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Journal of Humanistic Psychology 2003; 43; 8
DOI: 10.1177/0022167803257029

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TOWARD A COGNITIVE-EMOTIONAL MODEL OF ROGERS'S PERSON-CENTERED APPROACH



RENATE MOTSCHNIG is professor of computer science at the University of Vienna, Austria. Since her studies in the early 1980s she has been deeply interested in cognitive and humanistic psychology and in bringing sociopsychological wisdom into system requirements analysis as well as into learning/teaching. Since 2000, she has participated in encounter groups. Currently she is determined to foster a style in higher education that is based on person-centered attitudes as well as Web-based technology to bridge the gap between the technological and the social, the scientific and the personal, the intellectual and the intuitive—cognition and emotion.



LADISLAV NYKL was born in Bohemia, Czech Republic. In his 30s he moved to Vienna, where he studied economy and worked as a software analyst. His interest in psychology emanated from his participation in encounter groups in Vienna. During the last 20 years, he has been intensively engaged in counseling and psychotherapy, and he finished his doctorate in psychology in Prague. He was in charge of short training programs in Bohemia and facilitated training groups from Person-Centered Approach (PCA) Prague. Currently he is a lecturer at the University of Vienna and at the Masaryk University in Brno, Czech Republic, and an active organizer and facilitator of encounter groups.

AUTHORS' NOTE: Shortly after Renate Motschnig suggested a primarily cognitive model on explaining some phenomena of the person-centered approach (PCA), Ladislav Nykl realized that “the more important, emotional part” was largely missing. The current version of the cognitive-emotional model, in general, and the extended concept of a chunk, in particular, is the result of a 2-year process of intensive discussions between us that opened our minds for the complementary roles of cognitions and emotions in personal growth.

Journal of Humanistic Psychology, Vol. 43 No. 4, Fall 2003 8-45
DOI: 10.1177/0022167803257029
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Summary

Carl Rogers's person-centered approach is successfully applied around the world. Numerous empirical studies prove its success in several areas involving interpersonal relationships. Whereas Rogers described the processes that promote personal growth in utmost detail and transparency, a cognitive-emotional model that explains the basis for the functioning of the approach has not yet been suggested. This article proposes a mapping of Rogers's theory into a cognitive model that has been extended to address feelings and emotions at a cognitive neuroscience level. The primary purpose of this model is to complement the current empirical and pragmatic understanding of the person-centered approach by a profound intellectual understanding of the underlying cognitive and emotional effects. We view our model as an initial theory that should inspire further research to allow for evolutionary development. We believe the cognitive insight of understanding Rogers's theory has the potential to lead to a broader acceptance of its principles as well as to a theoretically well-grounded adaptation of the person-centered approach to the needs of the new century. The cognitive model further clearly delineates Rogers's approach from other schools in counseling and psychotherapy and reciprocally provides empirical evidence of a number of cognitive phenomena.

Because psychotherapy is such a microcosm of significant interpersonal relationship, significant learning, and significant change in perception and in personality, the constructs developed to order the field have a high degree of pervasiveness. . . . Such constructs may be used to study areas as . . . the inter-relation of psychological and physiological change. (Rogers, 1961, p. 246)

The inescapable and remarkable fact about these three phenomena—emotion, feeling, and consciousness—is their body relatedness. . . . “Feeling” feelings extends the reach of emotions by facilitating the planning of novel and customized forms of adaptive response. (Damasio, 2000, p. 284-285)

ACKNOWLEDGEMENTS: We sincerely thank the anonymous reviewers as well as Colin Lago, Howard Kirschenbaum, and Michael Trimmel for their insightful comments on an earlier draft of this article. We are convinced that their honest comments from their individual viewpoints significantly contributed to the forming of this version. We further appreciate Tom Greening's efforts in conducting the review process and his encouraging support.

Keywords: *person-centered approach; Carl Ransom Rogers; cognition; emotion; interpersonal relationships; communication*

The basic hypothesis underlying Rogers's person-centered approach (PCA) is very simple: given a facilitating atmosphere, governed by the principles of genuineness, understanding, and acceptance for the individual, every person is moving to a state that Rogers characterized as follows:

The other individual in the relationship:
will experience and understand aspects of himself which previously he has repressed
will find himself becoming better integrated, more able to function effectively
will become more similar to the person he would like to be
will be more self-directing and self-confident
will become more of a person, more unique and more self-expressive
will be more understanding, more acceptant of others
will be able to cope with the problems of life more adequately and more comfortably. (Rogers, 1961, p. 37-38)

The preconditions as well as the process of personal growth are precisely described by Carl R. Rogers, whose scientific attitude toward counseling, personal relationships, psychotherapy and freedom to learn is well documented in several places (Rogers, 1951/1995, 1961, 1983, & 1985). Although the last decades have witnessed intensive research on process outcome in humanistic psychotherapies (Cain & Seeman, 2002), a model that explains essential aspects of the PCA in terms of cognitions, feelings, and recent cognitive neuroscience background, however, has (to the best of our knowledge) not been proposed yet. The motivation for constructing such a model is threefold. First, it will provide a deeper intellectual understanding of Rogers's approach, based on scientifically accepted lower-level phenomena. Based on this, we expect the improved understanding to result in a broader and more profound appreciation of the PCA, fostering applications in areas such as communication, teamwork, education, and management (Rogers, 1983; Ryback, 1998). More generally, we expect the model to provide the theoretical and practical basis for a well-grounded adaptation of person centeredness in view of the new millennium. Third, the model would provide criteria that allow one to precisely

distinguish the PCA from other schools in counseling and psychotherapy.

The psychology of counseling and psychotherapy is subject to much debate by various schools. Although it is outside the realm of this article to compare the individual theories, Rogers' approach is unique insofar as all problem solving and change due to re-experiencing and insight is performed by an individual within his or her own inner frame of reference. The change is facilitated by an accepting, understanding partner or facilitator who provides the real and firm personal relationship necessary for personal growth. Because the PCA most intimately respects individual persons in terms of their immediate experiencing; their inherited and acquired properties and attitudes; their learnings, feelings, values, and—most important—experience, we are convinced of the utmost effectiveness of the PCA. Further discussion of Rogers's theory in comparison with psychoanalysis and behaviorism can be found, for example, in Nykl (1999, 2002). An approach to relating the theories of Rogers and Vygotsky is made in Nykl & Motschnig-Pitrik (2002).

To clarify the intended level of discussion, we propose to organize psychological theories into three levels, as illustrated in Figure 1. The topmost level holds some applied theory, such as that of behaviorism, transaction analysis (Berne, 1961), or, in our case, the PCA. The level beneath is intended to host cognitive theories and effects. Our abstract model of associative cognition and emotion (AMACE) is situated on that level but borrows from the next lower cognitive neuroscience level (Squire & Kandel, 1999) in addressing feelings and emotions.¹

The emphasis of our work is to provide a model of the PCA on the topmost level and map this into a suitable model (AMACE) on the middle level, as indicated by the arrow in the left part of Figure 1. Regarding the PCA, Rogers (1961) conducted several empirical investigations on the necessary and sufficient conditions of personal growth. As a result of his experiments, Rogers and his colleagues found that long-lasting, constructive, personal growth depends on three attitudinal conditions—also called the three Rogers variables, namely congruence, acceptance, and empathic understanding. If the facilitator communicates these three attitudes such that the other person in the relationship can perceive them to some degree, personal growth is most likely to occur (Cain

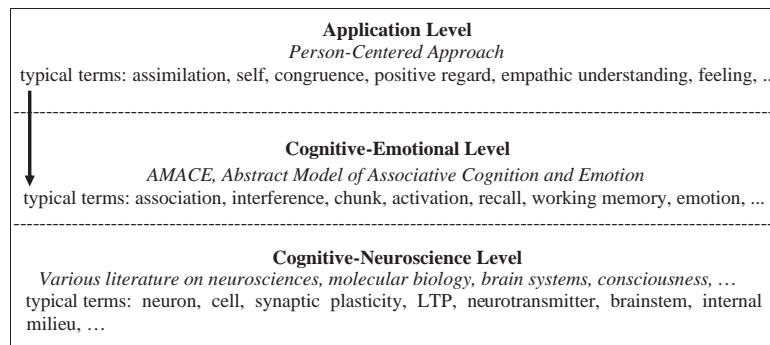


Figure 1 Allocation of the Proposed Mapping Within a Level-Based Organization of Relevant Theories

& Seeman, 2002; Rogers, 1959). In a nutshell, according to Rogers, growth manifests itself in more reliable experiencing in awareness, giving way to more flexible, better adaptable, open and acceptant mind structures, based on the congruence of a person's feelings with his or her cognitions and on an accepting and understanding attitude. Our task therefore will be to find cognitive and emotional interpretations of the three variables to hypothesize in which ways they influence the human mind and experiencing such that personal growth or—in Rogers's words—becoming occurs. Given the immense amount of detail on the lower levels, a key task is the provision of proper constructs and abstractions. Thus we seek to use abstractions that provide just sufficient information to understand the line of reasoning, no more and no less.

In the next section we introduce the abstract model of associative cognition and emotion (AMACE). Its requirements are described in Appendix A. In the section on interpretation—which is the central one—we interpret the three Rogers variables in terms of AMACE. The discussion section validates the model by explaining further empirically observed phenomena and relating AMACE to process outcome research. In the final section, we mention related work, discuss consequences, and point to issues for further research.² Appendix B provides further evidence on memory systems and a neuroscience view on the experiencing of feelings in awareness.

THE ABSTRACT MODEL OF ASSOCIATIVE COGNITION AND EMOTION

The AMACE Model, Its Constructs and Consequent Phenomena

The abstract model of associative cognition and emotion (AMACE) is intended to serve as a vehicle to explain and to partly visualize essential processes and effects of person-centered communication. As already mentioned, the primary task here is to find a model that is as simple, as generic, and as reliable as possible, yet sufficiently expressive, to meet our goal. Scientifically oriented readers are referred to Appendix A for a detailed list of model requirements. We are well aware of advanced cognitive, linguistic, and other models stemming from areas such as cognitive science, artificial intelligence, cognitive psychology and linguistics (Anderson, 1991; Quillian, 1967; Sowa, 1984, 2000). For ease of understanding and to manage complexity we employ an abstract cognitive model that is enhanced by recent findings on the role of feelings and emotions, stemming from the area of cognitive neuroscience (Damasio, 2000; Squire & Kandel, 1999). Readers may want to give this section just a fast reading and use it as a reference to the terms and constructs encountered in the section on interpretation.

Long-term memory. Memories having sufficiently strong encoding that they can be reactivated at long delays are called *long-term memory* (LTM). Activation refers to some transient factor that determines the momentary availability of the memory trace and hence determines access to our memories. Several experiments prove that LTM for semantic or autobiographic knowledge—hence also for the self—can be seen as an associative network of concepts or chunks (Anderson, 1991; Sowa, 1984).

Working memory. The memories that are currently active are often referred to as working memory (WM) (Baddeley, 1986, 1999). Knowledge in working memory is the only knowledge that we can currently work with (i.e., think about, compare, match, feel, or restructure).³ It is essential to appreciate that WM is constrained to hold a limited number—according to Miller (1956) about seven plus or minus two—of thinkable entities, referred to as chunks.⁴

Therefore a chunk can be as small as a single proposition, a concept, a structure, and as large as a whole picture. Chunks can either be activated from long-term memory or equally be constructed from the momentary experience in the "here and now." Chunks in working memory do not necessarily have an encoding in long-term memory.⁵

Chunks. Although Miller (1956) used the term *chunk* to refer to any thinkable entity, we reintroduce and extend the concept of chunk as a mental image that holds some thinkable entity (such as a concept, a feeling, or a picture) associated with emotional information (Damasio, 2000).⁶ The weight of the emotional component can vary between approximately zero and values indicating high emotional importance or arousal, in the spirit of Bower's (1981) emotional nodes. There is empirical evidence that the emotional value influences the strength of encoding and activation (Cahill & McGaugh, 1998) of the respective chunks. Hence we hypothesize that the degree of flexibility of the emotional values of chunks play a significant role in the behavior of the individual. Although an individual's organismic experience in the current situation leads to a symbolization of cognitions in chunks with a high degree of flexibility (i.e., with rich interconnections to those organismic experiences from which the emotional values are derived), fixed emotional values are characteristic of conditions of worth. The latter typically accompany external evaluations or statements introjected by some significant other or learned purely intellectually and establish rigid, preconceived patterns or prejudices.

Figure 2 sketches our abstraction of a chunk, whereby the left-hand part of the figure depicts a rigid chunk that typically appears in rigid constructs. The right-hand part of the figure illustrates a flexible chunk that assimilates its emotional value from organismic experience in the current valuing process. This chunk can be thought to be interconnected with organismic experience and thus is capable of influencing the spread of activation according to the individual's experiencing in the current situation. Note that our notion of interconnected chunks is more abstract but very close to Greenberg and Paivio's (1997) emotional schemes. These involve a complex synthesis of affect, cognition, motivation, and action constructed from an individual's innate response repertoire and past experience.

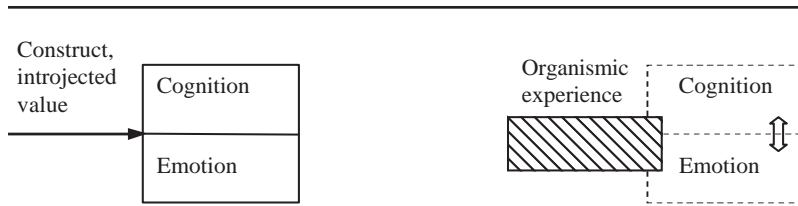


Figure 2 The Abstraction of a Chunk and Its Cognitive and Emotional Components. Chunks With Rigid Components (Left-Hand Side) vs. Chunks With Flexible, Richly Interconnected Components (Right-Hand Side).

Spread of activation. Given a chunk is activated and hence in awareness, how does it influence related chunks to potentially become aware? In AMACE, associations between chunks and their interconnections to mental images of (unconscious) organismic experience play a vital role in the spread of activation—some kind of energy flow—that is necessary to activate chunks to be available in working memory (Quillian, 1967). Spread of activation is comparable to water running through an irrigation system. We assume the following to hold:

- Activation spreads in long-term memory (LTM) from active chunks to other chunks, and this spread takes time.
- The spread of activation has limited capacity. A source chunk has a certain fixed capacity for emitting activation that can flow to associated chunks (Anderson, 1991).⁷ This limitation turns out to be essential in person-centered communication because more distant chunks can be reached only if activation stays focused.
- Associations learned first or repeated more often tend to be stronger encoded and thus faster recalled than associations learned later or repeated less often. In addition, various factors (attention, context, mood, etc.) can affect the amount of activation that is spread to a knowledge structure (Anderson, 1991). Even more important, in the context of showing films to participants, Cahill and McGaugh (1998) have proved that situations that are emotionally more arousing can be accessed more easily and hence receive more activation than emotionally neutral situations. Authors such as Piaget (1981) and Nykl (2002) even claim that the emotional evaluation of concepts is the primary driving force underlying the spread of activation.
- Recognition (e.g., Is Rogers's daughter called Natalie?) is more accurate than recall (e.g., What is the first name of Rogers's daughter?)

(Sowa, 1984). For the sake of recognition, activation can be imagined to spread from the initial as well as the target concept making the corresponding trace easier to find.

- The term *interference* is used to convey the fact that information about a concept or chunk interferes with memory for a particular piece of information. For example, the name of a new colleague may interfere with a similar name of an old friend such that the latter name is overshadowed. In general, interference can cause individuals to fail to remember information under some second condition (Anderson, 1991). Note that interference effects play a particular role in discussing person-centered communication, because the latter aims to resolve emotional interference caused by introjections.

Emotional contagion. Feelings and moods are contagious, we transmit and catch them from each other. As Goleman (1995) wrote: "This emotional exchange is typically at a subtle, almost imperceptible level; . . . We catch feelings from one another as though they were some kind of social virus" (p. 131). Referring to John Cacioppo (Cacioppo & Gardner, 1999; Hatfield, Cacioppo, & Rapson, 1994) and to Bernieri (1991), Goleman (1995) explained this phenomenon by saying that

We unconsciously imitate the emotions we see displayed by someone else, through an out-of-awareness motor mimicry of their facial expressions gestures, tone of voice, and other nonverbal markers of emotion. Through this imitation people recreate in themselves the mood of the other person . . . the more physically attuned their encounter, the more similar their moods will become . . . in short, coordination of moods is the essence of rapport. (pp. 132-133)

We conjecture that emotional contagion and mood-congruent memory (Baddeley, 1999)—the fact that we remember, for example, sad experiences when being in a sad mood—are interrelated phenomena having their roots in the body relatedness of the representation of feelings and emotions.

Feelings and consciousness. Damasio (2000) ascribed fundamental accounts to emotions⁸ and feelings,⁹ the body, and subcortical brain systems as sources or preconditions for higher psychological phenomena.¹⁰ Damasio (2000) suggested that core consciousness occurs when the brain's representation devices generate an imaged, nonverbal account of how the organism's own state is affected by the organism's processing of an object.¹¹ The

critical events that occur in our organism when we confront an object are of two principal sorts. First, there are changes in the organism's state caused by adjustments required by the perceptuo-motor process. Second, there are changes caused by the impact of the object on the state of internal milieu and viscera. The latter includes the sort of responses that eventually generate emotions and that begin to change the organism and its representation even before actual emotional states occur.¹² We should remember here that our previous experience with a specific object and with the same kind of object turns virtually any object into an inducer of some emotional reaction, weak or strong, positive, negative, or in between. We should also remember that emotion has a truly dual status in relation to consciousness: The actual responses whose consequences, as an ensemble eventually produce an emotion, are part of the mechanism that drives core consciousness; a fraction of time later, however, the collection of responses that constitute a particular emotion can also be treated as an object to be known. When the emotional object is made conscious, it becomes a feeling of emotion.¹³ Further information on the process of experiencing in awareness (Damasio, 2000; Rogers, 1961) can be found in Appendix B.

Intra- and Interpersonal Communication in AMACE

The left-hand side of Figure 3 sketches the constructs (i.e., structures and processes) we use to model intra- and interpersonal communication. Note that these constructs are more general than Rogers' representation of the total personality (Rogers, 1951/1995) sketched on the right-hand side of the figure. This is because we want to track the process of experiencing from its induction to potential awareness about its source and concomitants. The overall structure shows that the construct person (X) encompasses the totality of a person's organismic experiences at some particular point in time. These arise as subceptions anywhere in the organism (Rogers, 1959) and are represented in the brain. In Figure 3, organismic experience is denoted by the construct OrgExp that encompasses mental images and processes being implicit and not available to awareness.¹⁴ Furthermore, the OrgExp construct has—via various messaging systems—modulating influence on higher constructs such as LTM and WM. These two constructs have in their common intersection those chunks that have been activated from LTM. For reasons of simplicity, we do not (yet) dis-

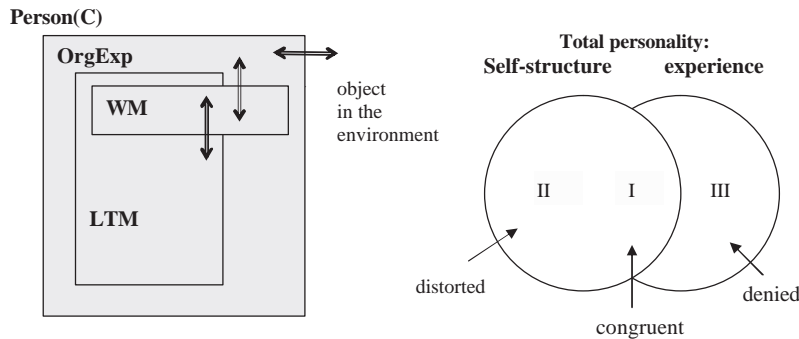


Figure 3 A Sketch of the Topology of Constructs Relevant in Intra- and Interpersonal Communication and Their Relationship to Rogers's Constructs of the Total Personality.

tinguish further substructures—such as various brain systems, the reflexes, the hormonal system, the sympathetic system, and so forth. Nevertheless, note that the LTM has a configuration or gestalt that takes the form of an associative network of chunks (i.e., mental images that can become aware if activated).

The bidirectional arrows in Figure 3 denote communication links. For example, the bidirectional arrow between WM and LTM means that chunks in WM may be symbolized in chunks of LTM and chunks from LTM can be activated into the WM. Analogously, particular mental images from the OrgExp construct can become conscious and be symbolized as chunks in WM, and current experience in the WM can be symbolized in processes and mental images in the OrgExp area. In general, intrapersonal communication is achieved by transmitting information of various intensity and quality along different paths. Thereby information can be either forwarded or inhibited from being spread according to current circumstances signaled in various regions of the organism¹³. This provides an explanation for the essential influence of experiencing in the current process, leading to effects that cannot be evoked purely cognitively.

Comparing our constructs with Rogers's representation of the self-structure and experience, we observe that Rogers's graphic focuses on illustrating the meaning of the amount of overlap of self-structure and experience. The intersection of Rogers's circles (referred to as zone I in Figure 3) denotes those experiences, where

the self is congruent with the organism's experience. In our terminology, Zone I corresponds to those chunks in LTM, WM, or both that have flexible emotional components (compare right-hand side of Figure 2) and hence rich interconnections to the OrgExp area that can be thought to encompass Rogers's circle denoting experience. Rigid chunks with valuing conditions (compare left-hand side of Figure 2) in LTM, WM, or both would be placed in Rogers's Zone II denoting those parts of the self-structure that lack interconnections to the individual's own organismic experience.¹⁶ Mental images in the OrgExp area with no accessible symbolization in LTM correspond to Rogers's Zone III holding denied experiences.

THE INTERPRETATION OF ROGERS'S PCA IN TERMS OF THE AMACE MODEL

The hypothesis underlying our research is that interpreting significant aspects of Rogers' theory of personality and behavior (1951/1995) in terms of lower-level phenomena will throw some light and provide further, complementary insight on the way Rogers's approach is effective. As expressed, for example, in the fourth proposition of his theory of personality and behavior (Rogers, 1951/1995), namely that "The organism has one basic tendency and striving—to actualize, maintain, and enhance the experiencing organism" (p. 487), Rogers has always been convinced of the constructive nature of human beings. He established that the constructive potential in humans can best be released in an atmosphere where they feel fully received. He also researched the individual necessary and sufficient conditions that characterize a relationship that promotes personal growth or "becoming." He described the relationship that, naturally, depends on the seeking of help from the other person and his or her willingness to participate in the process, as consisting of three major attitudinal conditions, the "Rogers variables" or dispositions (Nykl, 1999, 2000): Congruence or synonymously called realness, genuineness or transparency, acceptance or unconditional positive regard toward the other individual, and empathic understanding. It is these three mutually interdependent conditions that we chose to take up and to interpret in cognitive-emotional terms. We are fully aware of the dangers inherent in our enterprise, namely to deprive the approach of its power and make it appear too simplistic. In this context, we emphasize that our model is intended to explain signif-

icant aspects of Rogers's theory but is never meant to map all facets inherent in a real interpersonal relationship. Yet, we also do see the merits of intellectually understanding major aspects of Rogers's theory, because this way of understanding offers tools such as planning and intentional disposition over constituents that may be used to act in concert with feelings to improve the appreciation of the PCA by the strongly cognitively oriented (Western) society of the 21st century. Furthermore, recent research on feelings points directly to the vital role of person-to-person encounters in explaining the most sophisticated conscious as well as unconscious ways each such encounter influences our self based on our previous self and experience (Damasio, 2000).

According to Rogers, the three attitudinal conditions are strongly intertwined.¹⁷ Despite their inherent confluence, Rogers succeeded in clearly delineating and characterizing them separately. Following his strategy, we first interpret each variable separately in terms of AMACE components and discuss interdependencies consecutively.

Congruence, Genuineness, Realness, Transparency

I have found that the more that I can be genuine in the relationship, the more helpful it will be. . . . Being genuine also involves the willingness to be and to express, in my words and my behavior, the various feelings and attitudes, which exist in me. . . . It is only by providing the genuine reality which is in me, that the other person can successfully seek for the reality in him. (Rogers, 1961, p. 33)

The therapist makes himself or herself transparent to the client. As for the therapist, what he or she is experiencing is available to awareness, can be lived in the relationship, and can be communicated, if appropriate. (Rogers, 1980, p. 115)

Rogers's (1959) notion of congruence in the relationship is an aspect of congruence between self and experience. The facilitator experiences the feelings that currently exist in himself or herself before communicating them to the client, if appropriate. The expression "if appropriate" indicates the necessity of an internal decision on which of the inner experiences to let through and which ones to hold back at least temporarily, and rather listen to the client acceptantly and actively. The facilitator acts like a kind of animated mirror ("I am here for you now," "I want to understand you, so let me perceive what is going on inside you"), communicating to

the client his or her current inner world. Often it includes feelings and meanings that originally the client has initiated and transmitted, thus allowing him or her to re-experience them from a viewpoint enriched by the other person—a viewpoint existing outside of himself or herself.¹⁸ At other times, the facilitator will share parts of his or her inner world and thereby provide a personal reaction or viewpoint, striving for a focused continuation of the client process based on mutual understanding. In both cases, emergent feelings can be experienced, and corresponding mental images arise in the brain and can be matched, examined, and acted on consciously and unconsciously.¹⁹ Thereby activation—in other words the flow of experiencing—is focused on the chunks the client has activated and flows from these chunks to related ones, leading to further focused and deep, rather than scattered and shallow self-exploration. Once chunks are activated, they can freely be explored and brought into relationship with current or previous experience. In this way, new experiences can be assimilated. Note that mutual sharing of part of one's inner world builds trust and confidentiality and thereby contributes to the client's feeling safe.

To illustrate the importance of a real personal relationship targeted at mutual understanding and accompanying the client in her way, we include an excerpt of an interview taken from Bozart, Zimring, and Tausch (2002). The excerpt shows Carl Rogers talking with Sylvia about her feeling strong within herself to take chances:

Sylvia: Reaching out to people and approaching strangers and uh—

C.R.: Taking all kinds of risks that you hadn't before.

Sylvia: Some. More, which, I mean I, I don't know about all kinds.

C.R.: Yeah.

Sylvia: Quite a few, and it's been exciting and hard.

C.R.: And I guess that leads to a, um, a deeper kind of learning, at any rate a learning that you feel more sure of, I get, I get a sense of assurance in what you're talking about. Assurance in you.

Sylvia: Well, yes. Yes and no. And I, I feel more im—, like I was saying before, I feel more mature and more, and I'm more aware of my immaturity.

C.R.: M-hm.

Sylvia: They're both, uh, a part of each other. . . . And uh, does that make—does that, I guess I'm thinking that it just sounds crazy.

C.R.: No, I don't—

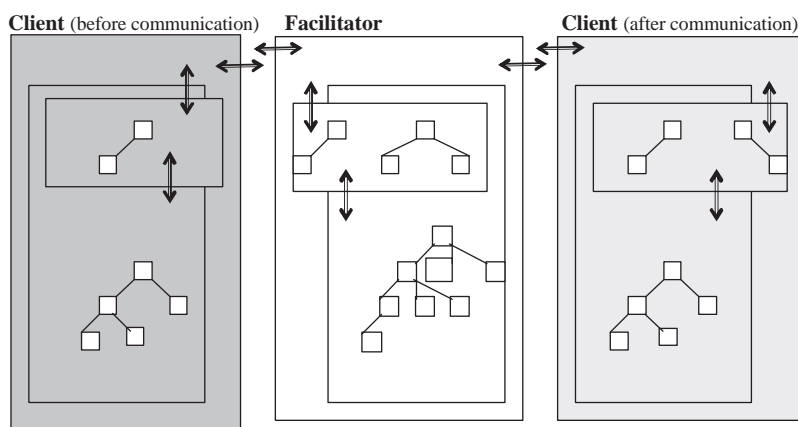


Figure 4 Mapping of Congruence. Chunks From the Facilitator's WM Help the Client to Activate Related, Associated Chunks That Enter His or Her WM. The Client's Openness Is Likely to Increase as Indicated by the Difference in Grey-Scale Between the Leftmost and the Rightmost Structure Modeling the Client.

Sylvia: To say that I feel more mature because I know I'm how, I know more about how immature I am.

C.R.: Uh-huh. No, that makes a lot of sense to me.

Figure 4 sketches our view of the process by which a person's associative map (the treelike structure in the LTM area), in particular the fragment available to the WM, gradually changes in response to communicating with the facilitator. The fact that the latter activates and communicates the rightmost chunk from his or her LTM (see the WM context depicted in the middle part of the figure) causes the client, in turn, to recall a corresponding chunk. By drawing chunks as empty squares we do not make any statement about the relative importance of the cognitive and emotional components of individual chunks. We assume, however, that feelings underlie meanings (Damasio, 2000). The thick line in the client's LTM substructure indicates that, under normal conditions, the more strongly associated chunk from the LTM substructure (the one beneath the root) would have interfered with the rightmost chunk and would most probably be activated instead. Generally speaking, Figure 4 shows the activation of related chunks (i.e., making them available in the WM due to the facilitator's congru-

ent experiencing and rephrasing of his or her perception of the current situation). If the client feels received, this process allows activation to escape from choosing the usual pathway. It tends to open up new paths of reaching experience, paths that often are closer to the client's original, undistorted experiencing. This can be seen in analogy to the cognitive notion of overcoming interference effects. It is worth mentioning that with genuine reflection—as opposed to cognitive explanation—the process of self-exploration is not interrupted but rather supported to proceed, at its best, guided by the person's own valuing process.

Openness on the side of the therapist fosters openness on the client side. This statement is deduced from the fact that feelings and moods are contagious, as we have argued here. As an attitude, openness tends to be induced from the intuitive, unconscious level, given a safe and accepting atmosphere. In Figure 4, we use greyscale in order to illustrate the client's development from being less open (depicted by a darker shade of grey) on the left-hand side of the figure to becoming more open (shown as light grey) on the right-hand side of the figure as a result of communication with a congruent facilitator. Physiological concomitants of openness are opposite to those of fear and appear in all parts of the respective organism (Damasio, 2000): The entire internal milieu becomes more open and prepared for reception—a factor that improves and strengthens the flow of experiencing and thus leads to the effect that inhibition (caused by rigid constructs) tends to be overcome more easily.

Although openness, as an attitude, manifests itself at the intuitive level (modeled as the OrgExp construct), this level is known to have modulating influence on all other constructs. Hence, intellectual openness—the willingness to be open for receiving and communicating new ideas and experiences—can be traced back to be nourished from lower-level structures by the way of influencing the chemical milieu (via chemical messaging) as well as signaling along neural pathways (Damasio, 2000; Goleman, 1995).

In terms of AMACE, congruence would best be mapped as having a rich repertoire of chunks and other mental images available that truthfully map mental and body states and, furthermore, well-developed, rich and flexible interconnections that encourage communication between all constructs. Congruence in the relationship then could be seen as the attitude or willingness to openly share inner states with another person, if this is deemed support-

ive. Thus, being congruent, open, and real manifests itself at the intuitive and the cognitive level. Perhaps most important, it means a harmonious, uninhibited, truthful interplay fostering communication between these two levels. Consistent with Rogers's view, we conjecture the forming, maintaining, and actualizing of this communication in terms of sophisticated mental patterns and messaging to be a lifelong task that rests on a rich supply of experience.

Viewing openness as linked to acceptance, it becomes evident that the perception and at least minimal symbolization of openness by the client are preconditions for the facilitator's symbolization of acceptance. Receiving acceptance in turn helps the client in opening up in communication and allowing him or her to proceed in the exploration of yet deeper levels of self. Naturally, congruence and acceptance can be at odds, needing empathy to mediate in their struggle.

Acceptance, Positive Regard

I find that the more acceptance and liking I feel toward this individual, the more I will be creating a relationship which he can use. By acceptance I mean a warm regard for him as a person of unconditional self-worth, of value no matter what his condition, his behavior, his feelings. It means a respect and liking for him as a separate person, a willingness for him to possess his own feelings in his own way. (Rogers, 1961, p. 34)

This nonjudgmental attitude is essential because evaluation by another moves the locus of evaluation outside the individual and thereby distracts the flow of activation and hence the process of self-disclosure. Furthermore, it supplies chunks with rigid emotional values assessed by a significant other rather than incorporating personal values derived from organismic experience. According to Rogers (1961),

Evaluation is always a threat, always creates a need for defensiveness, always means that some portion of experience must be denied to awareness. . . . But if judgments based on external standards are not being made then I can be more open to my experience, can recognize my own likings and dislikings. . . . I can begin to recognize the locus of evaluation within myself. (p. 357)

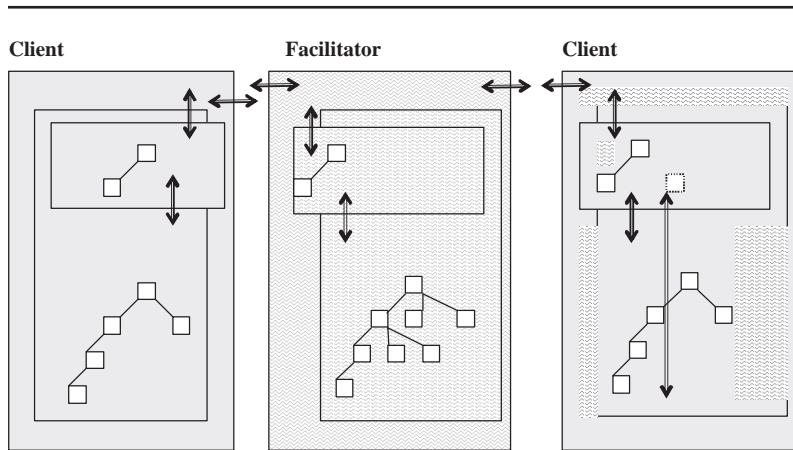


Figure 5 Sketch Illustrating the Mapping of Acceptance.

In discussing the subtle but sharp difference between acceptance and agreement, Rogers (1961) said: “To cease evaluating another is not to cease having reactions” (p. 358). Thus, acceptance on the intuitive level must not be confused with agreement with the conversation’s subject matter on the cognitive level. To make this distinction particularly clear in AMACE, we model the therapist’s reactions as a subdomain of congruence and point to the skill of gracefully and empathically portioning these two interdependent variables in every instant.

Experiencing and offering acceptance primarily addresses the realm of feeling and emotion. Thereby the aspects of content and cognition play a subordinate but nevertheless, at times, supportive role. In Figure 5, the facilitator’s attitude of unconditional positive regard is depicted as a wavy pattern that is manifest in the OrgExp construct and transmitted to other constructs by means of internal messaging. As with openness, acceptance improves and strengthens the internal flow of experiencing. “Pleasure . . . is aligned with reward and is associated with behaviors such as seeking and approaching. . . . Reward causes organisms to open themselves up and out toward their environment, approaching it, searching it” (Damasio, 2000, p. 78). Acceptance is communicated by various ways of verbal and non-verbal communication such as

subtle facial expressions, the tone of the voice, body language, and so forth, many of which are received by the client at an out-of-awareness level. On the right-hand side of Figure 5, the waved areas indicate that the client has, at least to some degree, perceived positive regard. It manifests itself on the intuitive level and spreads to the whole organism.

From the cognitive point of view, acceptance can be interpreted as attentive listening and perceiving of the client's chunks. In Figure 5, this is illustrated by the two-chunk structure the facilitator receives from the current situation, hence primarily the client. The facilitator holds these chunks in an area of the WM that captures current experience. By communicating the corresponding feelings and meanings acceptantly to the client, for example, in one's own words, or by simply saying "hmm . . .", the latter tends to feel received and can stay within oneself. Activation stays concentrated in those areas that the client activates. In other words, the locus and source of the organismic evaluation process stays within the client—it stays client-centered. In such an internal milieu prepared for flow and devoid of inhibition, activation is more likely to reach even distant chunks on deeper levels that now can be activated and explored in the WM of the client. This is indicated by the long arrow and rightmost chunk in the WM shown on the right-hand side of Figure 5. Former experience can thus be explored and valued from within and new experience—chunks drifting in from the here and now (not shown in the Figure)—can be assimilated.

The recipient perceives that his or her inner world drives the process. This reassures him or her of being a person of worth to the facilitator—usually a person toward whom he or she feels respect. The mutual respect, on the intuitive level strengthened by the phenomenon of emotional contagion, furthermore improves the working alliance between therapist and client that—not surprisingly—has been shown to be an important therapy outcome variable (Sachse & Elliot, 2001). As a further consequence, receiving oneself as someone of worth, the client finds it easier to become aware of feelings and experiences that, in the first place, stem from the current process. This experiencing in awareness has the potential to assimilate chunks that map feelings and hence widens the scope of experience and thereby contributes to congruence, a more informed and reliant intrapersonal communication. The repertoire of chunks is enriched by those that map feelings or bodily sensations and make them available for conscious thought and deci-

sion making. As a consequence, the client no longer depends on pure intellect but rather can draw on intellect enriched by intuition. Regarding neurons, we hypothesize that the facilitative atmosphere can cause the strengthening of those terminals and dendrites that support the perception and mediation of acceptance, liking, positive regard, and so forth. It is these and perhaps other anatomical processes in the brain and body of a person that allow him or her to grow in the direction of greater acceptance of self as well as the environment. Note, in particular, that this adaptation process is out of consciousness and requires, in the first place, experiencing in a favorable atmosphere.

Empathic Understanding

I feel a continuing desire to understand—a sensitive empathy with each of the client's feelings and communications as they seem to him at that moment. Acceptance does not mean much until it involves understanding. It is only as I understand the feelings and thoughts which seem so horrible to you, or so weak . . . —it is only as I see them as you see them and accept them and you, that you feel really free to explore . . . your inner and often buried experience. . . . There is implied here a freedom to explore oneself at both conscious and unconscious levels. (Rogers, 1961, p. 34)

A model of empathic understanding should reflect the facilitator's conscious endeavor to explore the client's inner world to support the client in the exploration and potential reorganization of his or her self.²⁰ Thus, the facilitator temporarily tries to step into the still unconscious associative maps in the client's LTM area that—according to the facilitator's momentary feeling and understanding—most closely reflect the client's current concerns. If the facilitator considers it appropriate, he or she communicates the findings to the client as an expression of a deep sharing. The recipient verifies the message against his or her conception and, in the positive case, feels empathically the correspondence of aspects (mental images) of himself or herself with the facilitator's symbolization.²¹ When feeling understood, the client can fully and consciously appreciate the positive regard he or she is receiving and gradually learns the meanings of individual, personal feelings. The recipient feels free to fully accept and engage himself or herself with personal feelings. Thereby new experiences can be assimilated. Occasionally insight—basically a link between organismic experience and cognitions (chunks)—can arise. If, however, the cli-

ent does not feel understood completely, he or she can report the discrepancies back to the facilitator, and the process can be backtracked to proceed in another direction. In case the client (repeatedly) feels totally misunderstood, he or she will withdraw, which means that there is always some risk in communicating empathic understanding. Rogers himself describes the dialogue between a facilitator striving for empathic understanding and a client who compares the reported feelings with his own experiencing and provides feedback on the quality of the match at several places (see e.g., Rogers, 1980, the chapter on empathy). From this we assume that our LTM is capable of holding concrete symbolizations of feelings—so called referents (Gendlin, 1978; Rogers, 1961, 1980)—in response to particular situations that can consciously be checked against perceived symbolizations, as soon as the former are brought into conscious awareness.

The upper part of Figure 6 illustrates the WM and LTM contents of a facilitator who tries to empathically understand the client. Note that the WM of the facilitator may hold chunks that are not yet in the client's WM (meaning that the client is not yet aware of their contents) but enter it in the next step, possibly along with further related chunks (compare the WM on the top of Figure 6). The bottom part of the figure (showing only the WM's) illustrates the continuation of the step-by-step process by which the facilitator accompanies the client in activating chunks and thus making them available in the process. The client thereby experiences the associated feelings in awareness and can explore their old and current meanings. The waved pattern in Figure 6 illustrates that the client has received the facilitator's acceptance at least to some degree (see right-hand side of the figure). The feeling of being accepted is intensified by the client's feeling of being empathically understood, as illustrated by the increase of the waved areas in the constructs representing the client. The transition from the light gray area to the dotted area in the client process indicates the increase in his or her openness to experience and hence congruence. We emphasize that empathic understanding is a conscious process that is directed toward supporting the other person in experiencing and enhancement of those levels of self that so far have been hidden, denied, or distorted. It depends on an atmosphere in which the client feels safe and received and appears to be strengthened by client resources, such as access to his or her inner world combined with skills to verbalize what has been found.

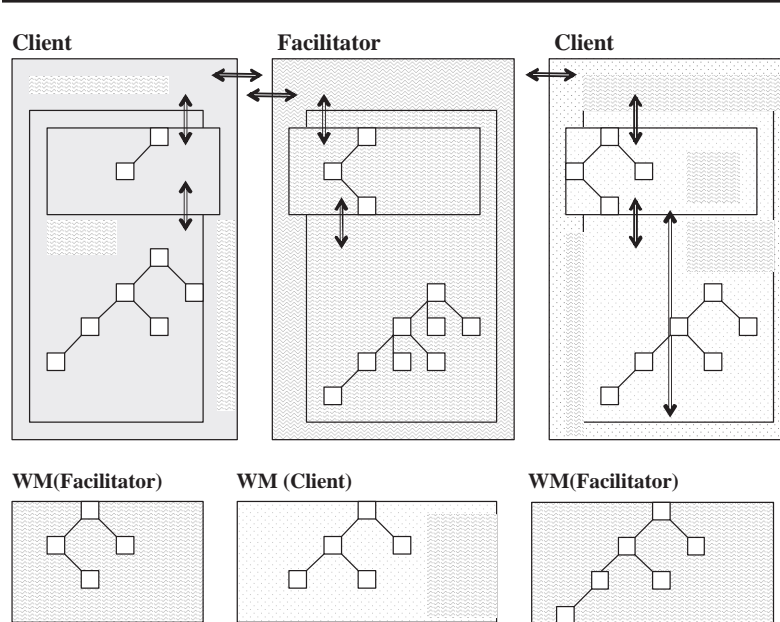


Figure 6 Cognitive and Emotional Effects Underlying Empathic Understanding.

In terms of our model, empathic understanding provides means to override introjected values, causing deep, emotionally initiated interference effects that stand in the way of accessing relevant chunks or inhibit the assimilation of new experience from the here and now. Emotionally grounded interferences inhibit the spread of activation to those chunks that hold the client's real, organismic experience. We say that it is denied or in some way distorted. The term *distorted* nicely expresses the fact that other associations are followed due to having higher emotional values instead of the "right" one and thus other chunks are activated. By striving to empathically understand the client, the facilitator cautiously tries to address those chunks from the client's repertoire that he or she feels or believes could contribute to the client's personal growth. Strategically, there seem to be two concrete ways that allow one to resolve interference. Following the first and more powerful way, the facilitator addresses those chunks for the purpose of recognition by the client, which he or she considers relevant. Because rec-

ognition needs less activation than recall (compare section 2.2 on the AMACE model), chunks on levels right beneath the borderline of consciousness can be activated. Although the fact that recognition is easier, faster, and more reliable than recall has extensively been proved for cognitive contents, we assume that it equally holds true for the emotional components of chunks. The second way to work around interference is to take up already conscious chunks that are immediately associated with the chunks that hold some key experience, such that the latter can more easily be recalled.

Complementary to intellectual understanding, matching along chunk networks, the client feels empathically understood. The strength of this feeling depends partly on the degree of understanding, in more concrete terms on the degree of overlap between the neural patterns representing the internal state of the client with the neural pattern mapping the client's perception of the therapist's understanding of feelings and meanings. Complete matching of these neural patterns as if they would touch each other lets activation flow together and causes those intense moments many know as "moments of meeting." The self is enriched by another, the other momentarily becomes part of self.

As with acceptance, at least some minimal degree of openness and transparency on the side of the client appears to be a precondition for the facilitator's empathic understanding of the client that, in turn, strengthens the client's feeling of being received and motivates further opening. We hypothesize that experiencing empathic understanding strengthens those anatomical connections that enable the matching between organismic experience as represented in mental images (on the OrgExp construct) with corresponding chunks and networks in the WM and LTM constructs. The person experiences his or her feelings in awareness such that his or her disposition over feelings and emotions grows. In other words, fixed chunks gradually give way to loose, fluent structures. Because rigid constructs no longer need to be guarded, energy is released and becomes available for the assimilation of experience in flexible chunks and equally for internal valuing processes leading to higher flexibility. The latter leads to a more differentiated perception of the world based on the fact that neither cognitions nor feelings are decisive in their own right. Their interplay—in other words the availability of sensory and visceral experiencing in cognitive tasks—leads to a synergy of all processes and systems. This mutual support and richer interconnection of interacting sys-

tems is exactly the reason why stability is not compromised by the higher flexibility of chunks. As a result, optimal achievement and optimized behavior ensue.

Summarizing, note that in AMACE all three of Rogers's variables have organismic or intuitive and cognitive aspects and support each other in accompanying the client in the direction of increased congruence. Realness enriches the client by having him or her share the facilitator's feelings and meanings with the tendency to trust the client to decide (intellectually and intuitively) what to assimilate or incorporate and what to dismiss. Acceptance devoid of evaluation encourages internal valuing processes leading to more self-acceptance and less dependence on others. Empathic understanding, based on congruence and acceptance, lets individuals feel understood at all levels. It amplifies their own feelings and meanings and makes them available to awareness by linking intuitions and cognitions, thus broadening the field of experience and improving integrated functioning. Some consequences thereof are discussed in the next Chapter.

DISCUSSION OF THE MODEL AND THE MAPPING

In the previous section, we mapped the key features of the PCA, congruence, acceptance, and empathic understanding into the AMACE model. This section discusses the ways in which the model accounts for further principles and effects of the PCA, thus aiming to further validate the model.

Model Construction

Rogers was convinced that the self possesses structure. This claim for structure has been met by foreseeing associative networks of chunks for organizing cognitive as well as emotional knowledge. Furthermore, the abstraction of chunks as network nodes carrying cognitive as well as emotional content meets the need to combine these two knowledge sources. The essential role of feelings in the PCA is underlined by explicitly considering organismic experience as central to feeling and by specifically regarding evolutionary older, subcortical memory systems. The theory of the spread of activation in AMACE along with the influence of feelings

in a facilitating atmosphere provide explanations for the observation that persons perceiving that atmosphere are capable of accessing chunks that otherwise are not readily accessible. Furthermore, Rogers's hypothesis regarding a layered structure of self, that typically is explored layer by layer (Rogers, 1961), is precisely met and confirmed by a layered traversal or exploration of the network structure such as suggested by the stepwise access to a client's LTM in empathic understanding.

Need for Experiential Learning

Besides considering associative structures of chunks to provide the self with structure and account for cognitive phenomena (Sowa, 1984, 2000), our model needs a way to account for the personal changes resulting from perceiving Rogers's three attitudinal conditions. These changes typically cannot be achieved purely cognitively. In AMACE, experiential learning is taken into account by introducing the construct OrgExp to capture structures and processes relying on organismic experience and by pointing to various mechanisms that promote or inhibit intrapersonal communication. Some of these mechanisms are flexible versus rigid emotional components of chunks, changes of the structure of neuronal connections, changes due to synaptic plasticity, individual cellular processes, neuronal signaling, the emotionally driven emission of hormones and various transmitter substances, such as neurotransmitters, neuromodulators, and so forth. Although these mechanisms work independently of conscious cognitions, synergistic effects can be achieved by strengthening the connections between the emotional and the cognitive systems.

Necessity of All Three Rogers's Variables in the PCA

Rogers, in several places, emphasizes that all three variables are complementary aspects of a facilitating relationship. He even views them as kind of components that flow into a congruent whole (Rogers, 1951/1995, 1980). Our mapping confirms this close relationship between the three dispositions insofar as each has been shown to contribute individual—yet complementary—cognitive as well as organismic effects: Congruence allows relevant experience

to flow into the process while acceptance keeps the locus of evaluation within the individual such that the person opens up for deeper access to his or her self that is required for empathic understanding. In the case that the client feels sufficiently received—at least a partial overlap of mental images occurs—the connections between cognitions and emotions are strengthened. This results in increased flexibility, undistorted perceptions, and synergetic effects of all systems allowing for optimally adjusted behavior in new situations.

Note that the interpretation of the three variables in AMACE allows one to explain three empirically proved phenomena from Rogers's theory (1959):

1. Changes in the structure of self are global and pervasive. They are not limited to apply to restricted parts of self, such as, for example, those addressed during a consultation.
2. Changes, to a prominent degree, affect subcortical, nondeclarative systems and hence cannot be brought about purely cognitively, but rather depend on organismic experience.
3. Changes depend on the contact with and mediation through another person. They are contagious in the sense that they are transmitted, based on the principle of reciprocity of positive regard.

Addressing Areas Denied to Consciousness

Due to Rogers's theory of personality (e.g., thesis 14) there exist situations in which the organism hides certain experiences from consciousness. In AMACE, chunks that are conscious can be reached in two ways: First, reflection can be used to activate conscious chunks that are associated with ones not yet conscious such that activation can spread to them. Second, empathic understanding has the potential to circumvent interference effects by proposing feelings or meanings for recognition rather than requiring them to be recalled. These effects are multiplied if (due to the growth-promoting atmosphere) new experiences are no longer perceived as threatening, but the whole self-structure is open to assimilate them. Furthermore, as illustrated in Figures 3 through 6, AMACE acknowledges communication between intuitive (OrgExp) areas of persons and illustrates the changes in these areas as caused by psychological contact.

Conditions of Worth

One of the major goals in the PCA is to loosen and to dissolve fixed chunks and configurations resulting from introjections or, more generally, conditions of worth. Their effect reveals itself in the fact that some emerging organismic experience is rejected by being denied or distorted (Nykl, 2002). This can be explained such that some introjected experience, meaning an experience that has been taught to a person by others, is repeatedly stronger associated, such that the person's genuine experience is cut off by interference effects. As a tragic example, consider Rogers's (1980) description regarding "Ellen West and Loneliness": Ellen's father repeatedly indicates to her daughter that he does not approve her close relationship with her boyfriend. Ellen, a healthy and vivid girl, repeatedly separates from her boyfriends in order not to lose her father's affection. By and large, Ellen experiences depressive loneliness until she finally commits suicide. Rather than viewing a person as an object, as was the case in Ellen West's therapies, the PCA accompanies a person in a direction that helps the person perceive his or her real organismic experience in correspondence to his or her self-structure. The current, real experiencing of a supporting relationship lets the recipient access, re-examine, and freely re-evaluate old experiences. Unfortunately, the original experience can get reinvoked when being exposed to the original environment. In the absence of threat, the client is likely to weaken associations leading to old, threatening experiences and reassess them flexibly with the currently perceived experiences. This process can start and even proceed subconsciously, although it often becomes conscious. Generally, it leads to a loosening of rigid chunks and leads the individual toward being more open to his or her own experiences resulting in a richer and more differentiated field of experience.

*Consistency With Process Outcome Research
in Humanistic Psychotherapies*

Although the majority of studies confirm the positive correlation of each of Rogers's three variables with therapy outcome, some studies on individual variables do not show significant correlation. From Rogers's statement on the necessity of all three variables and from the point of view of AMACE, this is exactly what would be expected. In AMACE, the account or contribution of every single

variable is given, hence its account for the positive correlations. Yet, AMACE clearly shows the individual contribution of each single variable and the consequent interdependence (and dependence on the particular situation) of the triad, such that no single variable, in the longer run, could be expected to predict significant growth. Regarding client processes, AMACE views self-exploration and experiencing as central phenomena following from the therapist's attitudes of congruence, acceptance, and empathic understanding. Consequently, their contribution to success appears evident. Equally, the contribution of client's resources—in particular his or her expressiveness, role involvement, and working alliance—follow directly from AMACE, as does process directness being targeted on self-exploration accompanied by self-evaluation and consequent experiencing in awareness. Many other process variables, in our view, seem to be consequences of Rogers's three attitudinal conditions. For example, we view therapist engagement as a symbolization of acceptance and congruence, and communicative attunement as an aspect of empathic understanding. On the microprocess level, therapist statements have been allocated on an 8-point scale of processing proposals (PP). It has been shown that clients profit from deepening proposals, in particular if the therapist has understood the client and anchored his or her response to the client's issues (Sachse & Elliot, 2002). This finding appears totally consistent with the way we model self-exploration, namely as stepwise activation of chunks allocated in networks in AMACE's LTM construct. The fact that self-exploration deteriorates with flattening PP follows in AMACE directly from the fact that flattening responses (explanations) distract activation (that is limited) to various locations and hence withdraw it from the client-driven paths for self-exploration.

CONCLUSIONS AND FURTHER RESEARCH

This article aims to model and explain significant aspects from Rogers's theory of personality and behavior by mapping the person centered approach (PCA) to an abstract model of associative cognition and emotion (AMACE). AMACE employs abstract constructs to overcome the complexity inherent in employing cognitive as well as emotional aspects stemming from disciplines as diverse and yet interrelated as humanistic psychology, psychotherapy, communi-

cation, cognitive psychology, and cognitive neuroscience. The constructs prove particularly useful in discussing inter- and intrapersonal communication and messaging. In addition, the mapping of the PCA into AMACE led to a clear-cut distinction between the PCA and other schools in counseling and psychotherapy based on the observation that Rogers's approach most clearly considers and fully respects an individual's inner frame of reference (Rogers, 1951/1995) at the organismic as well as cognitive level (Motschnig-Pitrik & Nykl, 2001).

The central result of this work is the proposal of a model on the level of cognition and emotion along with the mapping of the PCA into this model. This allows numerous empirically tested and approved phenomena from the PCA, most prominently the three Rogers variables (Cain & Seeman, 2002; Rogers, 1959, 1961) to be viewed at a more explicit level, to better—in the sense of more profoundly and cognitively—understand their effects. In our view, this leads to further evidence of Rogers's empirical findings and thus could support the PCA to drift into and be acknowledged in all areas involving inter- and intrapersonal communication. By considering experiential learning and concomitant changes in several regions of brain and body, the model, in particular, illustrates the limitations of relying solely on intellect. Rather, it directly rests on human dispositions of congruence, acceptance, and empathic understanding in any person-to-person encounter and herewith can, at least partially, be accounted for in terms of cognitive neuroscience. The model, however, is abstract in its initial version and intended to be refined along with the rapid progress being made in cognitive neuroscience (Squire & Kandel, 1999).

We see an overlap with research regarding autobiographic memory (Conway & Rubin, 1994), (Collins et al., 1994), emotional intelligence (Goleman, 1995; Ryback, 1998) and consciousness (Damasio, 2000) that could lead to mutual support of the respective hypotheses. In addition, our abstract notion of chunk networks appears to be highly consistent with Greenberg and Paivio's (1997) emotional schemes. The two notions share the intertwined nature of cognitions and emotions. They differ insofar as emotional schemes for individual emotions form the basis for the process of intervention, whereas it is the interpersonal relationship between persons, their attitudes, and the particular situation in the here

and now that activates chunks in the first place. The importance of symbolic representation of experience is convincingly discussed by Watson and Greenberg (1995). They argued that representing experience in words allows clients to make it perceptible and potentially transformable.

A complementary, future research direction will address applications of the PCA to areas of individual as well as corporate creative problem solving, such as requirements engineering, goal analysis, or situational project management. Motschnig-Pitrik has introduced person-centered teaching in her advanced courses on software engineering and IT project management. She combined student centeredness with elements of e-learning, employing the Internet as a knowledge source as well as a communication medium, resulting in a didactic approach called PCeL (person-centered e-learning; Motschnig-Pitrik, 2002; Motschnig-Pitrik & Holzinger, 2002; Motschnig-Pitrik & Mallich, 2002). In a nutshell, the online provision of intellectual material leaves more room for meaningful communication in class. This experience has fully convinced us of the applicability and the benefits of person-centered attitudes, personally and in facilitating whole-person learning. This also provided much of the motivation for developing AMACE as a model allowing one to visualize and intellectually capture several effects of the PCA—as something we and readers could take and show to students, management, and significant others to convince them and make them more acceptant of the importance of the intuitive (OrgExp) level.

It is our hope that this work helps to more clearly understand and appreciate the PCA and hence can contribute to a further spread of Rogers's humane, genuine, and deeply appealing theory in the new century and its adaptation to new needs and technologies. Although we have endeavored to consider in our model—at a rather abstract level—the most relevant cognitive and emotional phenomena, we do not exclude the possibility of the existence of further phenomena—cognitive, emotional, or even other—that lead to the loosening of fixed constructs, a strengthening of the attitudinal conditions, and to personal growth. To end with Rogers's words: "If they [these hypotheses] prove to be a stimulation to significant study of the deeper dynamics of human behavior, they will have served their purpose well" (Rogers, 1951/1995, p. 532).

Appendix A: Model Requirements

As already indicated earlier, the AMACE model should be applicable to explain several empirically proven phenomena:

The self possesses structure. Rogers was convinced about the fact that the self has a structure that is in constant flux. He thought of the self as a form or configuration, in which the change of some minor, insignificant aspect can lead to a total reconstruction of the whole pattern (Rogers, 1959). Those changes of the structure of the self that are not brought about by an individual's original experience and that can lead to incongruence are called *introjections*. One observation that is closely related to the fact that the self possesses a structure being in constant flux is the fact that reorganizations of the self can take place during, or equally at any arbitrary point in time after a person-centered dialogue.

Mapping of introjections or conditions of worth and their dissolution. This requirement implies that the model provides means to address areas that are not conscious as well as means to explain the assimilation of experience. Likewise, the model needs to address the transition from rigid constructs to more flexible structures.

Conditions of the therapeutic process and the role of congruence, acceptance, and empathic understanding. Rogers's (1959) six preconditions for the therapeutic process (i.e., the preconditions for personal growth) will be evident from the model in such a way that their positive manifestation is required for successful therapy from the model's point of view.

Because the client needs to perceive not a single condition but a combination of the attitudinal conditions, our model should provide the necessary evidence for their required confluence.

Interrelation between cognition and emotion. Because the primary and driving aspect underlying the PCA is an emotional one (Rank, 1938; Ryback, 1998), and communication frequently concerns cognitive contents, our model should manage to bring these two aspects together. This requirement calls for the consideration of cognitions as well as organismic experience, of corresponding memory systems and body states, and of relationships between cognitions and feelings.

Consistency with process outcome research in humanistic psychotherapies. Besides the three Rogers variables, other factors—such as the client's resources or the therapeutic alliance (Cain & Seeman, 2002) being positively correlated with personal growth—should follow from the model.

Appendix B

Memory systems. Whereas we are going to talk about the working and the long-term memory, we note that, in reality, we deal with multiple memory systems (Baddeley, 1999; Collins et al., 1994; Damasio, 2000) that can work independently of one another as well as engage in cooperation, such as to provide mutual support. Examples of other systematic descriptions of memory systems are views of the declarative system, such individual perceptual systems, a system for the processing of semantic knowledge, the autobiographic memory, and the evolutionary older, implicit or nondeclarative systems, such as a system for maintaining body states, acquiring motor skills, and managing feelings and emotions.²² Although several biochemical processes underlie all these systems and also share the property of having a short-term and a long-term mechanism of encoding, evolutionary older systems located in the brain stem and in lower and middle parts of the brain differ from cortical systems in a significant way. They are essentially body related and rely on implicit knowledge that is not accessible to awareness. An immediate consequence thereof is the fact that experiential learning or better acquiring of skills—or, in Rogers’s terms “growth or becoming”—more strongly proceeds in the form of experiencing rather than cognitive capture of information, although the latter can play a supportive role. In any case, it has been shown that intellectual learning appears not to be essential in acquiring skills (Squire & Kandel, 1999). The holistic aspect referred to as the “learning by the whole person” can anatomically be explained by effects, such as higher activity in special areas of the limbic system (acting as a mediator), varying intensity in the emission of transmitters and hormones, or the growth/degradation of synaptic terminals on nerve cells, known as the synaptic plasticity.²³

Feelings and consciousness. In the following two subsections we heavily draw on Antonio Damasio’s research on the way knowledge arises. Damasio (2000) ascribed fundamental account to emotions and feelings, the body, and subcortical brain systems as sources or preconditions for higher psychological phenomena. Damasio (2000) suggested that (core) consciousness occurs when the brain’s representation devices generate an imaged, nonverbal account of how the organism’s own state is affected by the organism’s processing of an object and when this process enhances the image of this causative object. His hypothesis is grounded on the following premises (*italics added*). We include them in their entirety because we believe they best illustrate two essential phenomena: the way objects are perceived and the salient dependencies of mental images (e.g., chunks) on feelings.

1. Consciousness depends on the internal construction and exhibition of new knowledge concerning an *interaction between that organism and an object*.

2. The organism, as a unit, is mapped in the organism's brain . . . the object is also mapped within the brain, in the sensory and motor structures activated by the interaction of the organism with the object; both organism and object are mapped as neural patterns, in first order maps; all of these neural patterns can become images.
3. The sensorimotor maps pertaining to the object cause changes in the maps pertaining to the organism.
4. The changes described in 3 can be re-represented in yet other maps (second-order maps) which thus represent the *relationship of object and organism*.
5. The *neural patterns transiently formed in second order maps can become mental images, no less than the neural patterns in first-order maps*.
6. Because of the body-related nature of both organism maps and second order maps, the mental images that describe the relationship are feelings. (Damasio, 2000, p. 169-170)

From emotion to conscious feeling. The following gives a shortened account on the means that allow us to experience feelings in awareness (Damasio, 2000): An inducer of emotion activates the neural sites that trigger responses toward the body and toward other brain sites and unleash the full range of body and brain responses. First-order neural maps in subcortical and cortical regions represent changes in body state, and feelings emerge. The pattern of neural activity at emotion induction sites is mapped in second-order neural structures. The proto-self is altered because of these events.²⁴ The changes in proto-self are also mapped in second-order neural structures. Thus, the relationship between the inducer of emotion and the proto-self is organized in second-order structures.

NOTES

1. Note that this level could still be further differentiated into a level of neuroscience based on a level of molecular biology.
2. In this article, the terms *therapist, counselor, or facilitator* are used interchangeably, as will be *client, recipient, or the other person in the relationship*. The interpersonal relationship can be a therapeutic one or one between friends, student-staff, parent-child, and so forth.
3. In fact, there exist several theories on the concept of short-term or working memory, going back to William James (1890). In AMACE, we just build on some essential features and thus abstract from further details.
4. As a consequence, highly complex problems can hardly be resolved purely cognitively (Claxton, 1998)
5. Recently (Damasio, 2000, referring to Bernard Baars, 1988), the notion of global working space has been developed as a way of describing the means by which focused attention and working memory cooperate.

6. “The records that we hold of objects and events that we once perceived include the motor adjustments we made to obtain the perception in the first place and also include the emotional reactions we had then. They all are co-registered in memory, albeit in separate systems” (Damasio, 2000, p. 147-148). “We retrieve not just sensory data but also accompanying motor and emotional data . . . we recall not just sensory characteristics of an actual object but the past reactions of the organism to that object” (p. 161). For the purposes of this article, we emphasize emotional aspects and ignore motor-related ones.

7. We hypothesize that it equally can flow to other mental images, such as those symbolizing emotions and to various processes and dispositions in unconscious areas.

8. An emotion is defined as a “specifically caused transient change of the organism state” (Damasio, 2000, p. 282). “The brain induces emotions from a remarkably small number of brain sites. Most of them are located below the cerebral cortex and are known as subcortical. [...] We have recently shown, using PET imaging . . . that the pattern for each emotion (sadness, anger, fear, happiness) is distinctive” (Damasio, 2000, pp. 60, 61). “Emotion induction sites are the nuclei in the hypothalamus, brain stem, basal forebrain, amygdala, and ventromedial prefrontal cortices” (p. 280).

9. A feeling is defined as “the private, mental experience of an emotion, while the term emotion should be used to designate the collection of responses, many of which are publicly observable” (Damasio, 2000, p. 42).

10. The scope of core consciousness is the here and now. Core consciousness is a simple biological phenomenon; it is stable across the lifetime of the organism; it is not exclusively human.

11. Note that the term *object* is used to subsume notions such as persons, pictures, situations, physical objects, and so forth.

12. cf. Rogers’s (1959) notion of subception.

13. cf. Rogers’s (1959) notion of experiencing in awareness.

14. Exploring the nature of these processes and their circuitries definitely constitutes a thrilling research question (Damasio, 2000).

15. Synaptic plasticity and hormonal signaling are just two examples illustrating that changes in particular cells in response to particular stimuli can be the cause for specific emotions (Squire & Kandel, 1999) and background feelings (Damasio, 2000).

16. In fact, two categories of rigid chunks belong to Zone II. First, (neutral) learned constructs lacking one’s own experience; and second, introjections with more-or-less distorted experience. In our view, based on Damasio (2000), chunks need at least some minimal OrgExp symbolization to be able to be symbolized as chunks in WM and LTM.

17. “For therapy to occur, the wholeness of the therapist in the relationship is primary, but a part of the congruence of the therapist must be the experience of unconditional positive regard and the experience of empathic understanding” (Rogers, 1959, p. 215).

18. This is the part of the therapist’s congruence that the client can experience as positive regard and occasionally also as empathic understanding.

19. The corresponding processes in terms of neuroscience are summarized in Appendix B. Note that—from the viewpoint of neuroscience—it is essential that some external source (typically the therapist) provide stimuli that the client can match with his or her previous mental images to perceive or feel the difference between the states.

20. Note the difference between empathic understanding and empathy. Empathy is based on an innate disposition (Goleman, 1995). Its biology has been researched by Brothers (1989), who points to the amygdala and its connections to the association area of the visual cortex as part of the key brain circuitry underlying empathy. The physiology of empathy is discussed in Levenson and Ruef (1992). Empathic understanding is based on empathy but unlike pure empathy is intertwined with intellectual aspects.

21. This could proceed in the way objects are perceived, as described in Appendix B.

22. “The neocortex is the seat of thought. . . . It adds to a feeling what we think about it—and allows us to have feelings about ideas, art, symbols, imaginings. . . . The neocortex allows for the subtlety and complexity of emotional life, such as the ability to have feelings about feelings. . . . The more complex the social system, the more essential is such flexibility. . . . But these higher centres do not govern all of emotional life; in crucial matters . . . they can be said to defer to the limbic system. Because so many of the higher centres sprouted from or extended the scope of the limbic area, the emotional brain plays a crucial role in neural architecture. . . . This gives the emotional centres immense power to influence the functioning of the rest of the brain—including the centres of thought” (Goleman, 1995, p. 2-14).

23. “Ordinarily, the complementarity of limbic system and neocortex, amygdala and prefrontal lobes, means each is a full partner in mental life. When these partners interact well, emotional intelligence rises—as does intellectual ability” (Goleman, 1995, p. 32).

24. “The proto-self is a coherent collection of neural patterns which map, moment by moment, the state of the physical structure of the organism in its many dimensions. We are not conscious of the proto-self. It is a reference point at each point in which it is” (Damasio, 2000, p. 154).

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