effects first to the hypnotist then to the subject. In the meantime, the essence of hypnosis has somehow escaped the theorists’ grasp.

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At the dawn of the modern history of hypnosis, F.A. Mesmer and his immediate successors promulgated the doctrine that hypnotic phenomena were induced by 'animal magnetism', a force they believed to be emanating from their own hands. A century later, J.M. Charcot thought that certain physiological mechanisms in psychopathologically disturbed individuals accounted for hypnosis. Nowadays, clinicians using hypnosis as a therapeutic tool tend to follow the mesmeric tradition, emphasizing the hypnotists' skilled and sometimes even virtuoso technical manoeuvres (Barber, 1980; Haley, 1963; Van Dyck, 1982; etc.). Experimental investigation, however, has paid attention almost exclusively to alterations occurring within the hypnotized person. Owing to the important recognition that hypnotic responsiveness – measured by standardized scales – is a stable personality trait, compelling data have been accumulated regarding the differences related to the susceptibility to hypnosis (Hilgard, 1986).

It is striking that as more data were collected regarding the contributions of the hypnotist and those of the hypnotized person in hypnosis, the more controversial the issue appeared. The more convincing the evidence that showed that both the hypnotist and the subject had decisive roles in the outcome of hypnosis, the more hopeless it became to find the ultimate determinants of hypnosis solely in either the hypnotist or in the subject.

A shift in thinking in the early 1980s

At the beginning of the 1980s, after more than 10 years of studying the psychophysiological changes appearing in the hypnotized persons, it seemed to me that in order to overcome these controversies, a shift in thinking was required. Instead of continuing to limit ourselves by focusing attention on either the hypnotist or the subject, that is, on only one of the individuals participating in hypnosis, we should consider that *hypnosis develops in a unique interaction between hypnotist and subject*, and we should study the interaction itself (Bányai et al., 1982, 1985). This shift in my thinking in the early 1980s seemed to be in line with a more general tendency in contemporary scientific thinking, with a shift in theorizing on psychology and also with a slightly noticeable trend in hypnosis research. Von Bertalanffy's General Systems theory (1974), for example, proposed the study of objects and events in the contexts in which they occur. Whereas in psychology explanations of human behaviour were previously conceptualized in terms of a limited set of determinants, termed as independent entities that combine to produce behaviour, contemporary theorizing has shown a steady progression to more complicated accounts emphasizing reciprocal interactions, where behaviour, internal personal and cognitive factors, and environmental influences mutually operate as interlocking determinants of each other (Bandura, 1978).

It is noteworthy that at approximately the same time when we decided to broaden our research and to study hypnosis in an interactional framework, other workers in the field also began to show interest in the interactional nature of hypnosis. On the one hand, returning to the early psychoanalysts' thinking about hypnosis in relational terms (Ferenczi, 1909; Freud, 1921; etc.), the interactive therapeutic relationship became the object of a renewed interest of clinicians (Baker, 1981; Chertok, 1982; Diamond, 1984, 1987; etc.). Other authors have offered an explanation of hypnosis wholly in interactional terms from a systems framework (Haley, 1958; Fourie, 1983).

Empirical studies in an interactional framework

However, relatively few attempts were made to conduct empirical research regarding the interactional aspects of hypnosis. Besides the work of our laboratory only three

other groups began systematic empirical work in an interactional frame. In Australia, Sheehan and his colleagues studied the effects of the interpersonal climate established by the hypnotist on the subject's experiences of hypnosis (summarized in Sheehan and McConkey, 1982). In the United States, in Indianapolis Levitt and Baker (1983) reported on the effect of the subject's perception of the hypnotist. A group led by Lynn and Nash at Ohio University explored the nature of non-volition in hypnosis (Lynn et al., 1984), and the psychodynamically relevant interpersonal dimension of hypnosis (Nash and Spinler, 1989; etc.).

It is interesting that even those *empirical studies* that were conceived in an interactional conception *seemed to neglect the physiological level of the interaction*. This is all the more surprising, since organismic involvement was often considered – mainly by psychoanalytically oriented theorists – to be an essential part of hypnotic relational experiences (e.g. Kubie and Margolin, 1944). The practice of M.H. Erickson also seemed to support the notion that an important part of interactions between hypnotist and subject occurs on the physiological level (e.g. the reports on Erickson's mirroring the subject's breathing or posture: Erickson, Rossi and Rossi, 1976).

A multidimensional social psychophysiological experimental approach

In the course of our laboratory research studying the psychophysiological changes appearing in the subjects we occasionally noticed that similar physiological changes seemed to appear in the hypnotist and subject: e.g. the hypnotist, inducing active-alert hypnosis while the subject pedalled a bicycle ergometer steadily, usually began to experience a mild stiffness in her legs (Bányai, 1985). The data regarding the subjects' characteristic psychophysiological alterations also directed our attention to the importance of studying the physiological concomitants of the interactions, since our studies suggested that evoked potential changes accompany the modification of selective attention in the subjects (Bányai et al., 1981; Mészáros et al., 1981).

These experiences, along with the above described theoretical considerations, made us to take on a multidimensional interactional approach in which behavioural, experiential and relational dimensions of the interaction between hypnotist and subject are explored empirically, and beyond these the physiological level of the interaction is also studied. In this interactional approach hypnosis is conceptualized as an altered state of consciousness, arising in a special social context in a person, designated the subject, as a result of reciprocal interactions between him or her and another person, designated the hypnotist. We think that the development of hypnosis is influenced by the personal characteristics of both the hypnotist and the subject, by their relation, and also by their actual physiological, behavioural and subjective experiential changes accompanying the process of inducing and testing hypnosis. We are not looking for linear causal relationships among different manifestations of the participants of the hypnosis interaction but we consider hypnosis as an ever-changing process and we are looking for the interdependence of its elements.

In this multidimensional interactional research paradigm, hypnosis interactions are studied in a complex way. Various data of hypnotists and subjects are recorded in parallel. After recording previous attitudes and expectations, the verbal and non-verbal behavioural manifestations, central and peripheral physiological indices, subjective experiences and data on the relational dimension are recorded.

In order to control the whole history of the hypnotic interactions we choose hypnotists and subjects who have never seen each other before. Video records are made from the moment before the subject enters the experimental chamber to the moment

both the hypnotist and the subject leave. At the beginning, the subject waits for the hypnotist for one minute, then the hypnotist enters the room. They greet each other, then, after establishing rapport, hypnosis is induced by the usual eye-fixation method of one of the standardized Stanford scales (Weitzenhoffer and Hilgard, 1959). Different test suggestions are used as part of the standard procedure and subjective depth of hypnosis is also tested by using an imaginary scale where 0 means waking state, and 10 means the deepest achievable hypnosis.

After de-hypnosis, the hypnotist leaves the room, and the next phase begins. In this phase an independent enquirer – who was not involved in the hypnosis interaction in any way – listens to the subject's experiences, using a somewhat modified version of Sheehan and McConkey's (1982) Experiential Analysis Technique (EAT). In this technique the subjects report on their subjective feelings, and their thoughts, which are stimulated by the video-playback of the original hypnosis session. We developed an extended version of EAT, which we call Parallel Experiential Analysis Technique (PEAT) (Varga et al., 1994). The essence of PEAT is that in addition to the original EAT where only the subjects' experiences are explored, in PEAT the hypnotists are also asked to relate their experiences in a similar way.

After the interviews on subjective experiences, both the subjects and the hypnotists complete different questionnaires concerning relational characteristics: archaic involvement, involvement and sympathy. By archaic involvement we refer to a relational dimension of hypnosis defined by Shor (1979, p. 126) as 'a temporary displacement or "transference" of core emotive attitudes formed early in life (most typically in regard to parents) onto the hypnotist'. We measure archaic involvement by using a modified version of Nash and Spinler's (1989) Archaic Involvement Measure. We extended the scale to the negative side of involvement, and also to the archaic involvement of the hypnotist with the subject (Horváth et al., 1988, Bányai et al., 1990).

The experimental sessions, including interviews to obtain information about subjective experiences, are video-taped showing both participants of the interaction. Data are analysed separately for the different dimensions and participants, and are then intercorrelated. Raw data are assessed by independent judges and raters who are naive as to the aim and procedure of the experiments, and who are blind to other data of the experiments (e.g. raters content-analysing subjective experiences do not know anything about either the hypnotic susceptibility of the subjects or that of the experimental groups).

It has to be realized in an interactional research paradigm that it is not enough to look once at one participant of the hypnosis interaction and then at the other one. In order to follow the process of hypnosis, beyond sequential analysis, a more holistic approach seems necessary. On the basis of such an approach it is necessary to introduce 'interaction synchrony', a central concept of modern interaction research into the field of hypnosis. Interaction synchrony is a term applied to the matching of rhythms present in the individuals.

Interaction research reported interaction synchrony in different physical activities and physiological processes. For example, Condon and Ogston (1967) have noted movement synchrony between therapist and client and Stern (1982) discussed the functions of rhythm changes between mother and infant.

Main findings within the multidimensional interactional research paradigm

In our hypnosis experiments interaction synchrony appeared either in overt movements (e.g. joint movements of the limbs when the subjects performed motor

suggestions) and postures (e.g. posture mirroring), or in some covert processes (e.g. breathing and electromyographic activity). These phenomena were usually involuntary and out of awareness. An interaction rhythm was reported at the end of the hypnosis induction: If hypnosis was sufficiently deep, a swaying motion of the hypnotist's body was observed in synchrony with the subject's breathing. We called this phenomenon joint rhythmic movements.

Systematic analysis of the occurrence of interaction synchrony in different hypnotists' hypnosis interactions revealed that hypnotists differ in the frequency of the occurrence of interaction synchrony. A typical comparison of two hypnotists' frequency of synchronous phenomena is shown in Figure 1.

The female hypnotist tended to give a percentage of time of common breathing rhythm during hypnosis that was three times greater than that of the male hypnotist. The percentage of time of joint rhythmic movements (i.e. the hypnotist unwittingly moving back and forth or from left to right in the breathing rhythm of the subject) was also significantly higher for that female hypnotist. We interpreted these differences as signs of being physically more attuned to the subject.

Analysis of the subjective experiences of these hypnotists (Bányai et al., 1990) revealed that observable differences in interaction synchrony matched verbal reports. The hypnotist with more signs of physical attunement made many comments on her bodily involvement in the process. She described various sensations in her body and the ways in which these sensations affected her during the hypnosis session. She stated that in many instances she relied on her own bodily sensations in order to assess the state of the subject, as if acquiring information about the subject through this channel. In contrast, the reports of the male hypnotist, who showed less observable signs of physical attunement, reflected a more cognitive/rational involvement. He reported his impressions of the subject's personality and 'analysed' the process of hypnosis as well as his own style and attitude.

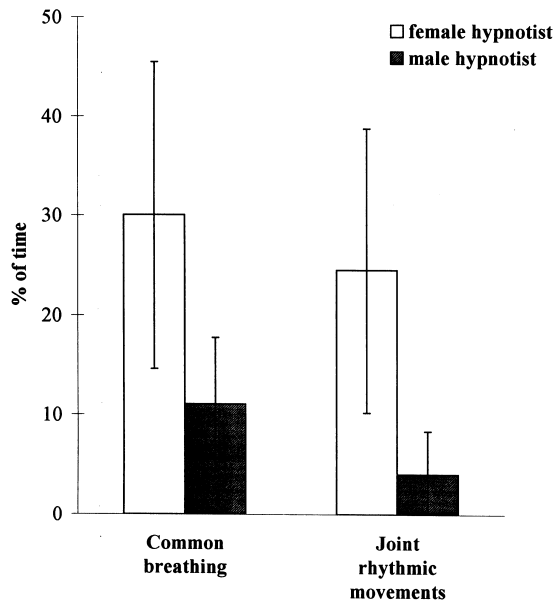


Figure 1. The frequency of interactionally synchronous phenomena with two hypnotists. For common breathing $d(10,21) = 3.766$, $p < 0.01$. For joint rhythmic movements $d(10,21) = 4.561$, $p < 0.001$.

Since other hypnotists showed similar differences both in the occurrence of interaction synchrony and in reporting bodily involvement, we intercorrelated physical attunement and verbal reports of different hypnotists. On the basis of this intercorrelation *two distinct hypnotist styles could be differentiated: a physical-organic style and an analytic-cognitive style*. The hypnotists with a physical-organic style are not only characterized by the frequent occurrence of interaction synchrony and relying on bodily cues during the hypnotic procedure, but they are also more personal when establishing rapport before hypnosis: they call the subjects by their first names more often than the hypnotists with analytic-cognitive style. The latter hypnotists, on the other hand, inhibit the frequency of subjects' speech in the course of rapport formation, show interaction synchrony very rarely as if maintaining greater distance from the subjects, and rely on thoughts rather than bodily cues.

Although the hypnotists' personal styles do not influence the subjects' responsiveness to standardized test suggestions, in the case of physical-organic style there is a systematic relationship between interaction synchrony and subjects' hypnotic susceptibility, subjective depth of hypnosis and archaic involvement, while in the case of analytic-cognitive style no such relationship could be found (Bányai et al., 1990).

It occurred to us that the difference in the hypnotists' characteristic working styles closely resembles Sándor Ferenczi's (1909/1965) hypothesized distinction between 'maternal' and 'paternal' hypnosis. According to Ferenczi, these two types of hypnosis are based on the 'same feelings of love or fear, the same conviction of infallibility, as those with which his (the subjects') parents inspired him as a child' (Ferenczi, 1909/1965, p. 178).

On the basis of his clinical experience Ferenczi says that 'the hypnotist with the imposing exterior, who works by frightening and startling, has certainly a great similarity to the picture impressed on the child of the stern, all-powerful father, to believe in, to obey, to imitate whom, is the highest ambition of every child. And the gentle stroking hand, the pleasant, monotonous words that talk one to sleep: are they not a reimpression of scenes that may have been enacted many hundred times at the child's bed by the tender mother, singing lullabies or telling fairy-tales?' (Ferenczi, 1909/1965, p. 178).

It seems to us that Ferenczi's distinction calls attention to an important and perhaps fundamental aspect of hypnosis. Despite the fact that in our standardized experimental conditions the hypnotists are restricted in many ways, the recorded overt and covert indices support the notion that these two characteristic relational patterns appear in hypnosis interactions. The findings concerning the frequent occurrence of interaction synchrony in some hypnotists with a physical-organic style imply that a '*maternal*' hypnotist engages in an interaction with the subjects that resembles the symbiotic early mother-infant relationship. The behaviour of the hypnotists with an analytic-cognitive style, i.e. the behaviour of '*paternal*' hypnotists, however, shows some similarity with the behaviour of a restricting father as early as in the phase of rapport formation.

After our first publications on hypnosis styles (Bányai et al., 1990, Bányai, 1991), our more recent studies confirmed the relevance of these two distinct hypnosis styles: their characteristics could be discovered in the hypnoses of several hypnotists. Our most recent studies, however, indicate that these styles are not as stable as they seemed to be at first: Hypnotists usually hypnotizing in a maternal style sometimes manifest signs that do not fit into the maternal style. The same is true for paternal hypnotists. In these cases signs of disturbance can be discovered like slips of the

tongue, or the hypnotist touching him- or herself more often than usual (Gösi-Greguss et al., 1993). Furthermore, there are hypnotists who cannot be classified as maternal or paternal.

One of our female hypnotists, for example, often showed signs of trance herself when inducing hypnosis. The following verbatim quotation from one of her subjective reports indicates the nature of these altered states.

Many times I was also absorbed . . . I think the natural way of this would be – if I were not forced to be in my right mind according to my role – that I keep talking to him on and on for a while, more and more softly, and then, slowly both of us would get to sleep. Like when I was a child, as we were chatting in the bed, and one didn't care about anything, just talking in the dark, and suddenly realized that you were asleep.

This example and several similar ones of our hypnotists show that characteristics of a *sibling relationship* may also be mobilized between hypnotist and subject.

Another of our hypnotists (a male) showed a different pattern: although his amount of interaction synchrony was minimal as if being a paternal hypnotist, and his subjective experiences referred to a lot of physical involvement as if being a maternal hypnotist, he could not be labelled either as maternal or as paternal, because he referred to several thoughts and wishes with an erotic touch, as the following verbatim quotation indicates.

I don't know why, but during hypnosis I wanted to touch her many times . . . I had the wish to take her hand to . . . to . . . let her feel my presence . . . or . . . or I don't know, to have some direct connection between us this way.

The experiences of this hypnotist raise the possibility that a *lover-type relationship* may be evoked in hypnotic interactions, too. Since the clinical hypnosis (and non-hypnosis) literature has long been aware of the revival and emergence of erotic feelings in patients, our data secured under laboratory conditions support the notion that all of the relevant intimate relationship types can be mobilized in hypnotic interactions.

Discussion and conclusion

Recent research on intimate relationships emphasizes that the participants of the interactions of these relationships have mutual regulatory functions. On the basis of studying parent–infant interactions, for example, Brazelton et al. (1974) called attention to the fact that reciprocity exists already in the early mother–infant interactions. Compelling pieces of evidence are collected showing that in both animals and humans social emotions and interactions are accompanied by marked neurophysiological and hormonal changes (Reite and Field, 1985). According to Field (1985, p. 415.) 'Attachment might . . . be viewed as a relationship that develops between two or more organisms as their behavioural and physiological systems become attuned to each other. Each partner provides meaningful stimulation for the other and has a modulating influence on the other's arousal level'. The individual has differential stimulation and arousal modulation needs, and they may be met by different individuals in different life stages.

On the basis of the resemblance of hypnosis styles to intimate relationships we formulated a theoretical proposal (Bányai, 1992): from a social psychobiological perspective we postulated that *characteristic hypnosis styles resemble the styles of*

the most important relationships in life that have regulatory functions. If this is really so, the healing effects of hypnosis, well known for ages, could be explained easily, since more and more data indicate that social support and the existence of good intimate relationships play important roles in maintaining mental and physical health (e.g. House et al., 1988; Argyle, 1992). The recently emerging social neuroscience already provides data on how the immune system is influenced by central nervous system processes that are shaped by social and psychological factors (Cacioppo, 1994).

In light of the literature cited above it seems important to find ways to differentiate various styles of hypnosis, and to find the characteristics of interactions that may facilitate hypnosis to play the role of regulatory function of intimate relationships. Different hypnosis styles may help to meet the subject's different needs – and, in cases of patients, they may correct different regulatory deficiencies.

In order to find the corresponding points between hypnosis styles and basic intimate relationships, we have to start out from the interactional patterns of the basic intimate relationships. During the past few years, extensive research has been done on interpersonal interactions. As summarized in a book edited by Montgomery and Duck (1991), in conducting interpersonal research, data should be analysed at different levels: the individual, the dyad, and the larger social group. Unfortunately, exhaustive studies have been undertaken only on early mother–infant relationships, but no sufficiently complex multilevel analysis has been done yet for father–child, sibling, peer, or love relationships. Both the separation studies and the psychobiological attunement studies show that the attachment relationship between the mother and the infant may serve the infant's arousal-modulation needs more than its need for stimulation, while the father may serve more of the infant's stimulation needs than its arousal-modulations needs (Field, 1985). While mothers spend substantial amounts of time in caregiving and comforting the infant, providing close physical contact between them, fathers tend to spend less time in caregiving and comforting the infant, but are more likely to engage in physically stimulating unpredictable playful activities with their infants. Peers also seem to satisfy stimulation needs, but differentially from fathers. Unfortunately, however, this area has not been analysed in depth yet. Multiple relationships for the adult (spouses, friends, children) may differentially serve the adult's stimulation and arousal modulation needs.

As a next step in finding the corresponding points between hypnosis styles and basic intimate relationships, those characteristics and measurable variables should be found in the different hypnosis stages in which the features of close relationships can be reflected.

On the basis of our research so far, all of the characteristics – relational needs, the nature of rapport formation, the amount of interaction synchrony, the tools used by the hypnotist for deepening hypnosis, the signs of disturbance of the hypnotist, and the nature of the hypnotist's involvement – are moderated by the gender of the participants of the interaction. This finding fits well within the framework of Buss's (1989) call for a discipline of evolutionary psychology, where the psychological mechanisms forged by natural selection are emphasized.

In order to differentiate the hypnosis styles, it is necessary to limit the number of variables to a reasonable and thus analysable amount without leaving out those ones that have a discriminatory potential. With these points in mind, the relational needs of the participants of the hypnosis interaction can be measured by content analysing attitudes toward hypnosis prior to hypnosis and subjective experiences after hypnosis.

We have found verbal manifestations, proxemics, eye contact and posture to be the best measurable variables of rapport formation. The amount of interaction synchrony, which seems to be an especially valuable characteristic in differentiating hypnosis styles, can be measured by posture mirroring, and by moving, breathing, and relaxing together. Many tools are available for a hypnotist to deepen hypnosis: under our standardized circumstances we have found lengthening or shortening the duration of hypnosis, deviating from the standard text, gestures of emphasis in the course of hypnotizing, and interaction synchrony as the most important ones. When the hypnotist is disturbed to a greater or lesser extent for some reason or another, it can evidently be seen in slips of the tongue and touching him- or herself more than usual, but interestingly enough, interaction synchrony can also be a sign of disturbance. In the case of paternal hypnotists, for example, where interaction synchrony is not used as a tool for deepening hypnosis, it appears when strong transference/countertransference is present in the hypnotist. The nature of the hypnotist's involvement is best manifested in the subjective experiences, and archaic involvement as measured by Nash and Spinler's (1989) Archaic Involvement Measure.

The different hypnosis styles are probably characterized by different patterns of different variables. In addition to the already described paternal and maternal styles, we have formulated working hypotheses regarding the other patterns. For example, sibling hypnosis can be expected to show positive correlations between some variables of hypnotists and subjects, as opposed to paternal hypnosis where negative correlations are expected, due to the division of power. Data on the positive aspect of archaic involvement of the hypnotist with the subject [AIS(+)]H seem to support this hypothesis: while a paternal hypnotist's AIS(+)]H showed a significant negative correlation ($r = -0.809$, $p < 0.05$) with the subjects' scores on the subjective depth of hypnosis (Horváth et al., 1988), two other hypnotists who manifested mainly sibling hypnosis styles showed significant positive correlations between these measures ($r = +0.631$, $p < 0.05$). Sibling hypnosis is expected to be further characterized by a bargaining rapport formation, by a moderate amount of interactional synchrony, by deviation from the standard text rather than gestures of emphasis to deepen hypnosis, by signs of disturbance when the subject is passive and demands definite leadership from the hypnotist, and by a balanced ratio of competitive and co-operative attitude and experiences when regarding the nature of the hypnotists' involvement. In cases of lover-like hypnosis styles gender differences are expected to be especially pronounced.

In order to test our above working hypotheses, a systematic series of studies was started where in addition to the gender of the participants of the hypnotic interaction the hypnotic susceptibility of the interactants are also controlled and varied. *The results obtained so far seem to yield direct support for a social psychobiological model of hypnosis* (Bányai 1991, 1992). The model conceptualizes hypnosis as an altered state of consciousness that may have a socially and biologically adaptive value. Labelling a social situation 'hypnosis' makes it possible for the participants to engage in an intensive interpersonal relationship without undue risk to themselves or others, since they can leave the situation at any moment of their interaction. This way, in a controlled situation, new cognitive and emotional – perhaps corrective – experiences may appear. By helping two individuals engage in a close relationship in which mutual attunement and meaningful cognitive experiences emerge, hypnosis may broaden the horizons of both participants in the interaction.

The very fact that hypnotic-like techniques have existed for thousands of years and the techniques and styles of hypnosis become renewed from time to time, sug-

gests that hypnosis can be conceptualized within the framework of evolutionary psychology as an evolutionary tool in helping the participants to function more adequately, constructively and creatively in the social and biological milieu.

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