This table lists references and abstracts for positive, direct and indirect published research for NLP. A simple reference list follows.
For Direct research please look for NLP in the title or the abstract.

To submit articles for inclusion, please contact the owner of the website where you found this and they will forward your submission to the author.

NLP Pattern or Technique	Sub Element	Citation	Abstract	Application note
Perceptual Position	First Position	Kross, E., & Ayduk, O. (2011). Making meaning out of negative experiences by self-distancing. *Current Directions in Psychological Science, 20*(3), 187-191. doi: 10.1177/0963721411408883	Both common wisdom and findings from multiple areas of research suggest that it is helpful to understand and make **meaning out** of **negative experiences**. However, people's attempts to do so often backfire, leading them to ruminate and feel worse. Here we attempt to shed light on these seemingly contradictory sets of findings by examining the role that **self**-**distancing** plays in facilitating adaptive **self**-reflection. We begin by briefly describing the "**self**-reflection paradox." We then define **self**-**distancing**, present evidence from multiple levels of analysis that illustrate how this process facilitates adaptive **self**-reflection, and discuss the basic science and practical implications of this research.	
	Second Position	Petitmengin, C. (2006). "Describing one's subjective experience in the second person: An interview method for the science of consciousness." Phenomenology and the Cognitive Sciences **5**(3-4): 229-269.	This article presents an interview method which enables us to bring a person, who may not even have been trained, to become aware of his or her subjective experience, and describe it with great precision. It is focused on the difficulties of becoming aware of one's subjective experience and describing it, and on the processes used by this interview technique to overcome each of these difficulties. The article ends with a discussion of the criteria governing the validity of the descriptions obtained, and then with a brief review of the functions of these descriptions. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract).	
	Third Position	Kross, E., & Ayduk, O. (2011)	See above	
	Perceptual positions	Andreas, C. and T. Andreas (2009). "Aligning perceptual positions: A new distinction in NLP." Journal of Consciousness Studies 16(10-12): 217-230.	This article describes and refines an experiential distinction which has been highlighted by neuro-linguistic programming (NLP), perceptual positions. When you are imagining a past or future scene, you may perceive it (usually pre-reflectively) from three different viewpoints or perceptual positions. If you are looking at the world from your own point of view, through your own eyes, you are in the first perceptual position. If you are looking at the scene through another person's eyes, appreciating the other person's point of view, you are in the second position. If you are seeing the world from an outside point of view, as an independent observer, you are in the third position. NLP highlighted the fact that our feelings change dramatically according to the perceptual position we adopt. Through a concrete example, Connirae Andreas shows that this distinction does not only concern visual perceptions, but also auditory and kinaesthetic perceptions. She also shows that our visual, auditory and kinaesthetic perceptions may be split in different perceptual positions at the same time, and that this misalignment may cause difficulties. Learning to 'align' our perceptual positions brings us greater wholeness, enables us to become more integrated	

Calibration		Wallbott, H. G. (1991). "Recognition of emotion from facial expression via imitation? Some indirect evidence for an old theory." British Journal of Social Psychology **30**(3): 207-219.	Used P. Ekman and W. V. Friesen's (1976) Pictures of Facial Affect to conduct a study employing 20 Ss. During the 1st part, Ss had to judge the emotions expressed in the pictures of facial affect. During this task, Ss were videotaped without their knowledge. About 2 wks later the same Ss watched the video-recordings of their own expressions during the judgment task and had to judge which emotions they had decoded for the respective slides 2 wks previously. Results indicate that decoding of emotions from own facial expression and decoding of the respective emotions from pictures of facial affect correspond to a degree above chance. The degree of imitation and thus recognition rate of own-face judgments partly depended on the emotions expressed in the slides in the 1st place. The conclusion that imitation (T. Lipps, 1907) at least helped in decoding facial expression seems feasible. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
	Observer state	Neidenthal, P. M., M. Brauer, et al. (2001). "When did her smile drop? Facial mimicry and the influences of emotional state on the detection of change in emotional expression." Cognition and Emotion 15(6): 853-864.	257 undergraduates in manipulated emotional states played computerised movies in which facial expressions of emotion changed into categorically different expressions. The participants' task was to detect the offset of the initial expression. An effect of emotional state was observed such that individuals in happy states saw the offset of happiness (changing into sadness) at an earlier point in the movies than did those in sad states. Similarly, sad condition participants detected the offset of a sad expression changing into a happy expression earlier than did happy condition participants. This result is consistent with a proposed role of facial mimicry in the perception of change in emotional expression. The results of a second experiment provide additional evidence for the mimicry account. The discussion focuses on the relationship between motor behaviour and perception. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Niedenthal, P. M., P. Winkielman, et al. (2009). "Embodiment of emotion concepts." Journal of Personality and Social Psychology **96**(6): 1120-1136.	Theories of embodied cognition hold that higher cognitive processes operate on perceptual symbols and that concept use involves partial reactivations of the sensory-motor states that occur during experience with the world. On this view, the processing of emotion knowledge involves a (partial) reexperience of an emotion, but only when access to the sensory basis of emotion knowledge is required by the task. In 2 experiments, participants judged emotional and neutral concepts corresponding to concrete objects (Experiment 1) and abstract states (Experiment 2) while facial electromyographic activity was recorded from the cheek, brow, eye, and nose regions. Results of both studies show embodiment of specific emotions in an emotion-focused but not a perceptual-focused processing task on the same words. A follow up in Experiment 3, which blocked selective facial expressions, suggests a causal, rather than simply a correlational, role for embodiment in emotion word processing. Experiment 4, using a property generation task, provided support for the conclusion that emotions embodied in conceptual tasks are context-dependent situated simulations rather than associated emotional reactions. Implications for theories of embodied simulation and for emotion theories are discussed.;	

		Huang, L. and A. D. Galinsky (2011). "Mind–Body Dissonance: Conflict Between the Senses Expands the Mind's Horizons." Social Psychological and Personality Science **2**(4): 351-359.	The ability of humans to display bodily expressions that contradict mental states is an important developmental adaptation. The authors propose that mind–body dissonance, which occurs when bodily displayed expressions contradict mentally experienced states, signals that the environment is unusual and that boundaries of cognitive categories should be expanded to embrace atypical exemplars. Four experiments found that mind–body dissonance increases a sense of incoherence and leads to category expansion. Recalling a happy memory while frowning or a sad event while smiling, listening to sad music while smiling or happy music while frowning, and assuming an expansive posture while being in a low-power role or a constricted posture while being in a high-power role all led to higher category inclusiveness compared to when the body and mind were coherent. The ability to display bodily expressions that contradict mental states may be an important foundation for the capacity of humans to embrace atypical ideas.	
		Serences, J. T. (2008). "Value-Based Modulations in Human Visual Cortex." Neuron 60(6): 1169-1181.	Economists and cognitive psychologists have long known that prior rewards bias decision making in favor of options with high expected value. Accordingly, value modulates the activity of sensorimotor neurons involved in initiating movements toward one of two competing decision alternatives. However, little is known about how value influences the acquisition and representation of incoming sensory information or about the neural mechanisms that track the relative value of each available stimulus to guide behavior. Here, fMRI revealed value-related modulations throughout spatially selective areas of the human visual system in the absence of overt saccadic responses (including in V1). These modulations were primarily associated with the reward history of each stimulus and not to self-reported estimates of stimulus value. Finally, subregions of frontal and parietal cortex represent the differential value of competing alternatives and may provide signals to bias spatially selective visual areas in favor of more valuable stimuli.	
	expectation	Riskind, J. H. and C. C. Gotay (1982). "Physical posture: Could it have regulatory or feedback effects on motivation and emotion?" Motivation and Emotion 6(3): 273-298.	109 undergraduates participated in 4 studies that examined whether variations in physical posture could have a regulatory or feedback role affecting motivation and emotion. Results of the 1st 2 studies reveal that Ss who had been temporarily placed in a slumped, depressed physical posture later appeared to develop helplessness more readily, as assessed by their lack of persistence in a standard learned helplessness task, than did Ss who had been placed in an expansive, upright posture. The 3rd study established that physical posture was an important cue in Ss' verbal reports of depression in another person. Results of the 4th study indicate that Ss who were placed in a hunched, threatened physical posture verbally reported self-perceptions of greater stress than Ss placed in a relaxed position. Findings are interpreted in terms of self-perception theory. It is suggested that physical postures of the body are one of several types of cues that can affect emotional experience and behavior. (42 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	

Eye Accessing Cues	Visual	Buckner, M., N., M., Reese, E., & Reese, M. (1987). *Eye Movements as an Indicator of Sensory Components in Thought.* Journal of Counseling Psychology 34(3), 283-287.	This study investigated a claim of the Neuro-Linguistic Programming (NLP) eye movement model, which states that specific eye movements are indicative of specific sensory components in thought. Forty-eight graduates and undergraduates were asked to concentrate on a single thought while their eye movements were videotaped. They were subsequently asked to report if their thoughts contained visual, auditory, or kinesthetic components. Two NLP-trained observers independently viewed silent videotapes of participants concentrating and recorded the presence or absence of eye movements posited by NLP theorists to indicate visual, auditory, or kinesthetic components in thought. Coefficients of agreement (Cohen's K) between participants' self-reports and trained observers' records indicate support for the visual ($K = .81$, $p < .001$) and auditory ($K = .65$, $p < .001$) portions of the model. The kinesthetic ($K = –.15$, $p < .85$) portion was not supported. Interrater agreement ($K = .82$) supports the NLP claim that specific eye movement patterns exist and that trained observers can reliably identify them. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Ackerman, J. A. (1996). "Stares and reflective gaze shifts as an index of cognitive modality." Journal of Mental Imagery **20**(3-4): 41-58.	Examined the relationship between eye movement responses and cognitive mode (visual or verbal images), using 109 male physicians (aged 24–73 yrs) who were asked 41 modally ambiguous questions: the first 40 assessed characteristic eye movement tendencies, and the 41st question assessed the relationship between self-reported cognitive mode of imagery (visual vs auditory/verbal) and gaze in response to the same question. Results showed a highly significant relationship between self-reported cognitive modality and eye movement response to question 41. Ss who stared, or moved their eyes upward, in response to the 41st question were highly likely to report a visual image, whereas Ss whose gaze shifts were true lateral (clockface 9 or 3) were more likely to report an auditory/verbal image. For the battery of 40 questions, the proportion of upward movements or stares was significantly correlated with visualizer-verbalizer style, but not with right–left directionality. Data support the hypotheses that stares and gaze shifts each index processing modality. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Sharot, T., Davidson, M.L, Carson, M.M., Phelps, E.A. (2008). *Eye Movements Predict Recollective Experience. PLoS ONE*. 3(8), e2884	Previously encountered stimuli can bring to mind a vivid memory of the episodic context in which the stimulus was first experienced (“remembered” stimuli), or can simply seem familiar (“known” stimuli). Past studies suggest that more attentional resources are required to encode stimuli that are subsequently remembered than known. However, it is unclear if the attentional resources are distributed differently during encoding and recognition of remembered and known stimuli. Here, we record eye movements while participants encode photos, and later while indicating whether the photos are remembered, known or new. Eye fixations were more clustered during both encoding and recognition of remembered photos relative to known photos. Thus, recognition of photos that bring to mind a vivid memory for the episodic context in which they were experienced is associated with *less* distributed overt attention during encoding and recognition. The results suggest that remembering is related to encoding of a few distinct details of a photo rather than the photo as a whole. In turn, during recognition remembering may be trigged by enhanced memory for the salient details of the photos.	Fixed stare

	Auditory	Buckner, M., N., M., Reese, E., & Reese, M. (1987). *Eye Movements as an Indicator of Sensory Components in Thought.* Journal of Counseling Psychology 34(3), 283-287.	See Above	
	Kinaes-thetic			
	Contextual	Graunke, B., & Roberts, T. K. (1985). *Neurolinguistic programming: The impact of imagery tasks on sensory predicate usage.* Journal of Counseling Psychology, 32(4), 525-530. doi: 10.1037/0022-0167.32.4.525	Abstract: Investigated the impact of varied imaging tasks on the use of sensory predicates by 45 right-handed white females (aged 18-40 yrs). Ss completed a background questionaire and 2 imagery questionaires before completing pleasant and unpleasant imagery tasks in visual, auditory, and kinesthetic sensory modalities. Four additional tasks included having Ss report a pleasant and an unpleasant image using 5 sensory modalities, and earliest memory, and an accomplishment experience. Randomly selected images were coded by therapists. Previous studies of the neurolinguistic programming have considered sensory predicates as a trait measure, indicative of a person's preferred or primary representation system. Results of the present study demonstrates that Ss were able to vary their type of sensory predicates according to the task demands or situational context. Thus, most Ss were auditory types during auditory imaging tasks and kinesthetic types during kinesthetic imaging tasks. Findings are incongruent with R. Bandler and J. Grinder's (1979) conceptualization of representational systems, but they support A. Hammer's (see PA, Vol 70:6385) recommendations for therapists to continuously track and match clients' sensory predicates.	

		Graunke, Bruce R.: An evaluation of Neurolinguistic Programming: the impact of varied imaging tasks upon sensory predicates. Dissertation Abstracts International 46(6) University of Houston, 1984, 226 pp. Pub. = AAC8420009.	Abstract: The importance of careful systematic research in the development of therapeutic models is evident. The present study is an exploration of an increasingly popular sensory-based therapeutic model, known as Neurolinguistic Programming (NLP). The study provided a research foundation for NLP and reviewed the current terminology and therapeutic interventions from 14 NLP publications (e.g., Dilts, Grinder, Bandler, and DeLozier, 1980). Five theoretical assumptions were proposed for NLP. These were : (1) NLP is a single- domain theory; (2) Experiences may be internally represented via at least five sensory channels; (3) Sensory representational channels may be directed either internally or externally; (4) There are consistent relationships between a person's external, observable behavior and his internal sensory processing; and, (5) Communication between individuals is enhanced if they emphasize the same sensory channel. The present study examined the relationship between one behavioral measure (sensory predicate usage) and internal imaging. Data was obtained from forty-five female college students during ten imaging tasks (visual, auditory, kinesthetic, combined, -- pleasant and unpleasant -- , earliest memory, accomplishment). The ten experimental tasks primarily involved subject- generated images based upon the Personal Imagery Questionnaire (Baer and McSweeny, 1976). The obtained results suggest a systematic relationship between sensory predicate usage and internal imaging. In addition to collecting descriptive data regarding sensory predicates, the present study tested whether sensory predicate usage might be considered as a situational variable. Past research and publications of NLP have almost exclusively considered sensory predicates as a trait characteristic reflecting an individual's cognitive typology or primary representational system (i.e., visualizer, audile, kinesthete). It was found that most individuals predominantly use kinesthetic sensory predicates, which was consistent with past research on NLP (e.g., Gumm, Walker, and Day, 1982). Concurrently, it was found that individuals are easily able to shift their use of predicates according to the context or task demands. Implications for future research and theoretical development of Neurolinguistic Programming are discussed.	
		Hammer, A. L. (1980). *Language as a therapeutic tool: the effects on the relationship of listeners responding to speakers by using perceptual predicates* (Doctoral Dissertation, Michigan State University, 1980). Dissertation Abstracts International, 41 (3), 991-A 149.	See Below.	

	Left Right Distinc-tions	Ouellet, M., Santiago, J., Funes, M. J., & Lupiáñez, J. (2010). *Thinking About the Future Moves Attention to the Right.* [doi: 10.1037/a0017176]. Journal of Experimental Psychology: Human Perception and Performance, 36(1), 17-24.	Previous studies have shown that past and future temporal concepts are spatially represented (past being located to the left and future to the right in a mental time line). This study aims at further investigating the nature of this space–time conceptual metaphor, by testing whether the temporal reference of words orient spatial attention or rather prime a congruent left/right response. A modified version of the spatial cuing paradigm was used in which a word's temporal reference must be kept in working memory whilst participants carry out a spatial localization (Experiment 1) or a direction discrimination, spatial Stroop task (Experiment 2). The results showed that the mere activation of the past or future concepts both oriented attention and primed motor responses to left or right space, respectively, and these effects were independent. Moreover, in spite of the fact that such time-reference cues were nonpredictive, the use of a short and a long stimulus onset asynchrony in Experiment 3 showed that these cues modulated spatial attention as typical central cues like arrows do, suggesting a common mechanism for these two types of cuing.	
		Santiago, J., Román, A., Ouellet, M., Rodríguez, N., & Pérez-Azor, P. (2010). *In hindsight, life flows from left to right.* Psychological Research/Psychologische Forschung, 74(1), 59-70. doi: 10.1007/s00426-008-0220-0	Three experiments investigated the mental representation of meaningful event sequences. Experiment 1 used extended (5 minutes long) naturalistic scenes excerpted from commercial movies. Experiments 2 and 3 presented everyday activities by means of sequences of 6 photographs. All experiments found both left-right and distance effects in an order decision task, suggesting that when contemplated in hindsight, experienced events unfold along a left-to-right analogical mental line. Present results are discussed in the context of the mental representation of other kinds of ordinal sequences, and other left-right effects reported in non-ordinal domains.	

		Tversky, B., Kugelmass, S., & Winter, A. (1991). *Cross-cultural and developmental trends in graphic productions.* Cognitive Psychology, 23(4), 515-557. doi: 10.1016/0010-0285(91)90005-9	How does space come to be used to represent nonspatial relations, as in graphs? Approximately 1200 children and adults from three language cultures, English, Hebrew, and Arabic, produced graphic representations of spatial, temporal, quantitative, and preference relations. Children placed stickers on square pieces of paper to represent, for example, a disliked food, a liked food, and a favorite food. Two major analyses of these data were performed. The analysis of directionality of the represented relation showed effects of direction of written language only for representations of temporal concepts, where left-to-right was dominant for speakers of English and right-to-left for speakers of Arabic, with Hebrew speakers in between. For quantity and preference, all canonical directions except top-to-bottom were used approximately equally by all cultures and ages. The analysis of information represented in the graphic representations showed an age trend; more of the older children represented ordinal and some interval information in their mappings. There was a small effect of abstractness of concept on information represented, with more interval information represented by children for the more concrete concepts, space, time, quantity, and preference in that order. Directionality findings were related to language-specific left-to-right or right-to-left directionality and to universal association of *more* or *better* with upward. The difficulties in externally representing interval information were related to prevalent difficulties in expressing comparative information. Children's graphic productions were compared to other invented notation systems, by children and by cultures, particularly for numbers and language.	
		Weger, U. W., & Pratt, J. (2008). *Time flies like an arrow: Space-time compatibility effects suggest the use of a mental timeline*. Psychonomic Bulletin & Review, 15(2), 426-430. doi: 10.3758/pbr.15.2.426	The concept of time is elusive to direct observation, yet it pervades almost every aspect of our daily lives. How is time represented, given that it cannot be perceived directly? Metaphoric mapping theory assumes that abstract concepts such as time are represented in terms of concrete, readily available dimensions. Consistent with this, many languages employ spatial metaphors to describe temporal relations. Here we investigate whether the timeis-space metaphor also affects visuospatial attention. In a first experiment, subjects categorized the names of actors in a manner compatible or incompatible with the orientation of a timeline. In two further experiments, subjects categorized or detected left- or right-side targets following prospective or retrospective time words. All three experiments show compatibility effects between the dimensions of space (left-right) and time (earlier-later) and indicate that the concept of time does indeed evoke spatial associations that facilitate responses to targets at spatially compatible locations.	

	Synaes-thesia	Spector, F. & Maurer, D. (2009). Synesthesia: A New Approach to Understanding the Development of Perception. Developmental Psychology, 45(1), 175-189.	In this article, the authors introduce a new theoretical framework for understanding intersensory development. Their approach is based upon insights gained from adults who experience synesthesia, in whom sensory stimuli induce extra cross-modal or intramodal percepts. Synesthesia appears to represent one way that typical developmental mechanisms can play out by magnifying connections present in early life that are pruned and/or inhibited during development but persist in muted form in all adults. As such, the study of synesthesia provides valuable insights into the nature of intersensory development. The authors review evidence on the perceptual reality and neural basis of synesthesia, then summarize developmental models and evidence that its underlying mechanisms are universal in adults. They illustrate how evidence for consistent sensory associations in adults leads to predictions about toddlers' perception and present 3 bodies of work that have confirmed those hypotheses. They end by describing novel hypotheses about intersensory development that arise from this framework. Such intersensory associations appear to reflect intrinsic sensory cortical organization that influences the development of perception and of language and that may constrain the learning of environmentally based associations. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
Visual Access	DHE model	Serences, J. T. (2008). "Value-Based Modulations in Human Visual Cortex." Neuron 60(6): 1169-1181.	Economists and cognitive psychologists have long known that prior rewards bias decision making in favor of options with high expected value. Accordingly, value modulates the activity of sensorimotor neurons involved in initiating movements toward one of two competing decision alternatives. However, little is known about how value influences the acquisition and representation of incoming sensory information or about the neural mechanisms that track the relative value of each available stimulus to guide behavior. Here, fMRI revealed value-related modulations throughout spatially selective areas of the human visual system in the absence of overt saccadic responses (including in V1). These modulations were primarily associated with the reward history of each stimulus and not to self-reported estimates of stimulus value. Finally, subregions of frontal and parietal cortex represent the differential value of competing alternatives and may provide signals to bias spatially selective visual areas in favor of more valuable stimuli.	
Submodalities Visual	Size	Codispoti, M., & De Cesarei, A. (2007). Arousal and attention: Picture size and emotional reactions. Psychophysiology, 44, 680–686.	Building on the assumption that the motivational relevance of an emotional scene depends on contextual factors such as proximity or stimulus size, the present study examined the effects of picture size on emotional perception using autonomic, facial, and subjective reactions. Affective changes were measured while participants viewed pictures presented in small, medium, and large sizes and varying in affective picture content. Whereas affective modulation of heart rate and Corrugator Supercilii muscle activity were not modulated by picture size, emotional modulation of skin conductance was absent for the smallest stimuli and increased linearly for the medium and largest stimulus sizes. Stimulus size modulated sympathetic changes possibly related to activation of the strategic motivational systems and action preparation. In contrast, responses related to orienting, categorization, and communicative functions did not covary with picture size.	

		De Cesarei, A., & Codispoti, M. (2006). *When does size not matter?Effects of stimulus size on affective modulation.* Psychophysiology, 43,207–215.	Motivationally relevant stimuli have been shown to receive prioritized processing compared to neutral stimuli at distinct processing stages. This effect has been related to the evolutionary importance of rapidly detecting dangers and potential rewards and has been shown to be modulated by the distance between an organism and a faced stimulus. Similarly, recent studies showed degrees of emotional modulation of autonomic responses and subjective arousal ratings depending on stimulus size. In the present study, affective modulation of pictures presented in different sizes was investigated by measuring event-related potentials during a two-choice categorization task. Results showed significant emotional modulation across all sizes at both earlier and later stages of processing. Moreover, affective modulation of earlier processes was reduced in smaller compared to larger sizes, whereas no changes in affective modulation were observed at later stages.	
	Size change	De Cesarei, A. and M. Codispoti (2010). "Effects of Picture Size Reduction and Blurring on Emotional Engagement." PLoS ONE **5**(10): e13399.	The activity of basic motivational systems is reflected in emotional responses to arousing stimuli, such as natural pictures. The manipulation of picture properties such as size or detail allows for investigation into the extent to which separate emotional reactions are similarly modulated by perceptual changes, or, rather, may subserve different functions. Pursuing this line of research, the present study examined the effects of two types of perceptual degradation, namely picture size reduction and blurring, on emotional responses. Both manipulations reduced picture relevance and dampened affective modulation of skin conductance, possibly because of a reduced action preparation in response to degraded or remote pictures. However, the affective modulation of the startle reflex did not vary with picture degradation, suggesting that the identification of these degraded affective cues activated the neural circuits mediating appetitive or defensive motivation.	
	Color			

	Complexity	Bell, A. H., Meredith, M. A., Van Opstal, A. J., & Munoz, D. P. (2005). *Crossmodal Integration in the Primate Superior Colliculus Underlying the Preparation and Initiation of Saccadic Eye Movements.* Journal of Neurophysiology, 93(6), 3659-3673. doi: 10.1152/jn.01214.2004	Saccades to combined audiovisual stimuli often have reduced saccadic reaction times (SRTs) compared with those to unimodal stimuli. Neurons in the intermediate/deep layers of the superior colliculus (dSC) are capable of integrating converging sensory inputs to influence the time to saccade initiation. To identify how neural processing in the dSC contributes to reducing SRTs to audiovisual stimuli, we recorded activity from dSC neurons while monkeys generated saccades to visual or audiovisual stimuli. To evoke crossmodal interactions of varying strength, we used auditory and visual stimuli of different intensities, presented either in spatial alignment or to opposite hemifields. Spatially aligned audiovisual stimuli evoked the shortest SRTs. In the case of low-intensity stimuli, the response to the auditory component of the aligned audiovisual target increased the activity preceding the response to the visual component, accelerating the onset of the visual response and facilitating the generation of shorter-latency saccades. In the case of high-intensity stimuli, the auditory and visual responses occurred much closer together in time and so there was little opportunity for the auditory stimulus to influence previsual activity. Instead, the reduction in SRT for high-intensity, aligned audiovisual stimuli was correlated with increased premotor activity (activity after visual burst but preceding saccade-aligned burst). These data provide a link between changes in neural activity related to stimulus modality with changes in behavior. They further demonstrate how crossmodal interactions are not limited to the initial sensory activity but can also influence premotor activity in the SC.	
		Kringelbach, M. (2005). *The human orbitofrontal cortex: Linking reward to hedonic experience.* Nature Reviews: Neuroscience, 6(September 2005), 691.	Hedonic experience is arguably at the heart of what makes us human. In recent neuroimaging studies of the cortical networks that mediate hedonic experience in the human brain, the orbitofrontal cortex has emerged as the strongest candidate for linking food and other types of reward to hedonic experience. The orbitofrontal cortex is among the least understood regions of the human brain, but has been proposed to be involved in sensory integration, in representing the affective value of reinforcers, and in decision making and expectation. Here, the functional neuroanatomy of the human orbitofrontal cortex is described and a new integrated model of its functions proposed, including a possible role in the mediation of hedonic experience.	
		Serences, J. T. (2008). "Value-Based Modulations in Human Visual Cortex." Neuron **60**(6): 1169-1181.	Economists and cognitive psychologists have long known that prior rewards bias decision making in favor of options with high expected value. Accordingly, value modulates the activity of sensorimotor neurons involved in initiating movements toward one of two competing decision alternatives. However, little is known about how value influences the acquisition and representation of incoming sensory information or about the neural mechanisms that track the relative value of each available stimulus to guide behavior. Here, fMRI revealed value-related modulations throughout spatially selective areas of the human visual systemin the absence of overt saccadic responses (including in V1). These modulations were primarily associated with the reward history of each stimulus and not to self-reported estimates of stimulus value. Finally, subregions of frontal and parietal cortex represent the differential value of competing alternatives and may provide signals to bias spatially selective visual areas in favor of more valuable stimuli.	

	Motion	Simons, R. F., Detenber, B. H., Reiss, J. E., & Shults, C. W. (2000). *Image motion and context: A between- and within-subjects comparison.* Psychophysiology,37, 706–710.	In two previous experiments, we studied how stimulus motion affects both the self-report of emotion experience and the physiological sequelae of emotion. In both studies, image motion intensified emotional responding, and the effect of motion was relatively specific to the arousal dimension of the emotion; there was little evidence that image motion altered the valence of the image. Moving images also appeared to sustain the attention of the participants for a longer period of time than did the still images. In these two experiments, however, image motion was manipulated within participants. In the present experiment, we used a between-subjects manipulation of image motion and found a nearly identical pattern of results. These data indicate that motion inherently increments the arousal value of an image and that this increment is not dependent on the context in which motion is introduced.	
		Simons, R. F., Detenber, B. H., Roedema, T. M., & Reiss, J. E. (1999).*Emotion processing in three systems: The medium and the message.* Psychophysiology, 36, 619–627.	In the context of picture viewing, consistent and specific relationships have been found between two emotion dimensions ~valence and arousal! and self-report, physiological and overt behavioral responses. Relationships between stimulus content and the emotion-response profile can also be modulated by the formal properties of stimulus presentation such as screen size. The present experiment explored the impact of another presentation attribute, stimulus motion, on the perceived quality of the induced emotion and on its associated physiological response pattern. Using a within-subject design, moving and still versions of emotion-eliciting stimuli were shown to 35 subjects while facial muscle, heart rate, skin conductance, and emotion self-reports were monitored. The impact of motion was dramatic. Self-report and physiological data suggested strongly that motion increased arousal, had little impact on valence, and captured and sustained the subject's attention to the image.	
		B. H. Detenber, R. F. Simons and G. G. Bennett, Jr. (1998), Roll'em!: The Effects of Picture Motion on Emotional Responses. Journal of Broadcasting and Electronic media, 42,113 - 127.	An experiment investigated the effects of picture motion on individuals' emotional reactions to images. Subjective measures (self-reports) and physiological data (skin conductance and heart rate) were obtained to provide convergent data on affective responses. Results indicate that picture motion significantly increased arousal, particularly when the image was already arousing. This finding was supported by the both skin conductance and the self-report data. Picture motion also tended to prompt more heart-rate deceleration, most likely reflecting a greater allocation of attention to the more arousing images. In this study, the influence of picture motion on affective valence was evident only in the self-report measures – positive images were experienced as more positive and negative images as more negative when the image contained motion. Implications of the results and suggestions for future research are discussed.	
	Aspect			

	Dynamic Size change	Schiff, W. (1965). Perception of impending collision: A study of visually directed avoidant behavior. *Psychological Monographs: General and Applied, 79*(11), 1-26.	Theoretical issues and empirical evidence concerned with the perception and avoidance of impending collision were discussed. A theoretical framework was developed, based on J. J. Gibson's (1950, 1958, 1939) concepts of ecological optics and stimulus information. A series of experiments was performed with invertebrate and vertebrate Ss; several stimulus variables were manipulated, and several hypotheses derived from the theoretical framework were tested. It was found that most animals respond avoidantly and directionally to the abstract visual stimulus property of accelerated magnification of a dark form in the field of view, which specifies the approach of an object and impending collision. Such behavior was found to be relatively independent of shape and magnification rate (with some exceptions) and is apparently not a product of associative learning in some species. (PsycINFO Database Record (c) 2012 APA, all rights reserved). (journal abstract)	
	Distance	Blanchard, R. J., D. C. Blanchard, T. Takahashi, and M. Kelley. (1977). *Attack and defensive behavior in the albino rat.* Animal Behaviour 25: 622-634.	Attack of dominant colony males of an albino rat (*Rattus norvegicus*) strain, on introduced strangers, produced a non-random distribution of bites, with ventral trunk virtually never bitten. Also, vibrissae-contact of attacker and defender interfered with bites to the defender's head and upper back. The specific agonistic reactions of attacking and defending rats appeared to involve strategies based on these limitations on attack: defenders utilized 'boxing' and lying 'on-the-back' behaviour, which interposed ventral trunk and vibrissae between attacker and defender. In turn, the 'lateral display' permitted attackers to circumvent the defender's behaviour. Limitations on attack therefore appeared to underlie the specific agonistic behaviour of both attacking and defending rats.	
		Liberman, N. and J. Förster (2008). "Expectancy, value and psychological distance: A new look at goal gradients." Social Cognition **26**(5): 515-533.	Goal gradients refer to the increase in motivation as a function of goal proximity. We propose that motivation does not always increase closer to the goal, and that in order to predict the shape and steepness of goal gradients one needs to look at how distance affects the two components of motivation—expectancy and value. Furthermore, we distinguish between four aspects of expectancy (probability, difficulty, sufficiency, necessity) and two types of value (value related to high level construal, value related to low level construal), each of which has a unique distance-related dynamics. It is proposed that motivational gradients are determined by the effect that distance has on each of these components. Our study demonstrated gradients of motivation, sufficiency and necessity, but not difficulty. We discuss whether avoidance gradients would be necessarily steeper than approach gradients, as is postulated by Miller's (1944) conflict models. We also suggest that in some situations (e.g., when gradients reflect necessity) gradients would be moderated by regulatory focus (e.g., would be steeper in a prevention focus than in a promotion focus, Higgins, 1998). (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

	Dimension	Moore, B, Mischel, W, & Zeiss, *A Comparative effects of the reward stimulus and its cognitive representation in voluntary delay* Journal of Personality and Social Psychology,1976, 34, 419-424	Examined the effects on delay time of 2 different ways of cognitively representing reward objects in a delay of gratification paradigm. Previous work had demonstrated that when children focused on the rewards for which they were waiting, their ability to delay gratification was inhibited; in contrast, attending to symbolic representation of the rewards enhanced their ability to delay. 48 children (mean age, 4 yrs, 8 mo) were taught to transform cognitively the stimuli present during the delay (real rewards or pictures of them), turning real rewards into pictures and pictures into real rewards. Results show that the manner in which the child represented the rewards cognitively was a much more potent determiner of his/her delay behavior than was the actual reward stimulus in front of the child. Theoretical implications of the role of cognitive appraisal in self-control are discussed. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
	Focus/ Detail	De Cesarei A. & Codispoti M. (2008). *Fuzzy Picture Processing: Effects of Size Reduction and Blurring on Emotional Processing.* Emotion Vol. 8, No. 3, June 2008, Pages 352-363.	Previous studies have suggested that picture size reduction affects emotional reactions, possibly because scenes subtending a small visual angle are perceived as being more distant and less relevant compared to larger stimuli. However, pictures that subtend a small visual angle also contain few fine-grained details, which may determine less vivid representations and responses compared to larger and more detailed images. Critically, the present study compared two different types of manipulations, namely size reduction and low-pass spatial filtering, which determined similar detail loss but affected visual angles differently. Affective modulation was assessed using an evaluative task and a behavioral interference task. Results showed that the availability of fine-grained details, independently of visual angle, modulated emotional evaluation. Moreover, interference in an unrelated task was unaffected by either size reduction or low-pass spatial filtering. These findings suggest that high spatial frequencies affect subjective emotional response whereas attentional capture by affective stimuli seems to rely on information that is sufficient to allow a categorization of picture content. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		De Cesarei, A. and M. Codispoti (2010). "Effects of Picture Size Reduction and Blurring on Emotional Engagement." PLoS ONE **5**(10): e13399.	The activity of basic motivational systems is reflected in emotional responses to arousing stimuli, such as natural pictures. The manipulation of picture properties such as size or detail allows for investigation into the extent to which separate emotional reactions are similarly modulated by perceptual changes, or, rather, may subserve different functions. Pursuing this line of research, the present study examined the effects of two types of perceptual degradation, namely picture size reduction and blurring, on emotional responses. Both manipulations reduced picture relevance and dampened affective modulation of skin conductance, possibly because of a reduced action preparation in response to degraded or remote pictures. However, the affective modulation of the startle reflex did not vary with picture degradation, suggesting that the identification of these degraded affective cues activated the neural circuits mediating appetitive or defensive motivation.	
Submodalities Auditory				

	timbre	Strait, D. L., K. Chan, et al. (2012). "Specialization among the specialized: Auditory brainstem function is tuned in to timbre." Cortex: A Journal Devoted to the Study of the Nervous System and Behavior **48**(3): 360-362.	This study aimed to provide unambiguous evidence for musical training's impact on auditory brainstem function. The answer to this question bears great significance for sensory learning; if musical training has the power to fine-tune subcortical structures to better process sound, this would attest to the power of cognitive experience to shape basic sensory function. By demonstrating timbre-specific subcortical tuning in musicians, we reveal that the human auditory brainstem is exquisitely more refined than previously assumed. This plasticity is likely driven by cortical-brainstem reciprocity that is strengthened by musical practice. Furthermore, we reveal, for the first time, an objective neural marker for sensory fine-tuning in musicians that unambiguously relates to specific instrumental training backgrounds. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
	Pitch	Stel, M., E. v. Dijk, et al. (2012). "Lowering the Pitch of Your Voice Makes You Feel More Powerful and Think More Abstractly." Social Psychological and Personality Science 3(4): 497-502.	Voice pitch may not only influence the listeners but also the speakers themselves. Based on the theories of embodied cognition and previous research on power, we tested whether lowering their pitch leads people to feel more powerful and think more abstractly. In three experiments, participants received instructions to read a text out loud with either a lower or a higher voice than usual. Subsequently, feelings of power (Experiments 1 and 2) and abstract thinking (Experiment 3) were assessed. Participants who lowered their voice pitch perceived themselves more as possessing more powerful traits (Experiments 1 and 2) and had a higher level of abstract thinking (Experiment 3) compared to participants who raised their voice pitch.	
	Mixed	Jee, E.-S., Y.-J. Jeong, et al. (2010). "Sound design for emotion and intention expression of socially interactive robots." Intelligent Service Robotics **3**(3): 199-206.	The current concept of robots has been greatly influenced by the image of robots from science fiction. Since robots were introduced into human society as partners with them, the importance of human–robot interaction has grown. In this paper, we have designed seven musical sounds, five of which express intention and two that express emotion for the English teacher robot, Silbot. To identify the sound design considerations, we analyzed the sounds of robots, R2-D2 and Wall-E, from two popular movies, Star Wars and Wall-E, respectively. From the analysis, we found that intonation, pitch, and timbre are dominant musical parameters to express intention and emotion. To check the validity of these designed sounds for intention and emotion, we performed a recognition rate experiment. The experiment showed that the five designed sounds for intentions and the two for emotions are sufficient to deliver the intended emotions. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Eitan, Z. and I. Rothschild (2011). "How music touches: Musical parameters and listeners' audio-tactile metaphorical mappings." Psychology of Music **39**(4): 449-467.	Though the relationship of touch and sound is central to music performance, and audio-tactile metaphors are pertinent to musical discourse, few empirical studies have investigated systematically how musical parameters such as pitch height, loudness, timbre and their interactions affect auditory–tactile metaphorical mappings. In this study, 40 participants (20 musically trained) rated the appropriateness of six dichotomous tactile metaphors (sharp–blunt, smooth–rough, soft–hard, light–heavy, warm–cold and wet–dry) to 20 sounds varying in pitch height, loudness, instrumental timbre (violin vs. flute) and vibrato. Results (repeated measures MANOVA) suggest that tactile metaphors are strongly associated with all musical variables examined. For instance, higher pitches were rated as significantly sharper, rougher, harder, colder, drier and lighter than lower pitches. We consider several complementary accounts of the findings: psychophysical analogies between tactile and auditory sensory processing; experiential analogies, based on correlations between tactile and auditory qualities of sound sources in daily experience; and analogies based on abstract semantic dimensions, particularly potency and activity. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
Submodalities Kinesthetic	Temperature	Williams, L. & Bargh, J. (2008). *Experiencing physical warmth promotes interpersonal warmth.* Science, 322, 606-607.	"**Warmth**" is the most powerful personality trait in social judgment, and attachment theorists have stressed the importance of warm **physical** contact with caregivers during infancy for healthy relationships in adulthood. Intriguingly, recent research in humans points to the involvement of the insula in the processing of both **physical** temperature and **interpersonal warmth** (trust) information. Accordingly, we hypothesized that experiences of **physical warmth** (or coldness) would increase feelings of **interpersonal warmth** (or coldness), without the person's awareness of this influence. In study 1, participants who briefly held a cup of hot (versus iced) coffee judged a target person as having a "warmer" personality (generous, caring); in study 2, participants holding a hot (versus cold) therapeutic pad were more likely to choose a gift for a friend instead of for themselves. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
Metaphor		Beeman, M., Friedman, R. B., Grafman, J., Perez , E., Diamond, S., & Beadle Lindsay, M. (1994). *Summation priming and coarse semantic coding in the right hemisphere.* Journal of Cognitive Neuroscience, 6, 26-45	*Conducted 2 experiments with 76 paid volunteers in which Ss read target words preceded by either summation primes (3 words weakly related to the target) or unrelated primes, and target exposure duration was manipulated so that Ss correctly named about half the target words in each hemifield. In Exp 1, Ss benefited more from summation primes when naming target words presented to the left visual field-right hemisphere (lvf-RH) than when naming target words presented to the right visual field-left hemisphere (rvf-LH). In Exp 2, with a low proportion of related prime-target trials, Ss benefited more from direct primes than from summation primes for rvf-LH target words. Results suggest that the RH processes words with relatively coarser coding than the LH. (PsycINFO Database Record (c) 2012 APA, all rights reserved)*	

		Coulson, S., and Van Petten, C., (2003) *A Special Role for the Right Hemisphere in Metaphor Comprehension?: ERP Evidence from Hemifield Presentation.* Cognitive Science, 31 (5) 673-689	It has been suggested that the right hemisphere (RH) has a privileged role in the processing of figurative language, including metaphors, idioms, and verbal humor. Previous experiments using hemifield visual presentation combined with human electrophysiology support the idea that the RH plays a special role in joke comprehension. The current study examines metaphoric language. Event-related potentials (ERPs) were recorded as healthy adults read English sentences that ended predictably (High-cloze Literals), or with a plausible but unexpected word (Low-cloze Literals and Low-cloze Metaphoricals). Sentence final words were presented in either the left or the right visual hemifield. Relative to High-cloze Literals, Low-cloze Literals elicited a larger N400 component after presentation to both the left and the right hemifield. Low-cloze Literals also elicited a larger frontal positivity following the N400, but only with presentation to the right hemifield (left hemisphere). These data suggest both cerebral hemispheres can benefit from supportive sentence context, but may suggest an important role for anterior regions of the left hemisphere in the selection of semantic information in the face of competing alternatives. Relative to Low-cloze Literals, Low-cloze Metaphoricals elicited more negative ERPs during the timeframe of the N400 and afterwards. However, ERP metaphoricity effects were very similar across hemifields, suggesting that the integration of metaphoric meanings was similarly taxing for the two hemispheres, contrary to the predictions of the right hemisphere theory of metaphor. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
		Rappa. A.M., Leubeb, D.T., Erbb, M., Groddb, W., & Tilo, T.J.K (2006) *Laterality in Metaphor Processing: Lack of Evidence from Functional Magnetic Resonance Imaging for the Right Hemisphere Theory.* Dept of Psychiatry, University of Tuebingen, Germany	We investigated processing of metaphoric sentences using event-related functional magnetic resonance imaging (fMRI). Seventeen healthy subjects (6 female, 11 mal)) read 60 novel short German sentence pairs with either metaphoric or literal meaning and performed two different tasks: judging the metaphoric content and judging whether the sentence has a positive or negative connotation. Laterality indices for 8 regions of interest were calculated: Inferior frontal gyrus (opercular part and triangular part), superior, middle, and inferior temporal gyrus, precuneus, temporal pole, and hippocampus. A left lateralised network was activated with no significant differences in laterality between the two tasks. The lowest degree of laterality was found in the temporal pole. Other factors than metaphoricity per se might trigger right hemisphere recruitment. Results are discussed in the context of lesion and hemifield studies. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Williams, L. E., & Bargh, J. A. (2008). Keeping one's distance: The influence of spatial distance cues on affect and evaluation. Psychological Science, 19, 302-308.	Current conceptualizations of psychological distance (e.g., construal-level theory) refer to the degree of overlap between the self and some other person, place, or point in time. We propose a complementary view in which perceptual and motor representations of physical distance influence people's thoughts and feelings without reference to the self, extending research and theory on the effects of distance into domains where construal-level theory is silent. Across four experiments, participants were primed with either spatial closeness or spatial distance by plotting an assigned set of points on a Cartesian coordinate plane. Compared with the closeness prime, the distance prime produced greater enjoyment of media depicting embarrassment (Study 1), less emotional distress from violent media (Study 2), lower estimates of the number of calories in unhealthy food (Study 3), and weaker reports of emotional attachments to family members and hometowns (Study 4). These results support a broader conceptualization of distance-mediated effects on judgment and affect.	
		Williams, L. E., Huang, J. Y., & Bargh, J. A. (2009). The scaffolded mind: Higher mental processes are grounded in early experience of the physical world. European Journal of Social Psychology, 39, 1257-1267.	It has long been a staple of psychological theory that early life experiences significantly shape the adult's understanding of and reactions to the social world. Here we consider how early concept development along with evolved motives operating early in life can come to exert a passive, unconscious influence on the human adult's higher-order goal pursuits,judgments, and actions. In particular, we focus on concepts and goal structures specialized for interacting with the physical environment (e.g., distance cues, temperature, cleanliness, and self-protection), which emerge early and automatically as a natural part of human development and evolution. It is proposed that via the process of scaffolding, these early sensorimotor experiences serve as the foundation for the later development of more abstract concepts and goals. Experiments using priming methodologies reveal the extent to which these early concepts serve as the analogical basis for more abstract psychological concepts, such that we come easily and naturally to speak of close relationships, warm personalities, moral purity, and psychological pain. Taken together, this research demonstrates the extent to which such foundational concepts are capable of influencing people's information processing, affective judgments, and goal pursuit, oftentimes outside of their intention or awareness. Copyright # 2009 John Wiley & Sons, Ltd.	
		Bargh, J. A., M. Chen, et al. (1996). "Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action." Journal of Personality and Social Psychology 71(2): 230-244.	Previous research has shown that trait concepts and stereotypes become active automatically in the presence of relevant behavior or stereotyped-group features. Through the use of the same priming procedures as in previous impression formation research, Experiment 1 showed that participants whose concept of rudeness was primed interrupted the experimenter more quickly and frequently than did participants primed with polite-related stimuli. In Experiment 2, participants for whom an elderly stereotype was primed walked more slowly down the hallway when leaving the experiment than did control participants, consistent with the content of that stereotype. In Experiment 3, participants for whom the African American stereotype was primed subliminally reacted with more hostility to a vexatious request of the experimenter. Implications of this automatic behavior priming effect for self-fulfilling prophecies are discussed, as is whether social behavior is necessarily mediated by conscious choice processes. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Fremder, Linda A.: Generalization of visual dot pattern strategies to number pattern strategies by learning disabled students. Dissertation Abstracts International 47(11), 4055-A Columbia University Teachers College, 116 pp. Order = DA8704296, 1986.	Abstract: The objective of this study was to determine whether training visual dot pattern strategies in learning disabled students would transfer to different visual pattern tasks as well as generalize to arithmetic sequencing. The sample consisted of 84 learning disabled and non- learning disabled students. The students were between the ages of 12-0 and 15-11. The learning disabled students' deficiency in visual dot and number pattern skills provided the rationale for training to improve these skills. The 42 learning disabled students were classified Neurologically Impaired (NI) or Perceptually Impaired (PI) in accordance with New Jersey Administrative Code Chapter 6:28. These 42 children were placed in three groups: (a) standard cognitive strategy training; (b) standard cognitive training plus Neurolinguistic Programming (NLP); and, (c) a control practice group. The study consisted of three phases: (a) pretest; (b) intervention; and, (c) posttest. Intervention consisted of three 20 minute training sessions for learning disabled students every second week for six weeks. Statistical analyses were performed on data collected from the Pattern Recognition Assessment (PRA) which was specifically developed for this study. The results showed significant transfer effects for both treatment groups when compared to the practice group but no difference between the treatment groups. Significant generalization effects occurred within all groups including the control group. The control group improvement, which negated treatment effects for generalization, was interpreted as chance variability.	Pattern Transfer
		Niedenthal, P. M., Barsalou, L. W., Winkielman, P., Krauth-Gruber, S., & Ric, F. (2005). Embodiment in attitudes, social perception, and emotion. *Personality And Social Psychology Review: An Official Journal Of The Society For Personality And Social Psychology, Inc, 9*(3), 184-211.	Findings in the social psychology literatures on attitudes, social perception, and emotion demonstrate that social information processing involves embodiment, where embodiment refers both to actual bodily states and to simulations of experience in the brain's modality-specific systems for perception, action, and introspection. We show that embodiment underlies social information processing when the perceiver interacts with actual social objects (online cognition) and when the perceiver represents social objects in their absence (offline cognition). Although many empirical demonstrations of social embodiment exist, no particularly compelling account of them has been offered. We propose that theories of embodied cognition, such as the Perceptual Symbol Systems (PSS) account (Barsalou, 1999), explain and integrate these findings, and that they also suggest exciting new directions for research. We compare the PSS account to a variety of related proposals and show how it addresses criticisms that have previously posed problems for the general embodiment approach.;	
Hierarchical/ Nested Organization		Lyons, D. E., L. R. Santos, et al. (2006). "Reflections of other minds: how primate social cognition can inform the function of mirror neurons." Current Opinion in Neurobiology **16**(2): 230-234.	Mirror neurons, located in the premotor cortex of macaque monkeys, are activated both by the performance and the passive observation of particular goal-directed actions. Although this property would seem to make them the ideal neural substrate for imitation, the puzzling fact is that monkeys simply do not imitate. Indeed, imitation appears to be a uniquely human ability. We are thus left with a fascinating question: if not imitation, what are mirror neurons for? Recent advances in the study of non-human primate social cognition suggest a surprising potential answer.	

		Hubel, D. H. & Wiesel, T. N. *(*1959*). Receptive fields of single neurons in the cat's striate cortex*. J Physiol *148*, 574–591.		
		Kilner, J., K. Friston, et al. (2007). "Predictive coding: an account of the mirror neuron system." Cognitive Processing **8**(3): 159-166.	See Below	
		Kandel, E. R. (2009). *An introduction to the work of David Hubel and Torsten Wiesel*. The Journal of Physiology, 587, 2733-2741. doi: 10.1113/jphysiol.2009.170688.	It is with enormous pleasure that I add my voice to that of others of my generation in celebrating the semicentenary of the 1959 publication of Hubel and Wiesel's first paper in The Journal of Physiology entitled: 'Receptive fields of single neurons in the cat's striate cortex'. This paper set the stage for the continuous flow of outstanding papers that emerged over the next twenty-odd years from the Hubel and Wiesel collaboration. Hubel and Wiesel's names are enshrined together in the Pantheon of Creative Collaborations in Biological Sciences, much like Hodgkin and Huxley, Watson and Crick, and Brown and Goldstein. In each case, equal partners joined forces bringing unique skills to their collaboration to produce a new level of science and a new family of insights. What follows in the ensuing set of papers in this issue is an outpouring of affection, respect, and gratitude for Torsten and David, for who they are, for what they have given us, and for setting the tone of our science for my generation in the United States. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Glezer, L.S., Jiang, X., & Reisenhuber, M. (2009).Evidence for Highly Selective Neuronal Tuning to Whole Words in the ‘‘Visual Word Form Area.” Neuron 62, 199–204, April 30, 2009.	Theories of reading have posited the existence of a neural representation coding for whole real words (i.e., an orthographic lexicon), but experimental support for such a representation has proved elusive. Using fMRI rapid adaptation techniques, we provide evidence that the human left ventral occipitotemporal cortex (specifically the visual word form area, VWFA) contains a representation based on neurons highly selective for individual real words, in contrast to current theories that posit a sublexical representation in the VWFA.	

		Lerner, Y., Epshtein, B., Ullman, S., & Malach, R. (2008). "Class information predicts activation by object fragments in human object areas." Journal of Cognitive Neuroscience **20**(7): 1189-1206.	Object-related areas in the ventral visual system in humans are known from imaging studies to be preferentially activated by object images compared with noise or texture patterns. It is unknown, however, which features of the object images are extracted and represented in these areas. Here we tested the extent to which the representation of visual classes used object fragments selected by maximizing the information delivered about the class. We tested functional magnetic resonance imaging blood oxygenation level-dependent activation of highly informative object features in low- and high-level visual areas, compared with noninformative object features matched for low-level image properties. Activation in V1 was similar, but in the lateral occipital area and in the posterior fusiform gyrus, activation by "informative" fragments was significantly higher for three object classes. Behavioral studies also revealed high correlation between performance and fragments information. The results show that an objective class-information measure can predict classification performance and activation in human object-related areas. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
		Kanwisher, N. (2010). "Functional specificity in the human brain: A window into the functional architecture of the mind." Proceedings of the National Academy of Sciences **107**(25): 11163-11170.	Is the human mind/brain composed of a set of highly specialized components, each carrying out a specific aspect of human cognition, or is it more of a general-purpose device, in which each component participates in a wide variety of cognitive processes? For nearly two centuries, proponents of specialized organs or modules of the mind and brain—from the phrenologists to Broca to Chomsky and Fodor—have jousted with the proponents of distributed cognitive and neural processing—from Flourens to Lashley to McClelland and Rumelhart. I argue here that research using functional MRI is beginning to answer this long-standing question with new clarity and precision by indicating that at least a few specific aspects of cognition are implemented in brain regions that are highly specialized for that process alone. Cortical regions have been identified that are specialized not only for basic sensory and motor processes but also for the high-level perceptual analysis of faces, places, bodies, visually presented words, and even for the very abstract cognitive function of thinking about another person's thoughts. I further consider the as-yet unanswered questions of how much of the mind and brain are made up of these functionally specialized components and how they arise developmentally. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Yeatman, J. D., A. M. Rauschecker, et al. (2012). "Anatomy of the visual word form area: Adjacent cortical circuits and long-range white matter connections." Brain and Language.	Circuitry in ventral occipital-temporal cortex is essential for seeing words. We analyze the circuitry within a specific ventral–occipital region, the visual word form area (VWFA). The VWFA is immediately adjacent to the retinotopically organized VO-1 and VO-2 visual field maps and lies medial and inferior to visual field maps within motion selective human cortex. Three distinct white matter fascicles pass within close proximity to the VWFA: (1) the inferior longitudinal fasciculus, (2) the inferior frontal occipital fasciculus, and (3) the vertical occipital fasciculus. The vertical occipital fasciculus terminates in or adjacent to the functionally defined VWFA voxels in every individual. The vertical occipital fasciculus projects dorsally to language and reading related cortex. The combination of functional responses from cortex and anatomical measures in the white matter provides an overview of how the written word is encoded and communicated along the ventral occipital-temporal circuitry for seeing words. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
Sytntax		Aldridge, J. W. and K. C. Berridge (1998). "Coding of Serial Order by Neostriatal Neurons: A "Natural Action" Approach to Movement Sequence." The Journal of Neuroscience **18**(7): 2777-2787.	The neostriatum controls behavioral sequencing, or action syntax, as well as simpler aspects of movement. Yet the precise nature of the neostriatums role in sequencing remains unclear. Here we used a "natural action" approach that combined electrophysiological and neuroethological techniques. We identified neostriatal neurons that code the serial order of natural movement sequences of rats. During grooming behavior, rats emit complex but highly predictable species-specific sequences of movements, termed "syntactic chains." Neuronal activity of 41% of cells in the dorsolateral and ventromedial neostriatum coded the sequential pattern of syntactic chains. Only 14% coded simple motor properties of grooming movements. Neurons fired preferentially during syntactic chains compared with similar grooming movements made in different sequential order or to behavioral resting. Sequential coding differed between the dorsolateral and ventromedial neostriatum. Neurons in the dorsolateral site increased firing by 116% during syntactic chains, compared with only a 30% increase by neurons in the ventromedial site, and dorsolateral neurons showed strongest coding of grooming syntax by several additional criteria. These data demonstrate that neostriatal neurons code abstract properties of serial order for natural movement and support the hypothesis that the dorsolateral neostriatum plays a special role in implementing action syntax.	
		Armstrong, D. F., W. C. Stokoe, et al. (1994). "Signs of the origin of syntax." Current Anthropology **35**(4): 349-368.	Discusses the signed languages of modern deaf people in relation to the development of syntax. Sign language is described as a fully developed natural language. Visible gestures are seen as the behavioral building blocks associated with neuronal group structures for constructing syntax incrementally. The development of a large brain in humans before the appearance of the current vocal tract is associated with upright posture and the freeing of the arms from weight-bearing. Incremental development of linguistic/syntactical abilities is seen as an explanation for the reorganization of the brain that was already underway among the australopithecenes. The evolution and advantages of spoken languages are discussed. Comments by 8 reviewers and a reply by the authors are included. (PsycINFO Database Record (c) 2010 APA, all rights reserved)	

		Devauchelle, A.-D., C. Oppenheim, et al. (2009). "Sentence syntax and content in the human temporal lobe: An fMRI adaptation study in auditory and visual modalities." Journal of Cognitive Neuroscience **21**(5): 1000-1012.	Priming effects have been well documented in behavioral psycholinguistics experiments' The processing of a word or a sentence is typically facilitated when it shares lexico-semantic or syntactic features with a previously encountered stimulus. Here, we used fMRI priming to investigate which brain areas show adaptation to the repetition of a sentence's content or syntax. Participants read or listened to sentences organized in series which could or not share similar syntactic constructions and/or lexico-semantic content. The repetition of lexico-semantic content yielded adaptation in most of the temporal and frontal sentence processing network, both in the visual and the auditory modalities, even when the same lexico-semantic content was expressed using variable syntactic constructions. No fMRI adaptation effect was observed when the same syntactic construction was repeated. Yet behavioral priming was observed at both syntactic and semantic levels in a separate experiment where participants detected sentence endings. We discuss a number of possible explanations for the absence of syntactic priming in the fMRI experiments, including the possibility that the conglomerate of syntactic properties defining “a construction” is not an actual object assembled during parsing. (PsycINFO Database Record (c) 2010 APA, all rights reserved) (journal abstract)	
		Dixon, P. (1987). "The structure of mental plans for following directions." Journal of Experimental Psychology: Learning, Memory, and Cognition **13**(1): 18-26.	Outlined a general framework for understanding how people construct mental plans for carrying out written directions. In the framework, it is assumed that (a) a mental plan consists of a hierarchy of action schemas, (b) the hierarchy is constructed by beginning with the schema at the top level of the hierarchy, and (c) plan construction goes on concurrently with other reading processes. Predictions made on the basis of this framework were confirmed in 2 experiments involving undergraduates. In Exp I, Ss were timed while they read and carried out simple directions such as "Press button B while light X is on." Directions were read more quickly when they began with the action ("Press button B") than when they began with either the antecedent or the consequence of the action ("while light X is on"). In Exp II, this effect was reversed by changing Ss' prior knowledge of what they were supposed to do. A 3rd experiment showed that these results are specific to the task of reading and carrying out the directions; they did not occur when Ss recalled the sentences. (22 ref) (PsycINFO Database Record (c) 2010 APA, all rights reserved)	

		Frank, M. J. (2005). "Dynamic Dopamine Modulation in the Basal Ganglia: A Neurocomputational Account of Cognitive Deficits in Medicated and Nonmedicated Parkinsonism." Journal of Cognitive Neuroscience **17**(1): 51-72.	Dopamine (DA) depletion in the basal ganglia (BG) of Parkinson's patients gives rise to both frontal-like and implicit learning impairments. Dopaminergic medication alleviates some cognitive deficits but impairs those that depend on intact areas of the BG, apparently due to DA ?overdose.? These findings are difficult to accommodate with verbal theories of BG/DA function, owing to complexity of system dynamics: DA dynamically modulates function in the BG, which is itself a modulatory system. This article presents a neural network model that instantiates key biological properties and provides insight into the underlying role of DA in the BG during learning and execution of cognitive tasks. Specifically, the BG modulates the execution of ?actions? (e.g., motor responses and working memory updating) being considered in different parts of the frontal cortex. Phasic changes in DA, which occur during error feedback, dynamically modulate the BG threshold for facilitating/suppressing a cortical command in response to particular stimuli. Reduced dynamic range of DA explains Parkinson and DA overdose deficits with a single underlying dysfunction, despite overall differences in raw DA levels. Simulated Parkinsonism and medication effects provide a theoretical basis for behavioral data in probabilistic classification and reversal tasks. The model also provides novel testable predictions for neuropsychological and pharmacological studies, and motivates further investigation of BG/DA interactions with the prefrontal cortex in working memory.	
		Grahn, J. A., J. A. Parkinson, et al. (2009). "The role of the basal ganglia in learning and memory: Neuropsychological studies." Behavioural Brain Research **199**(1): 53-60.	In recent years, a common approach to understanding how the basal ganglia contribute to learning and memory in humans has been to study the deficits that occur in patients with basal ganglia pathology, such as Parkinson's disease and Huntington's disease. Pharmacological manipulations in patients and in healthy volunteers have also been conducted to investigate the role of dopamine, a neurotransmitter that is crucial for normal striatal functioning. When combined with powerful functional neuroimaging methods such as positron emission tomography and functional magnetic resonance imaging, such studies can provide important new insights into striatal function and dysfunction in humans. In this review, we consider this broad literature in an attempt to define a specific role for the caudate nucleus in learning and memory, and in particular, how this role may differ from that of the putamen. We conclude that the caudate nucleus contributes to learning and memory through the excitation of correct action schemas and the selection of appropriate sub-goals based on an evaluation of action-outcomes; both processes that are fundamental to all tasks involve goal-directed action. (PsycINFO Database Record (c) 2010 APA, all rights reserved) (journal abstract)	
		Grammer, K., K. B. Kruck, et al. (1998). "The Courtship Dance: Patterns of Nonverbal Synchronization in Opposite-Sex Encounters." Journal of Nonverbal Behavior **22**(1): 3-29.	This study examines the existence of behavioral correlates of synchronization on different levels of analysis and methods. We were unable to demonstrate a relation between synchronization defined in terms of movement echo or position mirroring and subjective experience of pleasure and interest in opposite-sex encounters. Significant results were found for a phenomenon we describe as hierarchically patterned synchronization. These patterns were identified with the help of a newly developed search algorithm. If a female is interested in a male, highly complex patterns of behavior with a constant time structure emerge. The patterns are pair-specific and independent from behavioral content. This rhythmic structure of interactions is discussed in functional terms of human courtship.	

		Grodzinsky, Y. (2000). "The neurology of syntax: Language use without Broca's area." Behavioral and Brain Sciences **23**(1): 1-71.	Five empirical arguments are presented on the functional role of the left anterior cortex in language. The experiments are (1) sentence comprehension, (2) cross-linguistic considerations, (3) grammaticality and plausibility judgments, (4) real-time processing of complex sentences, and (5) rehabilitation. Also discussed in the study are recent results from functional neuroimaging and from structured observations on speech production of Broca's aphasics. Results show that aspects of the language faculty reside in the human left cerebral hemisphere, but only the transformational component (or algorithms that implement it in use) is located in and around Broca's area. (PsycINFO Database Record (c) 2010 APA, all rights reserved)	
		Lieberman, P. (2007). "The Evolution of Human Speech: Its Anatomical and Neural Bases." Current Anthropology **48**(1): 39-53.	Human speech involves species-specific anatomy deriving from the descent of the tongue into the pharynx. The human tongue's shape and position yields the 1:1 oral-to-pharyngeal proportions of the supralaryngeal vocal tract. Speech also requires a brain that can "reiterate"--freely reorder a finite set of motor gestures to form a potentially infinite number of words and sentences. The end points of the evolutionary process are clear. The chimpanzee lacks a supralaryngeal vocal tract capable of producing the "quantal" sounds which facilitate both speech production and perception and a brain that can reiterate the phonetic contrasts apparent in its fixed vocalizations. The traditional Broca-Wernicke brain-language theory is incorrect; neural circuits linking regions of the cortex with the basal ganglia and other subcortical structures regulate motor control, including speech production, as well as cognitive processes including syntax. The dating of the FOXP2 gene, which governs the embryonic development of these subcortical structures, provides an insight on the evolution of speech and language. The starting points for human speech and language were perhaps walking and running. However, fully human speech anatomy first appears in the fossil record in the Upper Paleolithic (about 50,000 years ago) and is absent in both Neanderthals and earlier humans. (PsycINFO Database Record (c) 2010 APA, all rights reserved) (journal abstract)	
		Taborsky, E. (1985). "Syntax and society." Canadian Review of Sociology and Anthropology **22**(1): 80-92.	Suggests that human consciousness is based on a socially learned, yet unconscious, pattern of cognition. This pattern, which is referred to as "syntax" can differ, and the conscious cognition of the environment then also differs. Social systems, institutions, and behavioral patterns are specific to their particular syntax. A particular conscious perception of the environment functions only within a specific syntax; it cannot function within a different syntax. Two contrasting syntaxes are outlined, and it is suggested that historical differences in social, political, scientific, and philosophical thought can be fruitfully analyzed as based on different existing syntaxes. (French abstract) (18 ref) (PsycINFO Database Record (c) 2010 APA, all rights reserved)	

		Selcuk, E., V. Zayas, et al. (2012). "Mental representations of attachment figures facilitate recovery following upsetting autobiographical memory recall." Journal of Personality and Social Psychology **103**(2): 362-378.	A growing literature shows that even the symbolic presence of an attachment figure facilitates the regulation of negative affect triggered by external stressors. Yet, in daily life, pernicious stressors are often internally generated—recalling an upsetting experience reliably increases negative affect, rumination, and susceptibility to physical and psychological health problems. The present research provides the first systematic examination of whether activating the mental representation of an attachment figure enhances the regulation of affect triggered by thinking about upsetting memories. Using 2 different techniques for priming attachment figure representations and 2 types of negative affect measures (explicit and implicit), activating the mental representation of an attachment figure (vs. an acquaintance or stranger) after recalling an upsetting memory enhanced recovery—eliminating the negative effects of the memory recall (Studies 1–3). In contrast, activating the mental representation of an attachment figure before recalling an upsetting memory had no such effect (Studies 1 and 2). Furthermore, activating the mental representation of an attachment figure after thinking about upsetting memories reduced negative thinking in a stream of consciousness task, and the magnitude of the attachment-induced affective recovery effects as assessed with explicit affect measures predicted mental and physical health in daily life (Study 3). Finally, a meta-analysis of the 3 studies (Study 4) showed that the regulatory benefits conferred by the mental representation of an attachment figure were weaker for individuals high on attachment avoidance. The implications of these findings for attachment, emotion regulation, and mental and physical health are discussed. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
		Damasio, A.R., 1989. Time-locked multiregional retroactivation: A systems-level proposal for **the neural substrates of recall and recognition. Cognition, 33: 25-62.**	Damasio, A.R., 1989. Time-locked multiregional retroactivation: A systems-level proposal for the neural substrates of recall and recognition. Cognition, 33: 25-62. This article outlines a theoretical framework for the understan and mediated by feedback projections. This proposal rejects a single anatomi- cal site for the integration of memory and motor processes and a single store for the meaning of entities of events. Meaning is reached by time-locked multiregional retroactivation of widespread fragment records. Only the latter records can become contents of consciousness.	

		Buzsáki G.(2010) **Neural syntax: cell assemblies, synapsembles, and readers.**Neuron. 2010 Nov 4;68(3):362-85. doi: 10.1016/j.neuron.2010.09.023.	A widely discussed hypothesis in neuroscience is that transiently active ensembles of neurons, known as "cell assemblies," underlie numerous operations of the brain, from encoding memories to reasoning. However, the mechanisms responsible for the formation and disbanding of cell assemblies and temporal evolution of cell assembly sequences are not well understood. I introduce and review three interconnected topics, which could facilitate progress in defining cell assemblies, identifying their neuronal organization, and revealing causal relationships between assembly organization and behavior. First, I hypothesize that cell assemblies are best understood in light of their output product, as detected by "reader-actuator" mechanisms. Second, I suggest that the hierarchical organization of cell assemblies may be regarded as a neural syntax. Third, constituents of the neural syntax are linked together by dynamically changing constellations of synaptic weights ("synapsembles"). The existing support for this tripartite framework is reviewed and strategies for experimental testing of its predictions are discussed.	
		Pesut D.J. The art, science, and techniques of reframing in psychiatric mental health nursing **Issues in Mental Health Nursing** 1991, Vol. 12, No. 1, Pages 9-18	Reframing is a powerful psychotherapeutic intervention. Changing the “frame” in which a person perceives events can change the meaning the person associates with the events. This article describes several types of reframing strategies that have been developed within the context of a model of human behavior and communication known as neurolinguistic programming (NLP). Fundamental assumptions of the NLP model are discussed and several reframing techniques are described. A set of strategies that clinicians can use to redefine behaviors and expand a client's model of the world are illustrated. Development of theoretical and clinical applications of the NLP model and reframing techniques in psychiatric-mental health nursing is an important task for the 1990s To sum up, reframing involves art, science, and technique. This article has described several reframing strategies that were developed within the context of the NLP model of human behavior and communication. The NLP model is rich with clinically useful techniques that augment and complement many nursing interventions. The development of refraining talent requires practice and experience with appropriate supervision. Seasoned practitioners are invited to explore and learn more about the NLP model of communication and the range of therapeutic techniques that are a part of this cutting-edge communication technology. Development of the theoretical and conceptual aspects of reframing and the application of other NLP techniques and strategies is an important focus of work for the 1990s. As nurses use the NLP model in nursing practice contexts, there will undoubtedly	

Strategies VAKOG	Embodied consciousness Kinesthetic	Agne, R.R. (2007) Reframing practices in moral conflict: interaction problems in the negotiation standoff at Waco Discourse & Society, Vol. 18, No. 5, 549-578	Findings in the social psychology literatures on attitudes, social perception, and emotion demonstrate that social information processing involves embodiment, where embodiment refers both to actual bodily states and to simulations of experience in the brain's modality-specific systems for perception, action, and introspection. We show that embodiment underlies social information processing when the perceiver interacts with actual social objects (online cognition) and when the perceiver represents social objects in their absence (offline cognition). Although many empirical demonstrations of social embodiment exist, no particularly compelling account of them has been offered. We propose that theories of embodied cognition, such as the Perceptual Symbol Systems (PSS) account (Barsalou, 1999), explain and integrate these findings, and that they also suggest exciting new directions for research. We compare the PSS account to a variety of related proposals and show how it addresses criticisms that have previously posed problems for the general embodiment approach.;

Rapport	Measure Dependent Support	Brockman, W. P. (1980). *Empathy revisited: the effects of representational system matching on certain counseling process and outcome variables*. (Doctoral Dissertation, College of William and Mary, 1980). Dissertation Abstracts International, 41(8), 3421. Retrieved November 24, 2006 from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action =res_entries	Abstract: Therapist-offered empathy has been shown to be an important ingredient in the counseling relationship. Many operational definitions of empathy and tools for measurement of this elusive quality exist. Most empathy measures have been criticized on methodological grounds and their construct validity is suspect. Yet there is little argument with the trend which emerges from the data; the overall relationship between empathy, or those dimensions tapped by empathy measures and effective therapy appears positive. The nature of empathy, however, remains enigmatic and it is evident that all the variables which account for the empathetic process have not been explicated. This study defined and investigated the validity and effect on counseling of a new dimension of empathy. From their linguistic analysis of effective therapy, Bandler and Grinder have formulated the construct of representational systems or internal maps used by individuals to organize reality. Such maps are visual, auditory or kinesthetic, and are reflected in natural language. Do you see what I mean? Empathy, then, is operationally defined as the counselor's matching language with the representational system used by the client. It was hypothesized that counselors who use representational system matching would: (1) be perceived by subjects as more empathetic than counselors who do not (accepted, $p<.0045$); (2) be perceived by judges as more empathetic than counselors who do not (accepted, $p<.0165$); (3) elicit a greater willingness to self-disclose than counselors who do not (rejected); and, (4) be preferred by clients over counselors who do not use representational matching (accepted, $p<.05$). Subjects (N=20) were undergraduates at The College of William and Mary who met with each of two counselors, in counterbalanced order, for an analogue of a beginning counseling interview. One counselor used representational system matching; the other counselor took a more generic, human relations approach to empathy. After each interview subjects completed Barrett-Lennard's Relationship Inventory (RI) and Jourard's Willingness-to-Disclose Questionnaire (WDQ). Following their second interview subjects indicated their preferred counselor. Covariates were: (1) Carkhuff's Empathetic Understanding Scale (EU) which also served as a dependent measure; (2) the Counseling Readiness Scale (CRS) of Gough and Heilbrun's Adjective Check List; and, (3) Rotter's I-E scale. The Latin square design produced data analyzed by: repeated measures analysis of covariance (hypotheses 1-3); stepwise regression (hypotheses 1 & 2), and Chi Square (hypothesis 4). Results indicate that both subjects and judges perceived the representational system matching counselor as more empathetic than the generic empathy counselor. While EU accounted for 11.76% of the variance on RI-empathy scale scores, representational system matching accounted for 11.94% of the variance beyond that accounted for by EU. Clients preferred the representational system matching counselor by a ratio of 3 to 1. It was concluded that representational system matching is an important dimension of empathy and the recommendation was made that beginning courses in counseling techniques and human relations training include a section on identifying and responding to clients' representational systems. Recommendations were made for further study.	

		Ehrmantraut, J. E., Jr. (1983) *A comparison of the therapeutic relationships of counseling students trained in Neurolinguistic Programming vs. students trained on the Carkhuff Model.* Doctoral Dissertation, University of Northern Colorado, 1983). Dissertation Abstracts International, 44(10), 3191-B.	Abstract: Therapist-offered empathy has been shown to be an important ingredient in the counseling relationship. Many operational definitions of empathy and tools for measurement of this elusive quality exist. Most empathy measures have been criticized on methodological grounds and their construct validity is suspect. Yet there is little argument with the trend which emerges from the data; the overall relationship between empathy, or those dimensions tapped by empathy measures and effective therapy appears positive. The nature of empathy, however, remains enigmatic and it is evident that all the variables which account for the empathetic process have not been explicated. This study defined and investigated the validity and effect on counseling of a new dimension of empathy. From their linguistic analysis of effective therapy, Bandler and Grinder have formulated the construct of representational systems or internal maps used by individuals to organize reality. Such maps are visual, auditory or kinesthetic, and are reflected in natural language. Do you see what I mean? Empathy, then, is operationally defined as the counselor's matching language with the representational system used by the client. It was hypothesized that counselors who use representational system matching would: (1) be perceived by subjects as more empathetic than counselors who do not (accepted, $p<.0045$); (2) be perceived by judges as more empathetic than counselors who do not (accepted, $p<.0165$); (3) elicit a greater willingness to self-disclose than counselors who do not (rejected); and, (4) be preferred by clients over counselors who do not use representational matching (accepted, $p<.05$). Subjects (N=20) were undergraduates at The College of William and Mary who met with each of two counselors, in counterbalanced order, for an analogue of a beginning counseling interview. One counselor used representational system matching; the other counselor took a more generic, human relations approach to empathy. After each interview subjects completed Barrett-Lennard's Relationship Inventory (RI) and Jourard's Willingness-to-Disclose Questionnaire (WDQ). Following their second interview subjects indicated their preferred counselor. Covariates were: (1) Carkhuff's Empathetic Understanding Scale (EU) which also served as a dependent measure; (2) the Counseling Readiness Scale (CRS) of Gough and Heilbrun's Adjective Check List; and, (3) Rotter's I-E scale. The Latin square design produced data analyzed by: repeated measures analysis of covariance (hypotheses 1-3); stepwise regression (hypotheses 1 & 2), and Chi Square (hypothesis 4). Results indicate that both subjects and judges perceived the representational system matching counselor as more empathetic than the generic empathy counselor. While EU accounted for 11.76% of the variance on RI-empathy scale scores, representational system matching accounted for 11.94% of the variance beyond that accounted for by EU. Clients preferred the representational system matching counselor by a ratio of 3 to 1. It was concluded that representational system matching is an important dimension of empathy and the recommendation was made that beginning courses in counseling techniques and human relations training include a section on identifying and responding to clients' representational systems. Recommendations were made for further study.	

		Schmedlen, G. W. (1981). *The impact of sensory modality matching on the establishment of rapport in psychotherapy* (Doctoral Dissertation, Kent State University, 1981). Dissertation Abstracts International, 42(5), 2080-B	Abstract: Researchers and psychotherapists have long been interested in specifying as completely as possible the ongoing process variables occurring between therapist and client which lead consistently to effective therapeutic relationships and positive psychotherapy outcomes. Although a number of these variables have been intensely studied, few definitive findings exist. The purpose of the present study was to further the specification of the components of the successful relationship through investigation of a heretofore little researched area that has been the subject of a great deal of theorizing. Grinder and Bandler (1976) have argued that individuals, while taking in information from all senses, show a preference for representing their experience internally in a particular, favored, modality. This modality, by virtue of its greater usage, has available in it greater and finer distinctions in the world of experience. It constitutes, therefore, a more cognitively complex map of the world than the corresponding map in another modality with fewer distinctions. When describing their experience to themselves or others, individuals choose predicates which emphasize content from this more highly differentially favored system. Grinder and Bandler suggest that communicating to a client in predicates which imply the client's most favored modality serves, through greater clarity and ease of understanding, as a basis for the client's experience of rapport with the therapist. By the same token, communication across sensory channels may result in a loss of precision and be a component of misunderstanding or confusion between therapist and client. To test this hypothesis of a higher level of experienced rapport for clients who have been systematically matched, versus mismatched, in terms of the sensory modality implied by their predicate choice, 24 subjects were randomly assigned to 1 of 2 possible treatment session sequences. In one group, the clients were given 2 1-2 hour analogue therapy sessions where the therapist systematically matched their predicates in the first session and mismatched them during the second. The other group received the opposite order; that is, the therapist mismatched during the first session and matched during the second. During the match session, the counselor made a concerted effort to match the predicates spoken by the clients in terms of the sensory modality implied by their predicate choice. In the mismatch condition, the counselor mismatched the predicates spoken in terms of the sensory modality implied. To ensure that the match or mismatch procedure has been accurately administered, trained judges listened to audiotapes of the sessions and discarded those failing to meet the criterion. From the final pool, 8 subjects were removed leaving a total n of 16. At the end of each session, clients filled out the Session Evaluation Questionnaire (Stiles, 1980) and the Barrett-Lennard Relationship Inventory (1962) Empathetic Understanding Scale and Level of Regard Scale. Comparison of the means of the total match and mismatch samples through use of the correlated samples t-test revealed significant differences ($t=2.28$, $df=14$, $p(.05)$ between groups on the Empathetic Understanding Scale of the Barrett-Lennard, but not on the remaining measures. These findings were interpreted to support the Grinder-Bandler hypothesis that systematic matching of a client's predicates in terms of sensory modality implied, facilitated the client's perception of the empathetic component of rapport in the therapist above the case where the therapist mismatches. The procedure, however, had no discernable impact on the	

			client's perception of level of regard or the Stiles (1980) measures of Depth/Value, Smoothness/Ease, or perception of therapist level of regard is determined by other factors than those involved in the matching procedure. Too, it was suggested that the Stiles measures were more dependent on session content than interactional factors. Interesting anecdotes drawn from the counselors' experience during the study were discussed to highlight some of the subtleties of the matching procedures not readily apparent. A number of directions for further study in the area were offered.	
		Wood, J. A. (2006). "NLP Revisited: Nonverbal Communications and Signals of Trustworthiness." Journal of Personal Selling & Sales Management 26(2): 197-204.	A core principle of neurolinguistic programming (NLP) is that rapport and trust develop through synchronization of modes of communication between the sender and receiver. Nonverbal signals are a particularly important mode of communications in the NLP perspective. This study extends the NLP framework by incorporating findings from neuroscience into research about nonverbal signals and sensory representational systems. Three independent but related studies are used to identify nonverbal cues associated with the representational systems, to test if descriptions of these nonverbal signals influence trustworthiness assessments, and, finally, to test if these nonverbal signals trigger buyer's positive assessments of salesperson trust-building characteristics as well as trustworthiness	

	Predicate matching	Asbell, H. C. (1983). *Effects of reflection, probe, and predicate matching on perceived counselor characteristics (psychotherapy, interpersonal attraction, Neurolinguistic Programming (NLP))* (Doctoral Dissertation, University of Missouri at Kansas City, 1983). Dissertation Abstracts International, 44(11), 3515. Retrieved from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action=res_entries.	Abstract: The present study examined effects of reflection, probes, predicate matching, and casual conversation on perception of counselor warmth, threateningness, helpfulness, and quality of counseling relationship. Each of 128 subjects heard one of eight recordings of seven-minute counseling session segments. Subjects then completed a counselor evaluation inventory consisting of 35 statements, each to be rated on a seven-point scale. Hypotheses tested were as follows: (a) Counseling techniques would affect counselor-warmth ratings; (b) counseling technique would affect counselor-threat ratings; (c) counseling technique would affect counselor-helpfulness ratings; (d) counseling technique would affect ratings on two versions of the Counselor Relationship Inventory; (e) four items in the Counselor Relationship Inventory would be answered differentially depending on counseling technique; and, (f) counseling technique would have a differential effect on the total score on the original Counselor Relationship Inventory II, indicating instrument bias. Effects of counseling technique on the dependent variable scales were tested using seven one-way analyses of variance with Scheffe multiple ranges tests. Counseling technique was found to differentially affect perception of warmth, threat, helpfulness, and both relationship scales. Predicate-matching received higher warmth ratings than reflection or non-counseling, and was rated less threatening than reflections and probes. Predicate-matching was also rated most helpful of the four techniques. Non-counseling conversation was rated least helpful. Predicate-matching also received higher ratings on the relationship scales than reflections or probes. Comparison of scores on a four-item subscale of the Counselor Relationship Inventory with scores on four items designed to eliminate pro-reflection bias indicated that the original items were answered more favorably for reflective counselors than for predicate- matchers. However, total score on the Counselor Relationship Inventory was not significantly affected. It was concluded that item-bias was not of sufficient magnitude to effect instrument-bias. Correlation coefficients indicated that the short scales for warmth, threat, and helpfulness were internally consistent. However, two items in the original Counselor Relationship Inventory were found to be non- significantly correlated with total inventory score.	

		Brockman, W. P. (1980). *Empathy revisited: the effects of representational system matching on certain counseling process and outcome variables*. (Doctoral Dissertation, College of William and Mary, 1980). Dissertation Abstracts International, 41(8), 3421. Retrieved from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action=res_entries	Abstract: Therapist-offered empathy has been shown to be an important ingredient in the counseling relationship. Many operational definitions of empathy and tools for measurement of this elusive quality exist. Most empathy measures have been criticized on methodological grounds and their construct validity is suspect. Yet there is little argument with the trend which emerges from the data; the overall relationship between empathy, or those dimensions tapped by empathy measures and effective therapy appears positive. The nature of empathy, however, remains enigmatic and it is evident that all the variables which account for the empathetic process have not been explicated. This study defined and investigated the validity and effect on counseling of a new dimension of empathy. From their linguistic analysis of effective therapy, Bandler and Grinder have formulated the construct of representational systems or internal maps used by individuals to organize reality. Such maps are visual, auditory or kinesthetic, and are reflected in natural language. Do you see what I mean? Empathy, then, is operationally defined as the counselor's matching language with the representational system used by the client. It was hypothesized that counselors who use representational system matching would: (1) be perceived by subjects as more empathetic than counselors who do not (accepted, $p<.0045$); (2) be perceived by judges as more empathetic than counselors who do not (accepted, $p<.0165$); (3) elicit a greater willingness to self-disclose than counselors who do not (rejected); and, (4) be preferred by clients over counselors who do not use representational matching (accepted, $p<.05$). Subjects (N=20) were undergraduates at The College of William and Mary who met with each of two counselors, in counterbalanced order, for an analogue of a beginning counseling interview. One counselor used representational system matching; the other counselor took a more generic, human relations approach to empathy. After each interview subjects completed Barrett-Lennard's Relationship Inventory (RI) and Jourard's Willingness-to-Disclose Questionnaire (WDQ). Following their second interview subjects indicated their preferred counselor. Covariates were: (1) Carkhuff's Empathetic Understanding Scale (EU) which also served as a dependent measure; (2) the Counseling Readiness Scale (CRS) of Gough and Heilbrun's Adjective Check List; and, (3) Rotter's I-E scale. The Latin square design produced data analyzed by: repeated measures analysis of covariance (hypotheses 1-3); stepwise regression (hypotheses 1 & 2), and Chi Square (hypothesis 4). Results indicate that both subjects and judges perceived the representational system matching counselor as more empathetic than the generic empathy counselor. While EU accounted for 11.76% of the variance on RI-empathy scale scores, representational system matching accounted for 11.94% of the variance beyond that accounted for by EU. Clients preferred the representational system matching counselor by a ratio of 3 to 1. It was concluded that representational system matching is an important dimension of empathy and the recommendation was made that beginning courses in counseling techniques and human relations training include a section on identifying and responding to clients' representational systems. Recommendations were made for further study.	

		Day, R. C. G. (1985). *Students' perceptions of Neurolinguistic Programming strategies (counseling, communication, clients, therapy)* (Doctoral Dissertation, Florida State University, 1985*). Dissertation Abstracts International,* 46(4), 1333. Retrieved from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action=res_entries.	Abstract: Little empirical research has been carried out on the Neurolinguistic Programming (NLP) theoretical model to date. No research investigated strategies: conglomerations of representational systems emitted by individuals. To facilitate therapy, the clients must perceive the therapist as credible (that is, expert, attractive, and trustworthy) and having utility. According to NLP theory, the client can best perceive the therapist as credible and having utility when the therapist uses the NLP model to match the client's strategies. Four hypotheses were tested in the post-group only control group design. The treatment factor consisted of two levels, representing the matched strategies and the non-matched strategies techniques. The non-matched strategies technique served as the "control group". Subjects were randomly assigned to one of the two class groups. Though all students in the two groups were invited to participate as subjects and to control for the Hawthorne effect, the sample used consisted of 60 white female students who observed, along with the rest of the classes, one 15 minute treatment film randomly assigned to them. Thirty subjects were in each of the two groups. After observing the film, the subjects filled out the Counselor Effectiveness Rating Scale (CERS; Atkinson & Carskaddon, 1975). A multivariate Analysis of Variance (MANOVA) and t-tests were used to assess the data. The MANOVA was significant at the $p<.10$ level and each of the four t- tests were significant at the $p<.025$ level. Each of the four hypotheses were supported.	

		Ehrmantraut, J. E., Jr. (1983) *A comparison of the therapeutic relationships of counseling students trained in Neurolinguistic Programming vs. students trained on the Carkhuff Model.* Doctoral Dissertation, University of Northern Colorado, 1983). Dissertation Abstracts International, 44(10), 3191-B. Retrieved from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action=res_entries.	Abstract: This study compared the effects of eight hours of training in NLP with eight hours of training on the Carkhuff model on the therapeutic relationships of counselors-in-training enrolled in their initial counseling practicum. Research was conducted at a medium size university in the Rocky Mountain region. Research subjects consisted of 46 counselors-in- training. Ratings were made on the Barrett-Lennard Relationship Inventory on each counselor's work with each client. Raters were the counselors, clients, professors who supervised each session and doctoral students who assisted with supervision. Professors and doctoral students also rated each counselor on the Counselor Evaluation Rating Scale. It was hypothesized counselors trained on the Carkhuff model would be rated higher on all the dependent measures by all the raters. Data were analyzed in four separate MANOVAs. None of the null hypotheses were rejected. That being the case, univariate Fs were not computed. Since NLP trained counselors received scores that did not differ at significant levels from those received by Carkhuff model trained counselors, it was concluded that the NLP approach with its emphasis on nonverbal and process techniques to establish a therapeutic relationship worked as well as the established Carkhuff model. Two conclusions were drawn. First, since NLP techniques produced results that approximated those of the Carkhuff model, some NLP techniques can usefully be integrated into the training of counselors. Second, since NLP trained therapists were not rated higher at significant levels than Carkhuff trained counselors, some of the claims of NLP proponents need to be further evaluated. Further research is necessary to replicate this study with a no-treatment control group, to use pre-and post-measures to determine the possible gains in counselor effectiveness as a result of NLP training, and to examine the effects of ongoing supervision in each of the training modalities on the skill levels of counselors-in-training. It was also suggested that in view of the differences in ratings given by supervisor interns and professors on the dependent measures that research be done to examine the intercorrelations of the ratings and determine if different criteria were being used by professors and supervisor interns.	

		Falzett, William C., Jr. (1979) Matched versus unmatched primary representational systems relationship to perceived trustworthiness in a counseling analogue. Dissertation Abstracts International 41(1), 105-A Marquette University, 100 pp. Order = 8105176; Text can also be found in: Journal of Counseling Psychology, 1981, 28(4),	Abstract: The purpose of this study was to examine experimentally the Bandler and Grinder (1976) statement that trust will be enhanced in a relationship if the counselor uses predicates that match the primary representational system (PRS) of the client. The PRS concept is based on the assumption that people organize their experiences of the world in internal maps which are in turn organized via visual, auditory, or kinesthetic sensory modes. A further assumption is that people tend to favor one sensory mode over the others and that that system will become the PRS. The concept also assumes that people become clients when their maps are limited or impoverished in some fashion. Counseling is then viewed as a process of understanding the PRS and opening the other sensory modes as organizers of experience in order to facilitate flexibility and growth. Bandler and Grinder (1976) stated that a counselor can enhance the process of counseling and build trust by using predicates that match the client's PRS. The subjects were 24 female undergraduate students enrolled in education courses at Marquette University. The PRS was identified by noting predominant eye movement direction in response to a series of questions in an interview. The experimental design was a treatment by levels of analysis of variance with the levels dimension designated by the interviewer's use of visual (Level 1), auditory (Level 2), or kinesthetic (Level 3) predicates and the treatments dimension designated as subject's eye movements either matching or not matching the interviewer's predicates. After the interview, subjects completed the Counselor Rating Form -- CRF (Barak & LaCrosse, 1975) which is composed of a list of 12 bipolar adjectives indicative of trustworthiness. The results showed that the treatments dimension (Matched vs. Unmatched PRS) was significant. This result supported the contention that matching of the client's PRS with counselor predicates can enhance the atmosphere of trust in the relationship. Recommendations for further research were also discussed.	

		Frieden, Fredrick P. (2006) *Speaking the client's language: the effects of Neurolinguistic Programming (predicate matching) on verbal and nonverbal behaviors in psychotherapy. A single case design* (Doctoral Dissertation, Virginia Commonwealth University, 1981). Dissertation Abstracts International, 42(3), 1171-B. Retrieved November 24, 2006 from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action=res_entries.	Abstract: Bandler and Grinder's (1976) technique of Neurolinguistic Programming (predicate matching) was tested as to its effects on trust, communicative behaviors and outcome. Two female undergraduate students seeking counseling for personal problems were the participants in the present study. The participants, after an initial baseline session, received alternating sessions where the therapist/experimenter systematically matched or mismatched the sensory predicates used by the clients/participants. The clients/participants rated "relationship" after each session as measured by the Barrett-Lennard Relationship Inventory. They also rated pre-post therapy symptoms on the Target Complaints Scale. Trained judges viewed and coded segments of videotapes from eight therapy sessions with each client/participant. Client verbal behavior measures included length of utterance, speech errors, client requests for rephrasing and level of self-exploration. Client nonverbal behavior measures included head-to-head distances, angle of lean, facial observation (eye contact), and facial pleasantness. Therapist verbal behavior measures were monitored for accuracy of matching, mismatching, or non-sensory language and type of therapist intervention. A global measure of therapist/experimenter nonverbal warmth was obtained to monitor therapist warmth as a moderator variable. The results obtained suggested partial support for Bandler and Grinder's (1976) theories. When some of the data was averaged it appeared that predicate matching produced increased eye contact and paradoxically increased head-to-head distance. These findings were discussed in terms of anxiety or intimacy regulation. "Relationship" as measured by the BLRI was not affected by the independent variable of matching/mismatching. Outcome as measured by the target complaints indicated that each client/participant experienced improvements in all three identified symptom areas. This study concluded with a discussion of client differences, methodological problems, implications for theory, training and future research.	

		Green, M. A. (1979). *Trust as effected by representational system predicates* (Doctoral Dissertation, Ball State University, 1979). Dissertation Abstracts International, 41(8) 3159-B. Retrieved from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action=res_entries.	Abstract: The purpose of this study was to test experimentally a method based on Grinder and Bandler's theory of establishing trust through matching experimenter language to the various representational systems of subjects. Briefly, the representational system technique of establishing trust is that individuals organize their experiences into internal representational systems (which may be auditory, kinesthetic, or visual); that individuals specialize and one of the systems becomes the primary representational system (PRS); that by listening to the predicates used in an individual's natural language one may determine the representational system necessary to speak another individual's language; and that trust is built by one individual matching predicate representational systems and thereby speaking the other's language. Trust was operationally defined as self-disclosure, which was measured by Jourard's Questionnaire for measuring trust between subjects and experimenters. If the proposition regarding trust as postulated by Grinder and Bandler (1976) had been correct, then matching facilitator-subject predicates would have resulted in a significant increase in self-disclosure or trust. The specific hypothesis that was investigated was: Trust, as measured by Jourard's Questionnaire for measuring trust between subjects and experimenter, and matched facilitator-subject predicates are positively related. The subjects used to test this hypothesis were 63 undergraduate students drawn from classes at Ball State University. Each subject was randomly assigned to an experimental or control group. The subjects in each group were interviewed by a facilitator. The purpose of the structured interview was to build trust. Experimental facilitators received training in matching predicates of whatever representational systems the subjects used in their natural language. Predicates are words that indicate in which sensory modality an experience has been internally recorded in the brain. Thus, experimental facilitators were trained to listen for predicates, identify which representational system was indicated by the various predicates, and match their predicates to subject predicates. The training consisted of practice in identifying predicates visually and then auditorily, and orally matching various representational systems. Experimental facilitators demonstrated the matching of predicates, with interrater reliability found to be .94. Control facilitators, screened for their absence of knowledge of the Bandler and Grinder model, used the same interview questionnaire and whatever other method they chose in order to establish trust. Following the interview both groups completed the Questionnaire for measuring trust between subjects and experimenter. The data were subjected to a five-way analysis of variance. The major hypothesis failed to be rejected at the .05 level of confidence. Experimental subjects did not disclose differentially from control subjects. Several recommendations for further study were made.	

		Hammer, A. L. (1980). *Language as a therapeutic tool: the effects on the relationship of listeners responding to speakers by using perceptual predicates* (Doctoral Dissertation, Michigan State University, 1980). Dissertation Abstracts International, 41 (3), 991-A 149. Retrieved from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action=res_entries.	Abstract: The relationship between counselor and client is an important element of successful counseling. The tasks of understanding the client and communicating that understanding are vital components of the therapeutic relationship. It was suggested that the focus of understanding be the process by which clients model their world. In explicating the process of modeling, the concept of representational system was introduced. Due to the limits on the capacity of the nervous system to process information, sensory data are grouped into patterns or representations, such as images. There is a representational system associated with each of the 4 sensory modalities; the focus of this study, however, was limited to the visual, auditory, and kinesthetic systems. For the purpose of aiding in perception and memory functions, labels denoting the modality of the representation are stored along with the information itself. These labels manifest in speech as perceptual predicates, for which the prototypes are `see`, `hear` and `feel` and/or `touch` for the visual, auditory and kinesthetic systems, respectively. In communicating their experience people access at least one representational systems, and the perceptual predicates in their speech signify which representational system is in consciousness at the time of speaking. For ethical and practical reasons an interview situation with trained counselors as interviewers was used for the experimental setting instead of actual counseling sessions. Based upon the series of assumptions above, it was hypothesized that an interviewee would perceive a high degree of empathetic understanding in an interviewer when the interviewer responded with perceptual predicates implying the same representational system being employed by the speaker. The purpose of this study was to examine the differential effects on perceived empathy of interviewers responding to speakers with either similar of dissimilar perceptual predicates. A posttest only control group design with two factors was employed. The Treatment factor consisted of two levels representing the similar predicates and dissimilar predicates response conditions. An Interviewer factor was included as a control variable with three levels corresponding to the three interviewers. The sample consisted of 88 female students who volunteered to be interviewed about dormitory or sorority life. Students were randomly assigned to the six cells of the design. The dependent measure employed was a revised version of the perceived empathy scale from the Barret-Lennard Relationship Inventory. A 2x3 fixed effects analysis of variance model was used to test the three hypotheses: One each for the Treatment and Interviewer factors and one for the two- way interaction. All hypotheses were tested at the .05 level of significance. The hypothesis testing revealed a significant difference between the two treatment response conditions. The difference was in the expected direction with those students in the similar predicates condition rating their interviewers higher on perceived empathy than those students in the dissimilar predicates condition. No significant difference was found among interviewers nor was the interaction significant. The two treatment response conditions accounted for 8.41% of the variance in the dependent variable. The Treatment and Interviewer factors together explained 9.6% of the total variance in perceived empathy. Descriptive statistics revealed that the students used about twice as many auditory and kinesthetic predicates as visual predicates. The type of perceptual predicates used by an interviewer in responding to a student had a	

			significant impact on the relationship. Language can be an effective tool when used to understand a speakers representational system and then communicate that understanding through perceptual predicates.	
		Hammer, A. L. (1983). Matching perceptual predicates: Effect on perceived empathy in a counseling analogue. Journal of Counseling Psychology, 30(2), 172-179. doi: 10.1037/0022-0167.30.2.172	Investigated J. Grinder and R. Bandler's (1976) assertion that responding with perceptual predicates similar to those used by a speaker results in increased perceived empathy. In an analog counseling interview with 63 female undergraduates, counselors tracked the use of visual, auditory, and kinesthetic perceptual predicates and then responded with either similar or dissimilar predicates of their own. Ss completed a revised version of the Empathy scale of the Barrett-Lennard Relationship Inventory and an interviewer experience scale constructed by the author. A significant difference was found between treatments in the expected direction, with Ss in the matched predicates condition rating their counselors higher on perceived empathy. The procedure of continually tracking and matching perceptual predicates is contrasted with the method of identifying and matching a primary representational system used by other researchers, and questions are raised about the assumptions regarding representational systems in neurolinguistic programming. It is concluded that the tracking procedure was preferable for empirical and theoretical reasons. (31 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	

		Hillin, H. H., Jr. (1982). *Effects of a rapport method & chemical dependency workshop for adults employed in Kansas service agencies*. Dissertation Abstracts International 44(12), 3574-A Kansas State University, 135 pp. Order = DA840761x, 1982.	Abstract: Effects of a sensory based rapport method and chemical dependency workshop on knowledge and sentiments of adults employed in Kansas social service agencies were studied. The rapport method experimental group experimental group would not have significantly higher mean scores than controls, on measures of chemical dependency course knowledge, sentiment toward the experimental trainer, or sentiments about the workshop's usefulness; that they would not rate the experimental method trainer significantly higher than the seven control trainers; that all subjects would not score significantly higher on the knowledge posttest, than on the pretest, and that age, sex, job category, and education would have no main interactive effects on the three criterion measures (knowledge, usefulness of workshop, or sentiment toward trainer). Data was pooled from four deliveries of the course in Topeka and Kansas City during 1982. An accessible sample of 79 subjects (59 women and 20 men) employed in Kansas Service Agencies of Topeka, and Kansas City, participated in 50 hours of course instruction over a five week period. The participants were randomly assigned to either experimental or control conditions. Forty experimentals and 39 controls completed the workshop, from an original sample of 42 experimentals and 45 controls, resulting in an attrition rate of controls that was three times higher than that of the rapport group experimentals. Analysis of variance revealed significantly higher mean scores for the rapport group over controls on measures of workshop usefulness and sentiment toward the experimental trainer, and no significant difference on the course knowledge post test. Significant main effects of education and age were noted on the course knowledge post test. Although no demographic variables were interactive with the experimental rapport method on the course knowledge post test or usefulness of the workshop measure, three variables (education, sex, and job category) were interactive with the rapport method on sentiment toward the experimental trainer. A t-test for related samples indicated a significantly higher ($p<.0005$) course knowledge post test mean over the pre test mean for all subjects. An effect size (.0287) of superiority of the rapport method over the control (traditional) instruction method was noted. Subjects rated the experimental rapport method trainer significantly higher, on an analysis of variance, than all seven control trainers ($p<.001$).	

		Palubeckas, A. J. (1981). *Rapport in the therapeutic relationship and its relationship to pacing* (Doctoral Dissertation, Boston University School of Education, 1981). Dissertation Abstracts International, 42(6), 2543-B 2544-B. Retrieved from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action=res_entries.	Abstract: This research study examined the relationship of the pacing behaviors of direct mirroring, cross-over mirroring, auditory tempo mirroring, auditory tonal mirroring, predicate-predicate mirroring, and predicate-eye mirroring to the development of initial therapeutic rapport. Pacing was defined as the matching or "mirroring" by a therapist of a client's nonverbal, paralingual, and verbal behaviors, and was postulated to be a highly effective behavior in the initiation and maintenance of rapport in a therapeutic relationship. This study limited itself to an exploration of the relationship of the absolute frequency of these six pacing behaviors to the establishment of initial rapport. To examine the relationship of pacing, as measured by scores for direct mirroring, cross-over mirroring, auditory tempo mirroring, auditory tonal mirroring, predicate-predicate mirroring, and predicate-eye mirroring to subject perceived rapport in the initial therapeutic relationship, the research design of this study utilized a relatively unstructured interview which attempted to simulate an initial psychotherapeutic consultation. Twenty interviews of 20 undergraduate psychology students were conducted by 20 therapists of varying degrees of experience, after which the subjects completed the Anderson and Anderson Interview Rating Scale. The rating scale provided an operational definition of rapport for the study, and produced a score which measured the degree of subject-experienced rapport as an effect of therapist pacing behaviors. The videotapes of these 20 interviews were rated by trained raters to determine the absolute frequency of each of the six pacing behaviors for each therapist-client dyad. Analysis of the scores for the interviews, as measured by Pearson product moment correlation coefficients, showed statistically significant correlations for predicate- eye mirroring and perceived rapport, and for total pacing exhibited and perceived rapport. Correlations were not statistically significant for the relationships between perceived rapport and the degree of clinical experience, the degree of subject's awareness of pacing behaviors and perceived rapport, and the degree of clinical experience and the degree of pacing behaviors demonstrated. The findings of this study, then, support the following conclusions. Pacing as exhibited by non-verbal, paralinguistic, and verbal mirroring of a client's behaviors results in an initial sense of rapport experienced by a client which seems to foster an atmosphere conducive to the development of a deeper therapeutic relationship. An important element of pacing may be predicate-eye mirroring, but further investigation of the relationship between each of these pacing behaviors and between each of these behaviors and rapport is necessary. The type of clinical training and length of clinical training do not appear to be significant factors in determining the degree of pacing which occurs, nor do they seem to be significant elements in determining the degree of rapport which results in an initial therapeutic interview. This conclusion suggests, perhaps, that certain natural abilities to pace may outweigh the influence of training on the ability to effectively pace another individual in any communication. This data also suggests the importance to clinicians of attention, congruence in communication, and integration of new learnings into a "natural" psychotherapeutic style as goals of training.	

		Pantin, H. M. (1982). *The relationship between subjects' predominant sensory predicate use, their preferred representational system and self-reported attitudes towards similar versus different therapist-patient dyads* (Doctoral Dissertation University of Miami, 1982). Dissertation Abstracts International, 43(7), 2350-B. Retrieved from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action=res_entries.	Abstract: The present study addresses several issues raised by Neurolinguistic Programming's (NLP) conceptualizations of the function of individual differences in preferred sensory predicate usage. One hundred twenty-four subjects completed the necessary procedures for inclusion in the present study. A language sample was obtained for each subject. This language sample was transcribed and coded with regard to the number and type (auditory, visual, kinesthetic, olfactory, gustatory, and neither) of predicates employed. The first NLP proposition studied is that a subject's language behavior can be characterized by a predominant preference in sensory modality of predicates utilized. Based on a five minute language sample it was possible to identify a predominant sensory mode of predicates for all subjects. This was accomplished using a conservative decision rule which required a spread of at least 20% of total sensory predicates between the proportion of predicates in the dominant sensory modality and that in the next most frequently utilized modality. Individual differences in the type of predicate usage were compared with self-reports of habitual imaginal modalities and preferences. The subjects were asked to complete two such self-report instruments: the Adjective Questionnaire (constructed by the author for the purpose of this study); and the Verbalizer- Visualizer Questionnaire (Richardson, 1977). There was an extraordinarily powerful correspondence found between the subject's dominant mode of sensory predicate use and his self-reports of preferences for a visual versus auditory (verbal) imaginal style in activities of daily living. In addition, individual differences in type of predicate usage were compared with performance on standard memory tasks where mode of item presentation varied. Performance on these tasks was facilitated when mode of item presentation was congruent with subjects' preferred mode of language predicate usage. These findings support the second NLP hypothesis studied. Finally, subjects' reactions to a simulated therapy transcript, which was constructed so as to cross dominant predicate mode of therapist (auditory or visual) with dominant predicate mode of patient (auditory or visual), were obtained and assessed as a function of preferred predicate mode of the subject and the type of predicate usage employed by the therapist and the patient. The findings support the third NLP proposition studied, that individual differences in preferred representational system influences a person's responsiveness and evaluation of an interpersonal transaction in such a way that a person will evaluate more positively another individual whose predicate usage is similar than one whose predicate language is dissimilar to his own and in such a way that interactions between persons whose language preferences are congruent will be evaluated more positively than interactions between persons whose language preferences are incongruent.	

		Paxton, Louise K.: Representational systems and client perception of the counseling relationship. Dissertation Abstracts International 41(9), 3888-A Indiana University, 141 pp. Order = 8105941, 1980.	Abstract: Counseling is an interpersonal influence process. One factor in this process is counselor influence of client perception of the counseling relationship. Counselor verbal style within the interview is a means of influencing positive or negative client perception. A representational system is a verbal style reflecting patterns of sensory predicates spoken in conversation. Counselor use of representational systems is hypothesized to influence the direction of client perception of the counseling relationship. The purpose of this study was to examine (1) if clients whose primary representational system was matched by the counselor had a more positive perception of the counseling relationship than did the non- matched control clients; (2) if clients whose primary representational system was mismatched by the counselor had a less positive perception of the counseling relationship than did the non-matched control clients; and, (3) if clients whose primary representational system was matched by the counselor had a more positive perception of the counseling relationship than did mismatched clients. The design of the study was a factorial type with unequal cell sample sizes. The treatment factor had three levels: matching, mismatching, and non-matching. The counselor factor had four levels representing the four trained counselors. The subjects were 48 intake clients at Family and Children's Service of Midland who agreed to participate in an agency evaluation of services. The greatest percentage of subjects were women between 26 and 35 years of age, who had attended or graduated high school. The subjects were randomly assigned to a treatment group. After the subjects agreed to participate in the study, the experimenter obtained a taped sample of subject communication style. The sample was rated to determine the subject's most highly valued representational system. The subject was then randomly assigned to a treatment condition. The counselor was instructed to consistently choose predicates in the representational system --auditory, visual, kinesthetic, or non-specific --assigned. After the treatment interview, the subject completed the revised Relationship Questionnaire as the measure of client perception of the counseling relationship. The questionnaire was scored and samples of the treatment interview were judged for accuracy. The data collected from the matching, mismatching, and non- matching subjects indicated their perceptions of the counseling relationship after an initial interview were analyzed by a completely randomized two-factor analysis of variance. No counselor or interaction effects were found. However, a significant difference at $p<.01$ existed between treatment groups in terms of client perception of the counseling relationship. Scheffe tests indicated that both matching and mismatching groups are significantly different ($p<.01$) from the non-matching controls, but not different from each other. Null hypothesis one, stating that there will be no significant differences between clients receiving the matching treatment and clients receiving the non- matching control procedure on the variable of client perception of the counseling relationship, was rejected. Null hypothesis two, stating that there will be no significant difference between clients receiving the mismatching treatment and clients receiving the non-matching control procedure on the variable of client perception of the counseling relationship, was rejected. Null hypothesis three, stating that there will be no significant difference between clients receiving the matching treatment and clients receiving the mismatching treatment on the variable	

			of client perception of the counseling relationship, was not rejected. The results indicate that counselors who frequently use predicates reflecting a specific sensory representational system during the counseling interview will influence a more positive client perception of the counseling relationship than will counselors who infrequently use predicates reflecting several sensory representational systems.	
		Shobin, M. Z. (1980). *An investigation of the effects of verbal pacing on initial therapeutic rapport* (Doctoral Dissertation, Boston University School of Education, 1980). Dissertation Abstracts International, 41(5). Retrieved from http://www.nlp.de/cgi-bin/research/nlp-rdb.cgi?action=res_entries.	Abstract: This research study examined the effect of verbal pacing on the development of initial therapeutic rapport. Verbal pacing was defined as the matching or "mirroring" by a therapist of a client's sentence predicates and syntax, voice tone and tempo, and was postulated to be a highly effective behavior in both establishing and maintaining rapport over the course of therapeutic treatment. This study limited itself to an examination of the effect of verbal pacing behaviors on initial therapeutic rapport. To test the relationship of verbal pacing to initial therapeutic rapport, the design of the study incorporated the use of a semi-structured interview which attempted to simulate an initial psychotherapy consultation, and in which experimental manipulation of interviewer verbal and vocal behavior was conducted. Three experimental manipulations, or conditions, were tested: reflection/interrogation (designed to provide a baseline or "control" rapport rating), verbal pacing, and modified verbal pacing, a condition in which the interviewer matched the subject's voice tone, tempo of speech and sentence syntax, but mismatched the subject's sentence predicate language. Each experimental condition designated a mode of interviewer behavior to be used during the entire interview unit. The interviewer, as well, was hidden from the subject's view by a screen, ensuring that only verbal and vocal elements would be tested. At the conclusion of each interview, subjects completed the Anderson and Anderson Interview Rating Scale. The rating scale provided an operational definition of rapport for the study, and produced a score which measured the degree of subject experienced rapport as an effect of the experimental interview condition. Groups of subject scores for the three interview conditions provided the data for the statistical analysis of the results. Analysis of the scores of the interviews, as measured by t tests, showed significantly higher rapport ratings for the verbal pacing category of interviews than for the reflection/interrogation interviews, and significantly lower rapport ratings for the modified pacing interviews than for either the verbal pacing or reflection/interrogation interviews. The findings of the study, then, support the following conclusions: (1) Verbal pacing effectively induces an initial sense of rapport and fosters an atmosphere conducive to the development of the deeper therapeutic relationship. (2) The key element in verbal pacing is the matching of sentence predicate language. Awareness of a client's sentence predicate language, as well as the effect of verbal pacing on the development of rapport, can be a valuable tool for developing effective communication in psychotherapy and counseling.	

		Thomason, D. D. (1984). *Neurolinguistic Programming: an aid to increase counselor expertness* (Doctoral Dissertation, Biola University, 1984). Dissertation Abstracts International, 44(9), 2909-B.	Abstract: This study examined the Bandler and Grinder hypothesis that a counselor will be more expert in a shorter period of time if he knows the primary representational system of his client. The primary representational system is a concept of Neurolinguistic Programming (NLP) which holds that experience is organized by sensory systems --visual, auditory, and kinesthetic. One system is typically favored, thus becoming primary, and can be discovered by analyzing eye movement and speech predicates. Counselor expertness was measured using 56 male and female college subjects who were in short-term therapy with first-year graduate students in clinical psychology and marriage, family and child counseling. Levels of perceived expertness were assessed by an adaptation of the Counselor Effectiveness Scale (Ivey, 1971). The results showed that expertness was significantly increased in counselors who were trained in Neurolinguistic Programming, and that deficits in five areas of expertness relative to non-NLP trained counselors were remediated.	
		Hischke, D. L. (1989). A definitional and structural investigation of matching perceptual predicates, mismatching perceptual predicates, and Milton-model matching. US, ProQuest Information & Learning. **49**	Abstract: The purpose of this study was to investigate the definition of matching perceptual predicates by comparing subjects' responses to three counselor responses: matching perceptual predicates, mismatching perceptual predicates, and Milton-model matching. Matching perceptual predicates was defined as the counselor using process which indicated the same sensory code used by the client. Mismatching perceptual predicates refers to the counselor responding to the client with words indicating a different sensory code than the client. Milton-model matching was defined as the counselor responding to the client's use of perceptual predicates with nonspecific predicates. Two presumptions of the Neurolinguistic Programming (NLP) model were supported by the results that the subjects responded to matching perceptual predicates, mismatching perceptual predicates, and MIlton-model matching as separate counselor responses within the two dimensional space. One presumption was that subjects can discriminate between counselor responses that indicate same versus different sensory codes. The other presumption was that subjects can discriminate between counselor responses that indicate nonspecific versus perceptual predicates.	
	Physical Mirroring	Maurer, R. E., & Tindall, J. H. (1983). *Effect of postural congruence on client's perception of counselor empathy.* Journal of Counseling Psychology, 30(2), pp. 158-163.	Investigated whether a counselor who was mirror imaging a congruent arm and leg position of a client would significantly increase the client's perception of the counselor's level of empathy over the level of the client's perception when the counselor did not mirror image congruent arm and leg position. 80 high school juniors met individually with a counselor for 15 min to discuss career plans. Three variables were controlled for: counselor's direct body orientation, position of counselor's head, and empathy level of the counselor's verbal responses. The dependent variable was the Empathy subscale of the Barrett-Lennard Relationship Inventory. ANOVA results showed that clients rated the counselor as having a significantly greater level of empathy in the congruent than in the noncongruent condition. (23 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	

		Neumann, M., Bensing, J., Mercer, S., Ernstmann, N., & Oliver, P. H. (2009). *Analyzing the "nature" and "specific effectiveness" of clinical empathy: A theoretical overview and contribution towards a theory-based research agenda.* Patient Education and Counseling, 74(3), 339-346.	Objective: To establish sound empirical evidence that clinical empathy (abbreviated as CE) is a core element in the clinician–patient relationship with profound therapeutic potential, a substantial theoretical-based understanding of CE in medical care and medical education is still required. The two aims of the present paper are, therefore, (1) to give a multidisciplinary overview of the "nature" and "specific effectiveness" of CE, and (2) to use this base as a means of deriving relevant questions for a theory-based research agenda. Method: We made an effort to identify current and past literature about conceptual and empirical work focusing on empathy and CE, which derives from a multiplicity of disciplines. We review the material in a structured fashion. Results: We describe the "nature" of empathy by briefly summarizing concepts and models from sociology, psychology, social psychology, education, (social-)epidemiology, and neurosciences. To explain the "specific effectiveness" of CE for patients, we develop the "Effect model of empathic communication in the clinical encounter", which demonstrates how an empathically communicating clinician can achieve improved patient outcomes. Both parts of theoretical findings are synthesized in a theory-based research agenda with the following key hypotheses: (1) CE is a determinant of quality in medical care, (2) clinicians biographical experiences influence their empathic behavior, and (3) CE is affected by situational factors. Conclusion: The main conclusions of our review are twofold. First of all, CE seems to be a fundamental determinant of quality in medical care, because it enables the clinician to fulfill key medical tasks more accurately, thereby achieving enhanced patient health outcomes. Second, the integration of biographical experiences and situational factors as determinants of CE in medical care and medical education appears to be crucial to develop and promote CE and ultimately ensuring high-quality patient care. Practice implications: Due to the complexity and multidimensionality of CE, evidence-based investigations of the derived hypotheses require both well-designed qualitative and quantitative studies as well as an interdisciplinary research approach. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
		Sanchez-Burks, J., Bartel, C. A., & Blount, S. (2009). *Performance in intercultural interactions at work: Cross-cultural differences in response to behavioral mirroring*. Journal of Applied Psychology, 94(1), 216-223.	This article examines how performance in intercultural workplace interactions can be compromised even in the absence of overt prejudice. The authors show that individuals respond differently to nonverbal behavioral mirroring cues exhibited in workplace interactions, depending on their cultural group membership. In a field study with experienced managers, U.S. Anglos and U.S. Latinos interacted with a confederate who, unbeknownst to the participant, engaged (or not) in behavioral mirroring. Results show that the level of the confederate's mirroring differentially affected Latinos' state anxiety, but not Anglos' state anxiety, as well as actual performance in the interaction. Two additional laboratory experiments provide further evidence of the interactive relationship of behavioral mirroring and cultural group membership on evaluations of workplace interactions. Implications for intercultural interactions and research are discussed. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Sandhu, Daya S.(1984). The effects of mirroring vs. non-mirroring of clients' nonverbal behavior on empathy, trustworthiness, and positive interaction in cross-cultural counseling dyads. Dissertation Abstracts International 45(4), p. 1042.	Abstract: This study examined the effects of mirroring vs. non-mirroring of selected nonverbal behaviors on empathy, trustworthiness and positive interaction. The study was based upon the assertations of NLP proponents (i.e. Bandler and Grinder, Dilts, Lankton) that rapport and trust can be established and enhanced through mirroring of clients nonverbal behaviors. This method of generating facilitative conditions was purported to have applications in all interactions, but especially in cross-cultural counseling situations, where ethnic and cultural differences hinder rapport building. 60 male Choctaw adolescents were randomly selected from a pool of 109 volunteers. A Two Groups Randomized Posttest only as research design for this study was used. In the experimental group, the movements of extremities and posture were mirrored directly, while nose rubbing, hair patting frowns, laughs, tongue and eye movements were mirrored indirectly. In the control condition, no deliberate effort was made to mirror nonverbal behaviors; on the contrary, if the counselors noticed the clients mirroring them, they immediatly assumed non-mirrored positions. Two white female counselors with similar educational experiences mirrored and non-mirrored an equal number of subjects for 10 minutes. Each dyad was standardized through a counseling protocol and was videotaped. Data were collected on three dependent variables. The revised empathy scale of Barrett-Lennard Relationship Inventory and trustworthiness dimension of the Counselor Rating Form were completed by the subjects immediately after the counseling session. Two trained independent judges with interrater observer agreement of .88 rated each vide taped dyad on Leathers Nonverbal Feedback Rating Instrument for positive interaction. One-way analysis of variance was used as a statistical procedure to test three null hypotheses. The results indicated significant mirroring effects on the empathy scale of the BLRI. No significant differences were found on the CRF or the LNFRI.	
		Sandhu, D. S.; Reeves, T. G; Portes, P. R. (1993). Cross-cultural counseling and neurolinguistic mirroring with native American adolescents. Journal of Multicultural Counseling and Development, Vol 21(2) 106-118. Retrieved from PsychArticles.	Abstract: Examined the effects of neurolinguistic mirroring vs nonmirroring of selected nonverbal behaviors on empathy, trustworthiness, and positive interaction in a cross-cultural setting among 60 Choctaw male adolescents (aged 14-19 yrs) and 2 White female counselors. Ss were videotaped during counseling sessions and were then administered the Barrett-Lennard Relationship Inventory (BLRI) and the Counselor Rating Form. There were significant mirroring effects on the empathy scale of the BLRI. (PsycLIT Database Copyright 1993 American Psychological Assn, all rights reserved)	

		Chartrand, T. L. and J. A. Bargh (1999). "The chameleon effect: The perception-behavior link and social interaction." Journal of Personality and Social Psychology **76**: 893-910.	The chameleon effect refers to nonconscious mimicry of the postures, mannerisms, facial expressions, and other behaviors of one's interaction partners, such that one's behavior passively and unintentionally changes to match that of others in one's current social environment. The authors suggest that the mechanism involved is the perception–behavior link, the recently documented finding (e.g., J. A. Bargh, M. Chen, & L Burrows, 1996) that the mere perception of another's behavior automatically increases the likelihood of engaging in that behavior oneself. Experiment 1 showed that the motor behavior of participants unintentionally matched that of strangers with whom they worked on a task. Experiment 2 had confederates mimic the posture and movements of participants and showed that mimicry facilitates the smoothness of interactions and increases liking between interaction partners. Experiment 3 showed that dispositionally empathic individuals exhibit the chameleon effect to a greater extent than do other people. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
		Lakin, J. L., V. E. Jefferis, et al. (2003). "The chameleon effect as social glue: Evidence for the evolutionary significance of nonconscious mimicry." Journal of Nonverbal Behavior **27**(3): 145-162.	The "chameleon effect" refers to the tendency to adopt the postures, gestures, and mannerisms of interaction partners (Chartrand & Bargh, 1999). This type of mimicry occurs outside of conscious awareness, and without any intent to mimic or imitate. Empirical evidence suggests a bi-directional relationship between nonconscious mimicry on the one hand, and liking, rapport, and affiliation on the other. That is, nonconscious mimicry creates affiliation, and affiliation can be expressed through nonconscious mimicry. We argue that mimicry played an important role in human evolution. Initially, mimicry may have had survival value by helping humans communicate. We propose that the purpose of mimicry has now evolved to serve a social function. Nonconscious behavioral mimicry increases affiliation, which serves to foster relationships with others. We review current research in light of this proposed framework and suggest future areas of research. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Farmer, Stephen S.: Supervisory conferences in communicative disorders: verbal and nonverbal interpersonal communication pacing. Dissertation Abstracts International 44(9), 2715-B 2716-B University of Colorado (Boulder), 195 pp. Order = DA8400891, 1983.	Abstract: The present research investigated a supervisor's use of verbal and nonverbal Interpersonal Communication Pacing (ICP) during the Entry Phase (first 5 minutes) of Communication Disorders (CD) conferences. Pacing was the supervisor's matching a majority of the verbal and nonverbal dimensions of the supervisee's communication. Verbal pacing included Reactive Language and Primary Representational System (PRS) matching; nonverbal pacing was done through nonverbal mirroring. Verbal non-pacing included instructive language and PRS non-matching; nonverbal non-pacing included the limited use of nonverbal mirroring. Utilizing a posttest-only control group design, 78 undergraduate and graduate CD students were randomly assigned to the experimental group or control group of one of the four experimental conditions. The experimental group subjects had received training in identifying ICP behaviors. Each of the four experimental conditions involved the subjects viewing a videotape of the entry phase of a CD supervisory conference, judging the presence or absence of the supervisor's ICP, and rating the type and quality of her communication strategies. The Condition I videotape depicted a conference wherein the supervisor paced a majority of the verbal dimensions of the clinician's communication but not the nonverbal; in Condition II, nonverbal but not verbal; in Condition III, both verbal and nonverbal; in Condition IV, neither verbal nor nonverbal. Results of statistical analyses (p=.05) suggested that subjects trained in critical observation of ICP identified the salient pacing feature of the four experimental videotapes more accurately than untrained subjects and hierarchically differentiated the four pacing styles which might have resulted from an unintentional training bias. Trained subjects judged the comprehensive pacing style (verbal plus nonverbal) to be the most effective, followed by nonverbal pacing only, verbal pacing only, and no pacing. Overall, subjects did not judge qualitative differences in semantic differential continua among the four conditions. Academic status, amount of clinical practicum experience and proficiency in Reactive/Interactive therapy techniques had no significant effect on identification of salient verbal and nonverbal ICP features. The investigation supported the observation that ICP is associated with effective CD conference communication but that training in identification and use of ICP techniques is a necessity.	Physical and verbal

		Vaughan, K. B. and J. T. Lanzetta (1980). "Vicarious instigation and conditioning of facial expressive and autonomic responses to a model's expressive display of pain." Journal of Personality and Social Psychology 38(6): 909-923.	In 2 experiments, 35 undergraduates participated in the application of a long-interstimulus-interval differential conditioning paradigm with a confederate's videotaped expression of pain serving as the UCS. Facial EMG signals and skin conductance were recorded. Clear evidence of vicarious autonomic instigation and some evidence of facial excitation were obtained in Exp I, but vicarious autonomic and facial muscle conditioning were obtained only for the 50% of the Ss who were aware of the contingency between the CS+ and the model's pain. In Exp II, steps were taken to increase awareness of the contingency, and significant autonomic and facial muscle instigation and conditioning occurred. Both the vicariously instigated and conditioned autonomic responses involved skin conductance increases, but facial responses to the model's pain were different from conditioned facial responses. Autonomic and facial muscle data suggest that Ss were behaving as though they were anticipating shock when the CS+ was displayed to the model, and as though they were in pain when the model was being shocked. Vicariously aroused emotional reactions thus appear to be similar to those that would be elicited if the S were directly anticipating and receiving shock. (28 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Niedenthal, P. M., Barsalou, L. W., Winkielman, P., Krauth-Gruber, S., & Ric, F. (2005). Embodiment in attitudes, social perception, and emotion. *Personality And Social Psychology Review: An Official Journal Of The Society For Personality And Social Psychology, Inc, 9*(3), 184-211.	Findings in the social psychology literatures on attitudes, social perception, and emotion demonstrate that social information processing involves embodiment, where embodiment refers both to actual bodily states and to simulations of experience in the brain's modality-specific systems for perception, action, and introspection. We show that embodiment underlies social information processing when the perceiver interacts with actual social objects (online cognition) and when the perceiver represents social objects in their absence (offline cognition). Although many empirical demonstrations of social embodiment exist, no particularly compelling account of them has been offered. We propose that theories of embodied cognition, such as the Perceptual Symbol Systems (PSS) account (Barsalou, 1999), explain and integrate these findings, and that they also suggest exciting new directions for research. We compare the PSS account to a variety of related proposals and show how it addresses criticisms that have previously posed problems for the general embodiment approach.;	
	multiple	Wood, J. A. (2006). "NLP Revisited: Nonverbal Communications and Signals of Trustworthiness." Journal of Personal Selling & Sales Management **26**(2): 197-204.	A core principle of neurolinguistic programming (NLP) is that rapport and trust develop through synchronization of modes of communication between the sender and receiver. Nonverbal signals are a particularly important mode of communications in the NLP perspective. This study extends the NLP framework by incorporating findings from neuroscience into research about nonverbal signals and sensory representational systems. Three independent but related studies are used to identify nonverbal cues associated with the representational systems, to test if descriptions of these nonverbal signals influence trustworthiness assessments, and, finally, to test if these nonverbal signals trigger buyer's positive assessments of salesperson trust-building characteristics as well as trustworthiness. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

	Physical Mirroring: Mirror Neurons	Aziz-Zadeh, L. and R. B. Ivry (2009). The Human Mirror Neuron System and Embodied Representations. Progress in Motor Control**:** 355-376.	Mirror neurons are defined as neurons in the monkey cortex which respond to goal oriented actions, whether the behavior is self-generated or produced by another. Here we briefly review this literature and consider evidence from behavioral, neuropsychological, and brain imaging studies for a similar mirror neuron system in humans. Furthermore, we review functions of this system related to action comprehension and motor imagery, as well as evidence for speculations on the system's ties with conceptual knowledge and language.	
		Fabbri-Destro, M. and G. Rizzolatti (2008). "Mirror Neurons and Mirror Systems in Monkeys and Humans." Physiology **23**: 171-179.	Mirror neurons are a distinct class of neurons that transform specific sensory information into a motor format. Mirror neurons have been originally discovered in the premotor and parietal cortex of the monkey. Subsequent neurophysiological (TMS, EEG, MEG) and brain imaging studies have shown that a mirror mechanism is also present in humans. According to its anatomical locations, mirror mechanism plays a role in action and intention understanding, imitation, speech, and emotion feeling.	
		Gallese, V., L. Fadiga, et al. (1996). "Action recognition in the premotor cortex." Brain **119**(2): 593-609.	We recorded electrical activity from 532 neurons in the rostral part of inferior area 6 (area F5) of two macaque monkeys. Previous data had shown that neurons of this area discharge during goal-directed hand and mouth movements. We describe here the properties of a newly discovered set of F5 neurons (mirror neurons', n = 92) all of which became active both when the monkey performed a given action and when it observed a similar action performed by the experimenter. Mirror neurons, in order to be visually triggered, required an interaction between the agent of the action and the object of it. The sight of the agent alone or of the object alone (three-dimensional objects, food) were ineffective. Hand and the mouth were by far the most effective agents. The actions most represented among those activating mirror neurons were grasping, manipulating and placing. In most mirror neurons (92%) there was a clear relation between the visual action they responded to and the motor response they coded. In [~]30% of mirror neurons the congruence was very strict and the effective observed and executed actions corresponded both in terms of general action (e.g. grasping) and in terms of the way in which that action was executed (e.g. precision grip). We conclude by proposing that mirror neurons form a system for matching observation and execution of motor actions. We discuss the possible role of this system in action recognition and, given the proposed homology between F5 and human Brocca's region, we posit that a matching system, similar to that of mirror neurons exists in humans and could be involved in recognition of actions as well as phonetic gestures.	
		Gallese, V., C. Kaysers, et al. (2004). " A Unifying View of the Basis of Social Cognition." Trends in Cognitive Science **8**(9): 396-403.	In this article we provide a unifying neural hypothesis on how individuals understand the actions and emotions of others. Our main claim is that the fundamental mechanism at the basis of the experiential understanding of others' actions is the activation of the mirror neuron system. A similar mechanism, but involving the activation of viscero-motor centers, underlies the experiential understanding of the emotions of others. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Kilner, J., K. Friston, et al. (2007). "Predictive coding: an account of the mirror neuron system." Cognitive Processing **8**(3): 159-166.	Is it possible to understand the intentions of other people by simply observing their actions? Many believe that this ability is made possible by the brain's mirror neuron system through its direct link between action and observation. However, precisely how intentions can be inferred through action observation has provoked much debate. Here we suggest that the function of the mirror system can be understood within a predictive coding framework that appeals to the statistical approach known as empirical Bayes. Within this scheme the most likely cause of an observed action can be inferred by minimizing the prediction error at all levels of the cortical hierarchy that are engaged during action observation. This account identifies a precise role for the mirror system in our ability to infer intentions from actions and provides the outline of the underlying computational mechanisms.	
		Kilner, J. M., J. L. Marchant, et al. (2009). "Relationship between Activity in Human Primary Motor Cortex during Action Observation and the Mirror Neuron System." PLoS ONE **4**(3): e4925.	The attenuation of the cortical oscillations during action observation has been interpreted as evidence of a mirror neuron system (MNS) in humans. Here we investigated the modulation of cortical oscillations with the viewpoint of an observed action. We asked subjects to observe videos of an actor making a variety of arm movements. We show that when subjects were observing arm movements there was a significant modulation of oscillations overlying left and right sensorimotor cortices. This pattern of attenuation was driven by the side of the screen on which the observed movement occurred and not by the hand that was observed moving. These results are discussed in terms of the firing patterns of mirror neurons in F5 which have been reported to have similar properties.	
		Lyons, D. E., L. R. Santos, et al. (2006). "Reflections of other minds: how primate social cognition can inform the function of mirror neurons." Current Opinion in Neurobiology **16**(2): 230-234.	Mirror neurons, located in the premotor cortex of macaque monkeys, are activated both by the performance and the passive observation of particular goal-directed actions. Although this property would seem to make them the ideal neural substrate for imitation, the puzzling fact is that monkeys simply do not imitate. Indeed, imitation appears to be a uniquely human ability. We are thus left with a fascinating question: if not imitation, what are mirror neurons for? Recent advances in the study of non-human primate social cognition suggest a surprising potential answer.	

		Proverbio, A. M., F. Riva, et al. (2009). "Observation of Static Pictures of Dynamic Actions Enhances the Activity of Movement-Related Brain Areas." PLoS ONE **4**(5): e5389.	Background-Physiological studies of perfectly still observers have shown interesting correlations between increasing effortfulness of observed actions and increases in heart and respiration rates. Not much is known about the cortical response induced by observing effortful actions. The aim of this study was to investigate the time course and neural correlates of perception of implied motion, by presenting 260 pictures of human actions differing in degrees of dynamism and muscular exertion. ERPs were recorded from 128 sites in young male and female adults engaged in a secondary perceptual task. Principal Findings-Our results indicate that even when the stimulus shows no explicit motion, observation of static photographs of human actions with implied motion produces a clear increase in cortical activation, manifest in a long-lasting positivity (LP) between 350-600 ms that is much greater to dynamic than less dynamic actions, especially in men. A linear inverse solution computed on the dynamic-minus-static difference wave in the time window 380-430 ms showed that a series of regions was activated, including the right V5/MT, left EBA, left STS (BA38), left premotor (BA6) and motor (BA4) areas, cingulate and IF cortex. Conclusions and Significance-Overall, the data suggest that corresponding mirror neurons respond more strongly to implied dynamic than to less dynamic actions. The sex difference might be partially cultural and reflect a preference of young adult males for highly dynamic actions depicting intense muscular activity, or a sporty context	
		Rizzolatti, G. and L. Craighero (2004). "The Mirror-Neuron System." Annual Review of Neuroscience **27**(1): 169-192.	Abstract A category of stimuli of great importance for primates, humans in particular, is that formed by actions done by other individuals. If we want to survive, we must understand the actions of others. Furthermore, without action understanding, social organization is impossible. In the case of humans, there is another faculty that depends on the observation of others' actions: imitation learning. Unlike most species, we are able to learn by imitation, and this faculty is at the basis of human culture. In this review we present data on a neurophysiological mechanism”the mirror-neuron mechanism”that appears to play a fundamental role in both action understanding and imitation. We describe first the functional properties of mirror neurons in monkeys. We review next the characteristics of the mirror-neuron system in humans. We stress, in particular, those properties specific to the human mirror-neuron system that might explain the human capacity to learn by imitation. We conclude by discussing the relationship between the mirror-neuron system and language.	

		Rizzolatti, G., M. Fabbri-Destro, et al. (2009). "Mirror neurons and their clinical relevance." Nat Clin Pract Neuro **5**(1): 24-34.	One of the most exciting events in neurosciences over the past few years has been the discovery of a mechanism that unifies action perception and action execution. The essence of this 'mirror' mechanism is as follows: whenever individuals observe an action being done by someone else, a set of neurons that code for that action is activated in the observers' motor system. Since the observers are aware of the outcome of their motor acts, they also understand what the other individual is doing without the need for intermediate cognitive mediation. In this Review, after discussing the most pertinent data concerning the mirror mechanism, we examine the clinical relevance of this mechanism. We first discuss the relationship between mirror mechanism impairment and some core symptoms of autism. We then outline the theoretical principles of neurorehabilitation strategies based on the mirror mechanism. We conclude by examining the relationship between the mirror mechanism and some features of the environmental dependency syndromes.	
		Uddin, L. Q., M. Iacoboni, et al. (2007). "The self and social cognition: the role of cortical midline structures and mirror neurons." Trends in Cognitive Sciences **11**(4): 153-157.	Recent evidence suggests that there are at least two large-scale neural networks that represent the self and others. Whereas frontoparietal mirror-neuron areas provide the basis for bridging the gap between the physical self and others through motor-simulation mechanisms, cortical midline structures engage in processing information about the self and others in more abstract, evaluative terms. This framework provides a basis for reconciling findings from two separate but related lines of research: self-related processing and social cognition. The neural systems of midline structures and mirror neurons show that self and other are two sides of the same coin, whether their physical interactions or their most internal mental processes are examined.	

Meta Model		Macroy, T.D. (1978) *Linguistic surface structures in family interaction* in Dissertation Abstracts International, 40 (2) 926-B, Utah State University, 133 pp, Order = 7917967,	Abstract: The purpose of this dissertation was to determine the usefulness of the linguistic processes of distortion, deletion, generalization, and semantic ill-formedness as constructs which differentiate the verbal communication of families who express dissatisfaction with their current intrafamilial relationships from families expressing satisfaction with their current relationships. Specifically, it was hypothesized that dissatisfied families would use these linguistic structures to a greater extent in their interaction than would satisfied families. Thirty-one family triads (father, mother, and child) were obtained by asking families randomly selected from the local high school student directory to participate. The families were given a Revealed Differences Questionnaire which they subsequently discussed together and a questionnaire regarding their satisfaction with their intrafamilial relationships. The discussions were recorded and transcribed. Each of 150 Surface Structures (a complete thought, usually a grammatical sentence) per family was scored for 11 subcategories of Distortion, Deletion, Generalization, and Semantic Ill-Formedness. Interrater reliabilities ranged from .86 to .98. A mean was computed for the questionnaire pertaining to satisfaction with family relationships. Six families who scored at least one half standard deviation below the mean comprised the "dissatisfied" family group, and six families who scored at least one half standard deviation above the mean comprised the "satisfied" family group. It was found that the dissatisfied families used significantly more Deletion ($p<.01$) than the satisfied families. Results for the other categories were in the expected direction but did not attain statistical significance. It was further found that the mothers and children in dissatisfied families obtained a significantly greater ratio ($p<.05$) of dysfunctional language structures per surface structure than did mothers and children in satisfied families. Finally, three sets of 50 consecutive surface structures were compared to determine if the occurrence of each of the categories of dysfunctional language structures was consistent over the 150 surface structures which had been scored. It was found that dissatisfied families as a group did not differ in consistency from satisfied families as a group although individual families in either group varied widely. The linguistic process of Deletion is theorized to result in impoverishing the speaker's model of the world and the behavioral choices available to the speaker. Similarly, the listener(s) who must respond to the impoverished model is limited in his response and behavioral options. Since all members of the dissatisfied families used this form of language, they perpetuate the impoverishing model of the world and the limitations on their behavior. It was concluded that, while not establishing an etiologic link between the use of Deletion and family dissatisfaction, Deletion is part of the current verbal interaction of families who express dissatisfaction. Further research involving families in which a member is symptomatic is warranted based on the findings of this study. Language may provide at least one form of explanation regarding the process by which families maintain homeostasis in the face of symptom development. The use of linguistic concepts shows promise as an intermediate link in family interaction theory as well as a form of intervention available to therapists.	

		Moines, D. (1981) *A psycholinguistic study of the patterns of persuasion used by successful* salespeople in Dissertation Abstracts International, 42 (5), 2135-B, University of Oregon, 271pp, Order = 8123499	Abstract: The lingusitic forms of influence used by eight life insurance salesmen were studied. Four of the salesmen were the top producers in their companies, and the other four, matched on background variables, were evaluated as "average" producers. A 45-minute long cassette recording of each salesman's work was analyzed for frequency, chronology, and style of usage of linguistic patterns of persuasion which have been previously identified in the work of master hypnotists (Bandler & Grinder, 1975, 1975a, 1979). Fourteen other highly-successful salespeople, working in real estate sales, luxury automobile sales, and investment (stocks, commodities, and trust deed) sales were studied in a less formal way for their usage of these linguistic patterns of influence. A reliability study was conducted on the coding system which was developed to analyze the 45-minute long audio tapes. The first 10 minutes of each tape was used to determine intercoder reliability. The mean number of linguistic patterns identified in each 10-minute tape segment was 574; the range was 421 to 787. The mean level of agreement between coders was 84.3 percent, using conservative scoring conventions. The level of agreement between coders ranged from 72.4 percent to 89.5 percent. In the discussion of the significance of the reliability study, additional scoring conventions are presented which are expected to raise intercoder reliability in future studies of this type. The interaction between salesperson and customer is described in terms of a cybernetic model, exhibiting feedback, redundancy, and homeostasis. The majority of the salespeople studied used almost all of the linguistic patterns of influence, but the patterns were found to be utilized in significantly different ways and at different times by the highly-successful salespeople and the less-successful salespeople. Linguistic patterns of confusion, selectional restriction violations, and linguistic patterns of suprise were used rarely by top salespeople and were almost never used by less-successful salespeople. Less-successful salespeople were found to use more comparative deletions, phrases lacking referential indices, conjunctive leading statements, opinion- pacing statements, response-potential building patterns, superlative deletions, and unspecified verbs than did highly-successful salespeople. Highly- successful salespeople were found to employ anchors and tonality shifts, attention-focusing statements, imbedded commands, adverbial leading statements, cause-effect leading statements, metaphors, mind- reading patterns, modal operators of necessity, modal operators of possibility, and statements pacing mood, objections, observables, and predicate usage with greater frequency than that shown by less-successful salespeople. Highly-successful salespeople were found to begin their sales presentations with a predominance of nonspecific language patterns. As s/he collected information on the customer, and as s/he paced the cognitive maps and experience of the world of the customer, more specific language patterns were then utilized by the successful salesperson to elicit desired responses in the customer. The findings of this study further indicate that the stronger linguistic forms of influence are utilized by top salespeople in the middle and close of the sales interaction, after they have first built rapport and trust with the customer through the use of pacing statements. Less-successful salespeople were found to maintain a high- frequency usage of nonspecific language patterns throughout the sales interaction. They were also found to use certain strong linguistic forms of	

			influence relatively early in the sales interaction, possibly endangering rapport with the customers. Implications and significance of the findings are examined, and suggestions are presented for future research concerning how we, as human beings, understand and are influenced by certain psycholinguistic patterns of persuasion.	
		Rudolph, U. (1997). "Implicit verb causality: Verbal schemas and covariation information." Journal of Language and Social Psychology **16**(2): 132-158.	Two experiments analyzed the psychological causality implicit in language. In Study 1 (with 12 American-English speaking university students) an extension of the existing verb classifications was empirically tested to account for the finding that many action verbs give rise to attributions to the sentence object. Study 2 (with 64 native-German-speaking university students) examined whether implicit causality for these agent-evocator verbs is mediated by the same mechanisms that are assumed to mediate this effect for other kinds of interpersonal actions and states. Taken together, results suggest that (1) the introduction of an action verb schema that gives rise to object attributions is a useful extension of the existing classifications of interpersonal verbs and (2) the mediation of implicit causality in all kinds of interpersonal verbs is governed by perceived covariation information. Thus, the present data support an explanation of implicit causality that is based on classical attribution variables. (PsycINFO Database Record (c) 2010 APA, all rights reserved)	
		Vander Zyl, Eldon Lee: The effects of meta-model questioning and empathetic responding on concreteness in client statements and client ratings of anxiety and counselor attractiveness, expertness, and trustworthiness. Dissertation Abstracts International 44(12), 3600-A 3601-A Iowa State University, 117 pp. Order = DA8407xxx, 1983.	Abstract: The effects of the meta-model questioning strategy from neurolinguistic programming (NLP) were compared to the effects of an empathy responding strategy in the initial counseling interview. Seventy-two clients were obtained from a pool of undergraduate psychology student volunteers. Two graduate students majoring in counselor education served as the counselors and were trained to deliver the two counseling strategies. A four group design was used for the investigation. Clients were assigned at random to one of the two counselors and to one of the two counseling strategies. Each client was treated in one thirty- minute interview. Five dependent variables were identified to assess the effects of the treatments. The first, concreteness in client statements, was determined by trained raters of concreteness using a five-minute transcribed segment of each interview. The second dependent variable was the change in client anxiety during the counseling interview. Client self-reported anxiety change was assessed immediately following the interview. The final three dependent variables were counselor attractiveness, expertness, and trustworthiness, as perceived by the clients. The Counselor Rating form was completed by each client immediately following the counseling interview to assess these final three variables. No differences could be shown between the two counseling strategies on any of the five dependent variables. Also, no differences could be shown between the two counselors. An interaction of treatment strategy and counselor was found for self-reported change in client anxiety. The counselors, when using either of the two strategies, were generally perceived to be highly attractive, expert, and trustworthy. On the average, client self-reported anxiety was lowered somewhat for both treatments. Client concreteness scores averaged just below the midpoint on a five-point concreteness scale for both treatments. Possible conclusions and recommendations are discussed.	

Meta Programs		***Brewerton, P. (2004). Selection & Development Review, 20(3), June 2004, 14-18.***		
	Chunking	Gobet, Fernand, Lane, Peter C. R., Croker, Steve, C-H Cheng, Peter, Jones, Gary, Oliver, Iain, & Pine, Julian M. (2001). Chunking mechanisms in human learning. *Trends in Cognitive Sciences, 5*(6), 236-243. doi: 10.1016/S1364-6613(00)01662-4	The authors summarize here the major sources of evidence for chunking mechanisms, and consider how such mechanisms have been implemented in computational models of the learning process. The authors distinguish two forms of chunking: the first deliberate, under strategic control, and goal-oriented; the second automatic, continuous, and linked to perceptual processes. Recent work with discrimination-network computational models of long- and short-term memory (EPAM/CHREST) has produced a diverse range of applications of perceptual chunking. The authors focus on recent successes in verbal learning, expert memory, language acquisition and learning multiple representations, to illustrate the implementation and use of chunking mechanisms within contemporary models of human learning. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Penhune, Virginia B., & Steele, Christopher J. (2012). Parallel contributions of cerebellar, striatal and M1 mechanisms to motor sequence learning. *Behavioural Brain Research, 226*(2), 579-591. doi: 10.1016/j.bbr.2011.09.044	When learning a new motor sequence, we must execute the correct order of movements while simultaneously optimizing sensorimotor parameters such as trajectory, timing, velocity and force. Neurophysiological studies in animals and humans have identified the major brain regions involved in sequence learning, including the motor cortex (M1), basal ganglia (BG) and cerebellum. Current models link these regions to different stages of learning (early vs. late) or different components of performance (spatial vs. sensorimotor). At the same time, research in motor control has given rise to the concept that internal models at different levels of the motor system may contribute to learning. The goal of this review is to develop a new framework for motor sequence learning that combines stage and component models within the context of internal models. To do this, we review behavioral and neuroimaging studies in humans and neurophysiological studies in animals. Based on this evidence, we present a model proposing that sequence learning is underwritten by parallel, interacting processes, including internal model formation and sequence representation, that are instantiated in specific cerebellar, BG or M1 mechanisms depending on task demands and the stage of learning. The striatal system learns predictive stimulus–response associations and is critical for motor chunking. The role of the cerebellum is to acquire the optimal internal model for sequence performance in a particular context, and to contribute to error correction and control of on-going movement. M1 acts to store the representation of a learned sequence, likely as part of a distributed network including the parietal lobe and premotor cortex. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Simon, Herbert A. (1974). How big is a chunk? *Science, 183*(4124), 482-488. doi: 10.1126/science.183.4124.482	Reviews the hypotheses that short-term memory holds a fixed number of "chunks" (i.e., consecutive stimuli) and that total learning time is proportional to the number of chunks to be assembled. Experiments measuring digit span, paired associate learning, and immediate recall are discussed in terms of these hypotheses. Implications of the theory of chunking are discussed in terms of the change in memory span with age, extrapolation to mental multiplication of relatively large numbers, and extrapolation to the initial stages of problem-solving. It is concluded that laboratory experiments on simpler cognitive processes-when viewed as parameter-estimating rather than hypothesis-testing paradigms and when combined with theoretical models of cognitive processes-have implications for higher mental processes quite different from those of the original experiments. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Wymbs, Nicholas F, Bassett, Danielle S, Mucha, Peter J, Porter, Mason A, & Grafton, Scott T. (2012). Differential Recruitment of the Sensorimotor Putamen and Frontoparietal Cortex during Motor Chunking in Humans. *Neuron, 74*(5), 936-946. doi: http://dx.doi.org/10.1016/j.neuron.2012.03.038	Motor chunking facilitates movement production by combining motor elements into integrated units of behavior. Previous research suggests that chunking involves two processes: concatenation, aimed at the formation of motor-motor associations between elements or sets of elements, and segmentation, aimed at the parsing of multiple contiguous elements into shorter action sets. We used fMRI to measure the trial-wise recruitment of brain regions associated with these chunking processes as healthy subjects performed a cued-sequence production task. A dynamic network analysis identified chunking structure for a set of motor sequences acquired during fMRI and collected over 3 days of training. Activity in the bilateral sensorimotor putamen positively correlated with chunk concatenation, whereas a left-hemisphere frontoparietal network was correlated with chunk segmentation. Across subjects, there was an aggregate increase in chunk strength (concatenation) with training, suggesting that subcortical circuits play a direct role in the creation of fluid transitions across chunks.	
Presuppositions	Map/ territory	Loftus, E. F., & Yuille, J. C. (1984). *Departures from reality in human perception and memory.* In H. Weingartner & E. S. Parker (Eds.), Memory Consolidation: Psychobiology of Cognition (pp. 163-184). Hillsdale, NJ: Lawrence Erlbaum Associates.		

		Kroes, M.C.W., Fernández, G. (2012). Dynamic neural systems enable adaptive, flexible memories. Neurosci. Biobehav. Rev., doi:10.1016/j.neubiorev.2012.02.014	Almost all studies on memory formation have implicitly put forward a rather static view on memory. However, memories are not stable but sensitive to changes over time. Here we argue that memory alterations arise from the inherent predictive function of memory. Within this framework, we draw an analogy between the lateral temporal–lateral prefrontal system that supports prediction based on simple stimulus–response associations and propose that a similar system centring on the hippocampus and medial prefrontal cortex (mPFC) exists for complex episodic memories. We consider the hippocampus to be elementary for regularity detection and the mPFC for regularity storage together with response options, which form the basis of abstract knowledge. As such, abstract knowledge can come to guide behaviour in novel situations that only share partial overlap with episodic experiences that have given rise to the formation of abstract knowledge. Furthermore, we suggest that systems consolidation and sleep contribute to the formation of abstract knowledge, and that abstract knowledge can function as pre-existing schemas to the encoding of novel memories. Finally, we discuss that reconsolidation supports the updating of memories to optimize prediction. We accentuate that memory formation requires dynamic interactions between brain regions, and that rapid formation of detailed memories depends on synaptic weight changes, whereas rather stable abstract knowledge is supported by cortico-cortical rewiring. Together, we attempt explaining that apparent memory alterations and distortions are adaptive.	
		Loftus, E. F. and J. C. Palmer (1974). "Reconstruction of automobile destruction: An example of the interaction between language and memory." Journal of Verbal Learning and Verbal Behavior **13**(5): 585-589.	Two experiments are reported in which subjects viewed films of automobiled accidents and then answered questions about events occurring in the films. The question, “About how fast were the cars going when they smashed into each other?” elicited higher estimates of speed than questions which used the verbs collided, bumped, contacted, or hit in place of smashed. On a retest one week later, those subjects who received the verb smashed were more likely to say “yes” to the question, “Did you see any broken glass?”, even though broken glass was not present in the film. These results are consistent with the view that the questions asked subsequent to an event can cause a reconstruction in one's memory of that event.	
		Dutton, D.G., and Aron, A.P. (1974). *Some evidence for heightened sexual attraction under conditions of high anxiety.* Journal of Personality and Social Psychology, 30 (4), 510-517.	85 male passersby were contacted either on a fear-arousing suspension bridge or a non-fear-arousing bridge by an attractive female interviewer who asked them to fill out questionnaires containing Thematic Apperception Test (TAT) pictures. Sexual content of stories written by Ss on the fear-arousing bridge and tendency of these Ss to attempt postexperimental contact with the interviewer were both significantly greater. No significant differences between bridges were obtained on either measure for Ss contacted by a male interviewer. A 2nd study using 34 males involved a similar field setting and attempted to clarify findings of Study 1. A 3rd study in a laboratory setting manipulated anticipated shock to 80 male undergraduates and an attractive female confederate independently. Anticipation of own shock but not anticipation of shock to confederate increased sexual imagery scores on the TAT and attraction to the confederate. (26 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	

		Schachter, S. and Singer, J. E. (1962). Cognitive, Social, and Psychological Determinants of Emotional States. *Psychological Review,* 69, 379-399.	It is suggested that emotional states may be considered a function of a state of physiological arousal and of a cognition appropriate to this state of arousal. From this follows these propositions: (a) Given a state of physiological arousal for which an individual has no immediate explanation, he will label this state and describe his feelings in terms of the cognitions available to him….(b) Given a state of physiological arousal for which an individual has a completely appropriate explanation, no evaluative needs will arise and the individual is unlikely to label his feelings in terms of the alternative cognitions available. (c) Given the same cognitive circumstances, the individual will react emotionally or describe his feelings as emotions only to the extent that he experiences a state of physiological arousal. An experiment is described which, together with the results of other studies, supports these propositions" (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
	Positive intent			
	Resources/ Mood Effects	Gillihan, S. J., J. Kessler, et al. (2007). "Memories affect mood: Evidence from covert experimental assignment to positive, neutral, and negative memory recall." Acta Psychologica **125**(2): 144-154.	Memory recall has been proposed as a common and effective mood regulation strategy. Although several studies have presented results suggesting that recalling valenced memories affects subsequent mood, their designs allow for alternative interpretations of the observed effects. Two such alternatives include the reverse effect (mood effects on memory due to non-experimental assignment to memory recall condition) and demand characteristics of the experiment. We used covert experimental assignment to memory condition, asking subjects (N = 314; 56% female) to recall memories that were primarily positive, neutral, or negative. Results showed the expected effect on mood (p < .002), with reported mood worst in the negative memory condition, better in the neutral condition, and best in the positive condition. These results suggest that valenced memory recall does indeed exert an effect on mood, and may do so even without the individual's awareness.	
		Gendolla, G. H. E. and K. Brinkmann (2005). "The Role of Mood States in Self-Regulation: Effects on Action Preferences and Resource Mobilization." European Psychologist **10**(3): 187-198.	Based on the mood-behavior-model (MBM; Gendolla, 2000), it is proposed that moods play significant roles in two central processes of self-regulation: (1) The constitution of action preferences and (2) resource mobilization in instrumental behavior. Specifically, people's interest in behaviors that facilitate hedonic experiences depends on their momentary need for well-being and the perceived instrumentality of potential acts for satisfying this need. Resource mobilization is influenced by the use of moods as diagnostic information for demand appraisals, which in turn determine the intensity of effort and the persistence of behavior. A series of experiments that quantified effort as cardiovascular response has supported these predictions. The role of personality variables in the linkage between mood states and self-regulation is discussed. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Holland, A. C. and E. A. Kensinger (2010). "Emotion and autobiographical memory." Physics of Life Reviews **7**(1): 88-131.	Autobiographical memory encompasses our recollections of specific, personal events. In this article, we review the interactions between emotion and autobiographical memory, focusing on two broad ways in which these interactions occur. First, the emotional content of an experience can influence the way in which the event is remembered. Second, emotions and emotional goals experienced at the time of autobiographical retrieval can influence the information recalled. We discuss the behavioral manifestations of each of these types of interactions and describe the neural mechanisms that may support those interactions. We discuss how findings from the clinical literature (e.g., regarding depression) and the social psychology literature (e.g., on emotion regulation) might inform future investigations of the interplay between the emotions experienced at the time of retrieval and the memories recalled, and we present ideas for future research in this domain.	
		Kenworthy, J. B., C. J. Canales, et al. (2003). "Negative incidental affect and mood congruency in crossed categorization." Journal of Experimental Social Psychology **39**(3): 195-219.	Examined the effects of incidental sadness and anger on affiliative responses to crossed categorization targets. Affect manipulations included an anger-provoking frustration (Study 1), a sad film clip (Study 2), and autobiographical essays about sad or anger-provoking topics (Studies 3 and 4). By comparison with a neutral mood, anger (Study 1) reduced affiliative tendencies toward persons possessing an out-group membership but not toward those possessing only in-group memberships. Study 2 showed a similar pattern for sadness. Studies 3 and 4 replicated these effects in designs including both types of negative mood. Meta-analytic integration showed the pattern of greater rejection of targets with an out-group membership to be stronger under anger than sadness. Study 4 also showed that despite yielding a consistent pattern for affiliation, sadness and anger differentially elicited aggressive tendencies toward the same targets.	
		Lewis, P. A., H. D. Critchley, et al. (2005). "Brain mechanisms for mood congruent memory facilitation." NeuroImage **25**(4): 1214-1223.	Emotional information is better remembered when mood at the time of retrieval matches it in valence (positive mood, positive material). An associative memory model predicts that this 'mood congruent' facilitation is due to the mood-related reactivation at retrieval of emotional responses which were linked to valenced information at encoding. To test this model, we presented subjects with positive and negative words at study and manipulated their mood at test while using functional imaging to monitor brain activity. Subjective mood ratings and heart rate variability both indicated that the manipulation was effective, and memory performance showed a strong trend towards facilitation in congruent conditions. In the functional imaging data, valence-specific conjunctions between encoding activity predicting subsequent memory in a congruent mood and retrieval activity relating to mood congruent recollection revealed shared responses in subgenual cingulate for positive valence and posteriolateral orbitofrontal cortex for negative valence, thus supporting the associative model. To elucidate the mnemonic basis of facilitation, independent of valence, we examined the shared correlates of positive and negative congruence and found that parts of the episodic memory system were activated by congruence in correct rejection trials, but no part of this system was activated by congruence in correctly remembered trials. This pattern suggests that mood congruent facilitation occurs at the level of attempted recall rather than that of successful recollection.	

		Loftus, E. F. and J. C. Palmer (1974). "Reconstruction of automobile destruction: An example of the interaction between language and memory." Journal of Verbal Learning and Verbal Behavior **13**(5): 585-589.	Two experiments are reported in which subjects viewed films of automobiled accidents and then answered questions about events occurring in the films. The question, “About how fast were the cars going when they smashed into each other?” elicited higher estimates of speed than questions which used the verbs collided, bumped, contacted, or hit in place of smashed. On a retest one week later, those subjects who received the verb smashed were more likely to say “yes” to the question, “Did you see any broken glass?”, even though broken glass was not present in the film. These results are consistent with the view that the questions asked subsequent to an event can cause a reconstruction in one's memory of that event.	
		Matt, G. E., C. Vázquez, et al. (1992). "Mood-congruent recall of affectively toned stimuli: A meta-analytic review." Clinical Psychology Review **12**(2): 227-255.	A subset of the published research on mood-congruent memory in normal nondepressed, subclinically depressed, clinically depressed, induced depressed, and induced elated persons is examined with meta-analytic techniques. We estimated the magnitude of mood-congruent recall for these mood states, examined their robustness, and studied within each mood state the extent to which the strength of mood-congruent recall was related to self-referenced encoding and mood intensity. Asymmetric recall favoring positive stimuli appears to be part of the normative pattern of memory performance among individuals that have been labeled normal nondepressed (dh = .15; p < .001); subclinically depressed individuals show symmetric recall of positively and negatively valenced material (dh = − .02; p > .20). Clinically depressed, induced depressed, and induced elated subjects display mood congruent recall (dh, = − .19; p < .05; dh = − .12, p < .05; dh = .08; p < .10). With the exception of induced elated mood, effect estimates derived from different studies are robust in that sampling error accounts for the entire variability among effect estimates obtained from different studies. In studies on induced-elated mood, self-referent processing was associated with stronger mood-congruent recall as compared to other studies. Caveats and implications for future research on mood and memory are discussed.	

		Ramel, W., P. R. Goldin, et al. (2007). "Amygdala Reactivity and Mood-Congruent Memory in Individuals at Risk for Depressive Relapse." Biological Psychiatry **61**(2): 231-239.	Background According to cognitive diathesis-stress theories, a latent cognitive vulnerability to depression is activated by negative affect in individuals at risk for depressive relapse. This vulnerability can manifest as mood-congruent memory during sad mood and may involve amygdala response, which is implicated in memory for emotionally arousing stimuli. This study examined whether amygdala modulates memory for negatively valenced words before and after a sad mood induction in healthy individuals with and without a history of recurrent major depression. Methods Fourteen unmedicated remitted depressed (RD) and 14 matched never depressed (ND) individuals were scanned using functional magnetic resonance imaging (fMRI) while performing a self-referent encoding/evaluation task (SRET) preceding and following a sad mood challenge. After each SRET, participants' free recall was assessed. Results Following sad mood induction, bilateral amygdala response during encoding of valenced words predicted increased recall of negative self-referent words for a subset of RD participants. This association was not present before the sad mood induction and was not evident in individuals without a history of depression, regardless of mood state. Conclusions These results are consistent with cognitive diathesis-stress theories and suggest a role for the amygdala in modulating mood-congruent memory during transient sad mood in individuals who are vulnerable to depression relapse.	
		van Wingen, G. A., P. van Eijndhoven, et al. (2010). "Neural state and trait bases of mood-incongruent memory formation and retrieval in first-episode major depression." Journal of Psychiatric Research **44**(8): 527-534.	Mood-congruent cognitive biases constitute critical factors for the vulnerability to depression and its maintenance. One important aspect is impaired memory for positive information during depression and after recovery. To elucidate its state (during depression only) and trait (during depression and recovery) related neural bases, we investigated medication free depressed, recovered, and healthy individuals with functional MRI while they memorized and recognized happy and neutral face stimuli. The imaging results revealed group differences in mood-incongruent successful memory encoding and retrieval activity already in the absence of significant memory performance differences. State effects were observed in the amygdala and posterior cingulate cortex. Whereas the amygdala was generally involved in memory formation, its activity predicted subsequent forgetting of neutral faces in depressed patients. Furthermore, the amygdala and posterior cingulate cortex were involved in memory retrieval of happy faces in depressed patients only. Trait effects were observed in the fusiform gyrus and prefrontal cortex. The fusiform gyrus was involved in memory formation and retrieval of happy faces in both patient groups, whereas it was involved in memory formation and retrieval of neutral faces in healthy individuals.	
		Dutton, D.G., and Aron, A.P. (1974). *Some evidence for heightened sexual attraction under conditions of high anxiety.* Journal of Personality and Social Psychology, 30 (4), 510-517.	See above	

		Schachter, S. and Singer, J. E. (1962). Cognitive, Social, and Psychological Determinants of Emotional States. *Psychological Review,* 69, 379-399.	See above	
		Duncan, S. and Barrett, L. F. (2007). "Affect is a form of cognition: A neurobiological analysis." Cognition & Emotion 21(6): 1184-1211.	In this paper, we suggest that affect meets the traditional definition of "cognition" such that the affect-cognition distinction is phenomenological, rather than ontological. We review how the affect-cognition distinction is not respected in the human brain, and discuss the neural mechanisms by which affect influences sensory processing. As a result of this sensory modulation, affect performs several basic "cognitive" functions. Affect appears to be necessary for normal conscious experience, language fluency, and memory. Finally, we suggest that understanding the differences between affect and cognition will require systematic study of how the phenomenological distinction characterising the two comes about, and why such a distinction is functional. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
		Bargh, J. A., M. Chen, et al. (1996). "Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action." Journal of Personality and Social Psychology **71**(2): 230-244.	Previous research has shown that trait concepts and stereotypes become active automatically in the presence of relevant behavior or stereotyped-group features. Through the use of the same priming procedures as in previous impression formation research, Experiment 1 showed that participants whose concept of rudeness was primed interrupted the experimenter more quickly and frequently than did participants primed with polite-related stimuli. In Experiment 2, participants for whom an elderly stereotype was primed walked more slowly down the hallway when leaving the experiment than did control participants, consistent with the content of that stereotype. In Experiment 3, participants for whom the African American stereotype was primed subliminally reacted with more hostility to a vexatious request of the experimenter. Implications of this automatic behavior priming effect for self-fulfilling prophecies are discussed, as is whether social behavior is necessarily mediated by conscious choice processes. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	Priming

		Selcuk, E., V. Zayas, et al. (2012). "Mental representations of attachment figures facilitate recovery following upsetting autobiographical memory recall." Journal of Personality and Social Psychology **103**(2): 362-378.	A growing literature shows that even the symbolic presence of an attachment figure facilitates the regulation of negative affect triggered by external stressors. Yet, in daily life, pernicious stressors are often internally generated—recalling an upsetting experience reliably increases negative affect, rumination, and susceptibility to physical and psychological health problems. The present research provides the first systematic examination of whether activating the mental representation of an attachment figure enhances the regulation of affect triggered by thinking about upsetting memories. Using 2 different techniques for priming attachment figure representations and 2 types of negative affect measures (explicit and implicit), activating the mental representation of an attachment figure (vs. an acquaintance or stranger) after recalling an upsetting memory enhanced recovery—eliminating the negative effects of the memory recall (Studies 1–3). In contrast, activating the mental representation of an attachment figure before recalling an upsetting memory had no such effect (Studies 1 and 2). Furthermore, activating the mental representation of an attachment figure after thinking about upsetting memories reduced negative thinking in a stream of consciousness task, and the magnitude of the attachment-induced affective recovery effects as assessed with explicit affect measures predicted mental and physical health in daily life (Study 3). Finally, a meta-analysis of the 3 studies (Study 4) showed that the regulatory benefits conferred by the mental representation of an attachment figure were weaker for individuals high on attachment avoidance. The implications of these findings for attachment, emotion regulation, and mental and physical health are discussed. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
Spelling Strategy		Malloy, T.E., Mitchell, C. and Gordon, O.E. (1987) *Training cognitive strategies underlying intelligent problem solving* in Perceptual and Motor Skills, No 64 p 1039-1046	Cognitive strategies (CSTs) underlying excellent performance of intelligent people on the Raven Progressive Matrices Test were used to develop a teaching package used with university students. 24 Ss in a CST group were trained using this package. An exposure group of 17 Ss was not trained but solved all the examples of puzzles in the package. A control group of 13 Ss received no intervention. Ss were pre- and posttested on matrix solving ability and were posttested on a Piagetian multiplicative classification task. CST Ss showed the greatest improvement pre- to posttest, followed by the exposure group and then the control group. The CST group was superior to both controls on the Piagetian task, indicating a broad improvement in cognitive functioning. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Loiselle, F. (1985). The effect of eye placement on orthographic memorization, PhD Thesis, Faculté des Sciences Sociales, Université de Moncton, New Brunswick, Canada		

Visualization/ Imaginal re-experience		Kosslyn, M., Ganis, G., & Thompson, W.L. (2001) *Neural Foundations of Imagery.* Nature Reviews Neuroscience, 2.	Mental imagery has, until recently, fallen within the purview of philosophy and cognitive psychology. Both enterprises have raised important questions about imagery, but have not made substantial progress in answering them. With the advent of cognitive neuroscience, these questions have become empirically tractable. Neuroimaging studies, combined with other methods (such as studies of brain-damaged patients and of the effects of transcranial magnetic stimulation), are revealing the ways in which imagery draws on mechanisms used in other activities, such as perception and motor control. Because of its close relation to these basic processes, imagery is now becoming one of the best understood 'higher' cognitive functions.	
		Bowers, L. A. (1996). An exploration of holistic and nontraditional healing methods including research in the use of neuro-linguistic programming in the adjunctive treatment of acute pain. US, ProQuest Information & Learning. **56**.	Bowers, L. A. (1996). An exploration of holistic and nontraditional healing methods including research in the use of neuro-linguistic programming in the adjunctive treatment of acute pain. US, ProQuest Information & Learning. **56**. This study begins with a survey of holistic healing and pain control methods, from hands on healing techniques; to vitamin, mineral, herbal and diet-based therapies; body manipulation and movement; visualization, hypnosis, and guided imagery; meridian-based treatments of applied kinesiology and Chinese medicine (acupuncture and acupressure); art and music therapies; and several talk-based psychotherapies. This is followed by an analysis of Neuro-Linguistic Programming (NLP), from its development by Bandler and Grinder in 1975, through and including recent (1995) "state of the art techniques. The author pays particular attention to using NLP in pain management, and to the recent transpersonal direction of NLP. The research involved 48 chiropractic patients in acute pain. They were randomly divided into treatment and non-treatment groups of 24 each. Non-treatment group patients received regular chiropractic care while treatment group patients received adjunctive NLP treatments from the author, a psychologist. Before each chiropractic and NLP session, the clinicians measured pain level using a Visual Analogue Scale (VAS). The author compared pain reduction between the two groups. On a scale of 0-10, 0 being the absence of any pain and 10 being extreme pain, the treatment group experienced an average reduction of 6.2 over an average of 2.1 NLP sessions (6 days), and the non-treatment group experienced a reduction of 1.7 over the same time. The researcher concluded that NLP is an excellent adjunctive treatment for chiropractic patients in acute pain. She notes limitations of the study (group size, lack of control on degree of patient participation, therapeutic judgment) and makes suggestions for further study. The author suggests future researchers obtain funding to permit use of larger groups, multiple and varied therapists, different milieus (e.g. medical or physical therapy offices) and other types of pain (chronic pain, PMS, cancer pain, etc.). She also suggests eval (PsycINFO Database Record (c) 2012 APA, all rights reserved)	

		Driskell, J., Copper, C., & Moran, A. (1994). *Does mental practice enhance performance?* Journal of Applied Psychology, 79(4), 481-492	Mental practice is the cognitive rehearsal of a task prior to performance. Although most researchers contend that mental practice is an effective means of enhancing performance, a clear consensus is precluded because (1) mental practice is often defined so loosely as to include almost any type of mental preparation and (2) empirical results are inconclusive. A meta-analysis of the literature on mental practice was conducted to determine the effect of mental practice on performance and to identify conditions under which mental practice is most effective. Results indicate that mental practice has a positive and significant effect on performance, and the effectiveness of mental practice is moderated by the type of task, the retention interval between practice and performance, and the length or duration of the mental practice intervention. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Martin, K., & Hall, C. (1995). *Using mental imagery to enhance intrinsic motivation.* Journal of Sport & Exercise Psychology, 17(1), 54-69.	Determined whether Ss who used mental imagery would spend more time practicing a golf putting task and would have higher task specific self-efficacy than would controls. 39 beginner golfers were assigned to either an imagery treatment condition (performance plus outcome imagery or performance imagery) or a no imagery (control) condition. During the first 3 sessions all Ss were taught how to putt a golf ball. Imagery treatment Ss also participated in an imagery training program designed for the golf putting task. Ss in the performance imagery group spent significantly more time practicing the golf putting task than did controls. Ss who used imagery also set higher goals for themselves, had more realistic self-expectations, and adhered more to their training programs outside of the lab. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Pham, L. & Taylor, S. (1999) *From Thought to Action: Effects of Process- Versus Outcome-Based Mental Simulations on Performance* Personality and Social Psychology Bulletin, 25 (2), 250-260.	Mental simulations enhance the links between thought and action. The present research contrasted mental simulations that emphasize the process required to achieve a goal vs the outcome of goal achievement. For 5 to 7 days prior to a midterm examination, 85 college freshmen (aged 18–28) mentally simulated either the process for doing well on the exam (good study habits) or simulated a desired outcome (getting a good grade) or both. A self-monitoring control condition was included. Results indicated that process simulation enhanced studying and improved grades; the latter effect was mediated by enhanced planning and reduced anxiety. Implications of process and outcome simulations for effective goal pursuit are discussed. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Wohldmann, E., Healy, A., & Bourne, L. (2007). *Pushing the limits of imagination: Mental practice for learning sequences.* Journal of Experimental Psychology: Learning, Memory, and Cognition, 33(1), 254-261. doi:10.1037/0278-7393.33.1.254.	In 2 experiments, the efficacy of motor imagery for learning to type number sequences was examined. Adults practiced typing 4-digit numbers. Then, during subsequent training, they either typed in the same or a different location, imagined typing, merely looked at each number, or performed an irrelevant task. Repetition priming (faster responses for old relative to new numbers) was observed on an immediate test and after a 3-month delay for participants who imagined typing. Improvement across the delay in typing old and new numbers was found for the imagined and actual typing conditions but not for the other conditions. The findings suggest that imagery can be used to acquire and retain representations of sequences and to improve general typing skill. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Mikulincer, M., G. Hirschberger, et al. (2001). "The affective component of the secure base schema: Affective priming with representations of attachment security." Journal of Personality and Social Psychology **81**(2): 305-321.	Using an affective priming procedure (S. T. Murphy & R. B. Zajonc, 1993), 7 studies examined the effects of the contextual activation of representations of attachment security (secure base schema) on the evaluation of neutral stimuli under either neutral or stressful contexts. In all the studies, participants also reported on their attachment style. Results indicated that the subliminal priming of secure base representations led to more positive affective reactions to neutral stimuli than did the subliminal priming of neutral or no pictures under both neutral and stressful contexts. Although the subliminal priming of positively valued, attachment-unrelated representations heightened positive evaluations under neutral contexts, it failed to elicit positive affect under stressful contexts. The results also revealed interesting effects of attachment style. The discussion focuses on the affective component of the secure base schema. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
VK/D-RTM PTSD		Dietrich, A. M. (2000). "A Review of Visual/Kinesthetic Disassociation in the Treatment of Posttraumatic Disorders: Theory, Efficacy and Practice Recommendations." Traumatology **6**(2): 85-107.	In this article, the literature on the Neurolinguistic Programming (NLP) technique of Visual/Kinesthetic Disassociation (V/KD) is reviewed in relation to the treatment of Posttraumatic sequelae. An overview of the V/KD technique is provided, along with postulated mechanisms of change, based on current theory and research in the field of PTSD. Three published reports -- two case studies and one, uncontrolled, small study -- are reviewed in terms of treatment effectiveness for Posttraumatic sequelae. Currently, the V/KD technique is rated as an experimental approach, according to the American Psychological Association's Division 12 Task Force (1995) report and recommendations on empirically validated psychological treatments. Recommendations for use of exposure-based treatments with traumatized populations are provided.	
		Gray, R. M. and R. F. Liotta (2012). " PTSD: Extinction, Reconsolidation, and the Visual-Kinesthetic Dissociation Protocol" Traumatology **18**(2): 3-16.	Every year thousands of returning military, state, and local police officers and civilians of every description suffer from the intrusive symptoms of posttraumatic stress disorder (PTSD). Current treatments rooted largely in extinction protocols require extensive commitments of time and money and are often ineffective. This study reviews several theories of PTSD and two important mechanisms that explain when treatment does and doesn't work: extinction and reconsolidation. It then reviews the research about and suggests an explanatory mechanism for the visual-kinesthetic dissociation protocol (V/KD), also known as the rewind technique. The technique is notable for its lack of discomfort to the client, the possibility of being executed as a content-free intervention, its speed of operation, and its long-term, if largely anecdotal, efficacy. A case study, specific diagnostics for extinction, and reconsolidative mechanisms and suggestions for future research are provided.	
		Hossack, A. and R. P. Bentall (1996). "Elimination of posttraumatic symptomatology by relaxation and visual-kinesthetic dissociation." Journal of Traumatic Stress **9**(1): 99-110.	Five patients suffering from posttraumatic stress disorder and experiencing persistent intrusive imagery were treated with two sessions of relaxation training followed by two sessions of the visual-kinesthetic dissociation technique. Outcome was monitored using a multiple baseline design. Despite the briefness of the intervention, three of the patients showed an almost complete reduction in the frequency of their intrusive images and substantial changes on other measures of psychopathology. One patient showed partial improvement and one patient showed no improvement at all.	

		Koziey, P. W. and G. L. McLeod (1987). "Visual-Kinesthetic Dissociation in Treatment of Victims of Rape." Professional Psychology: Research and Practice **18**(3): 276-282.	A visual-kinesthetic (V-K) dissociation procedure of neurolinguistic programming (NLP) was used in treating rape-induced anxiety and phobic reactions. NLP theory suggests that anxiety reactions experienced by rape victims is a function of the interrelated processes of synesthesia and anchoring. In a pair of case reports, the use of the V-K dissociation technique is explored. From this preliminary basis, further research entailing the use of this treatment procedure is suggested. Implications for clinical practice are noted.	
		Muss, D. (2002). The Rewind Technique In the treatment of Post-Traumatic Stress Disorder: Methods and Application Brief Treatments for the Traumatized. C. R. Figley. West Port, Conn, Greenwood Press**:** 306-314.	(from the chapter) Describes the Rewind Technique, developed by the author, based on the neurolinguistic programming technique of visual-kinesthetic dissociation, as applied to posttraumatic stress disorder (PTSD) in survivors of traumatic events and emergency workers. The author presents the steps involved in using the Rewind Technique, which takes approximately 10-15 minutes to explain to the client and 2-3 minutes for the client to do. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (chapter)	
		Muss, D. C. (1991). "A new technique for treating post-traumatic stress disorder." British Journal of Clinical Psychology **30**(1): 91-92.	Describes the successful use of a dissociationâ€“association technique in treating 19 British police officers who met the criteria for posttraumatic stress disorder (PTSD). On average, only 3 sessions of this "rewind" technique were needed for each S. Over 2 yrs, all Ss remained free of intrusive images and returned to normal behavior. (PsycINFO Database Record (c) 2009 APA, all rights reserved).	
		Utuza, A. J., S. Joseph, et al. (2011). "Treating Traumatic Memories in Rwanda With the Rewind Technique: Two-Week Follow-Up After a Single Group Session." Traumatology, 18(1) 75–78.	The Rewind Technique (RT) is an exposure based therapy for the treatment of PTSD. The RT is most often used in one to one clinical settings but it also has the potential to be used in a group setting. To date it has not been evaluated in a group setting. The results of a single intervention group therapy session with the RT applied to 21 survivors of the genocide in the East of Rwanda are reported. Results show a statistically significant reduction in scores for clients at 2 weeks. It is concluded that the RT could be a useful tool to incorporate where vast numbers of traumatized people are beyond reach on a one to one basis.	
	VK/D Anxiety	Field, E.S. (1990) Neurolinguistic programming as an adjunct to other psychotherapeutic/hypnotherapeutic interventions. American Journal of Clinical Hypnosis. Jan;32(3):174-82.		
Swish Visual		Masters, B. J., Rawlins, M. E., Rawlins, L. D., Weidner, J.,(1991) *The NLP swish pattern: An innovative visualizing technique. Journal of Mental Health Counseling* 13(1): 79-90.	Describes the swish pattern visualizing technique developed within the neurolinguistic programming (NLP) framework. A brief overview of NLP is followed by an explanation of the basic theory and expected outcomes of the swish. Specific steps for using the swish include identifying the context, creating a desired self-image, checking ecology, swishing, and testing. Two case studies using the swish technique to alleviate stress and help a batterer are presented to illustrate its versatility and effectiveness. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	

		Juhnke, G. A., K. M. Coll, et al. (2008). "Using a modified neurolinguistic programming swish pattern with couple parasuicide and suicide survivors." The Family Journal **16**(4): 391-396.	Given the frequency of suicides and parasuicides and the often comorbid negatively experienced effects of these behaviors, it is likely that the vast majority of couples, marriage, and family counselors will at one time or another encounter couples who survive family members' parasuicides or suicides. This article succinctly describes a modified neurolinguistic programming technique the authors have found helpful with their surviving couples. The technique is based on their collective couples, marriage, and family counseling experiences and presents a strength-based perspective. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
Swish Auditory				
Allergy Pattern		Witt K (2003) *Psychological Treatment Can Modulate the Skin Reaction to Histamine in Pollen Allergic Humans.* Psychosomatics 4: 33-37	**Background:** There is growing evidence that allergy and immune function can be influenced by classical conditioning techniques, stress and other psychological factors, but the underlying neural mechanisms remain unclear. Psychological interventions such as the Hildesheim Health Training® have shown that feed-forward treatment (modification of internal stimuli such as cognitions and emotions, self-hypnotic imagery, classical conditioning of healthy reactions) may influence the extent of allergic immune responses. **Objective:** To evaluate the impact of psychological factors on allergic immune responses. **Methods:** In a randomised study the Hildesheim Health Training which includes behaviour therapy, classical conditioning, hypnosis and neuro-linguistic programming was evaluated with psychological tests and skin prick tests. **Results:** While the skin wheal reaction to histamine in allergic controls was clearly enhanced during the pollen season, it remained unchanged in pollen allergic individuals who had received mental allergy therapy. **Conclusion:** The immune response of birch pollen allergic patients towards histamine provocation can be influenced by psychological interventions such as the Hildesheim Health Training.	
		Witt K (2008) *Neuro-Linguistic-Psychotherapy (NLPt) treatment can modulate the reaction in pollen allergic humans and their state of health*. International Journal of Psychotherapy 12(1): 50-60	This article explores the effects of mental allergy therapy—the HILDESHEIM HEALTH TRAINING" which is based on NLPt. There are numerous evidence that points to a close association between psychosomatics and allergy. The strength of an allergy seems to be influenced by psychological factors. The reported experiment shows that NLPt is able to achieve feed-forward effects and positive changes to the immune function. In a randomised study was with help of psychological tests, a diary of medical consumption and ailments and skin prick tests as a read-out system examined, how NLPt like the HILDESHEIM HEALTH TRAINING influence the allergic immune function on birch pollen allergic humans. 1. In comparison to the people of the control groups the participants of the NLPt-HHT-groups experienced highly significant improvement in all psychological-diagnostic-measurements. 2. The in vivo results demonstrated a significant difference between the treatment groups in both, symptoms and medicine consumption. 3. The force of the allergic reactions showed a drastically decrease during the following season of birch pollen. It seems possible to influence immune function like allergies and the (subjective covariate) state of health by NLPt. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Ader, R. & Cohen, N. (1975) Behaviourally conditioned immunosuppression. Psychosomatic Medicine, 37, 333.	An illness-induced taste aversion was conditioned in rats by pairing saccharin with cyclophosphamide, an immunosuppressive agent. Three days after conditioning, all animals were injected with sheep erythrocytes. Hemagglutinating antibody titers measured 6 days after antigen administration were high in placebo-treated rats. High titers were also observed in nonconditioned animals and in conditioned animals that were nor subsequently exposed to saccharin. No agglutinating antibody was detected in conditioned animals treated with cyclophosphamide at the time of antigen administration. Conditioned animals exposed to saccharin at the time of or following the injection of antigen were significantly immunosuppressed. An illness-induced taste aversion was also conditioned using LiCl, a nonimmunosuppressive agent. In this instance, however, there was no attenuation of hemagglutinating antibody titers in response to injection with antigen.	
		Ader, R. (1989). Conditioned immune responses and pharmacotherapy. Arthritis Care & Research, 2, 3 , Pages A58 - A64.	Data on the conditioned modulation of immune responses are briefly reviewed, and the successful application of conditioning operations to the pharmacotherapy of autoimmune disease in lupus-prone mice is described. These data provide the background for a discussion of the role of conditioning in pharmacotherapy and an experimental analysis of the “placebo effect” as a conditioned response.	
		Michael S. Exton, [a], Anne Kristin von Auer[b], Angelika Buske-Kirschbaum[b], Ursula Stockhorst[c], Ulrich Göbel[d] and Manfred Schedlowski[a] Pavlovian conditioning of immune function Behavioural Brain Research Volume 110, Issues 1-2, June 2000, Pages 129-141	Pavlovian conditioning of immune functions provided early impetus to the rapidly expanding knowledge of bi-directional communication among the immune, endocrine, and central nervous systems. Since these early investigations, the phenomenology of this response has been well characterized. However the neural mechanisms and biological relevance of conditioned immunomodulation remain unclear. To this end, we present here data from our laboratories that have: (1) revealed some of the neural mechanisms and biological relevance of an animal model of conditioned immunomodulation; (2) demonstrated the conditionability and potential mechanisms of conditioned immune responses in healthy humans, and (3) investigated conditioned immunomodulation in a clinical sample. Together, these data demonstrate that animal models provide a basis for investigating mechanisms whereby conditioned changes in immune function may modulate health status in a clinical realm.	
		Vits, S., E. Cesko, et al. (2011). "Behavioural conditioning as the mediator of placebo responses in the immune system." Philosophical Transactions of the Royal Society B: Biological Sciences **366**(1572): 1799-1807.	Current placebo research postulates that conditioning processes are one of the major mechanisms of the placebo response. Behaviourally conditioned changes in peripheral immune functions have been demonstrated in experimental animals, healthy subjects and patients. The physiological mechanisms responsible for this ‘learned immune response’ are not yet fully understood, but some relevant afferent and efferent pathways in the communication between the brain and the peripheral immune system have been identified. In addition, possible benefits and applicability in clinical settings have been demonstrated where behaviourally conditioned immunosuppression attenuated the exacerbation of autoimmune diseases, prolonged allograft survival and affected allergic responses. Here, we summarize data describing the mechanisms and the potential clinical benefit of behaviourally conditioned immune functions, with particular focus on learned placebo effects on allergic reactions.	

		Pacheco-López, G., M.-B. Niemi, et al. (2005). "Neural Substrates for Behaviorally Conditioned Immunosuppression in the Rat." The Journal of Neuroscience **25**(9): 2330-2337.	We have previously demonstrated behaviorally conditioned immunosuppression using cyclosporin A as an unconditioned stimulus and saccharin as a conditioned stimulus. In the current study, we examined the central processing of this phenomenon generating excitotoxic lesions before and after acquisition to discriminate between learning and memory processes. Three different brain areas were analyzed: insular cortex (IC), amygdala (Am), and ventromedial nucleus of the hypothalamus (VMH). The results demonstrate that IC lesions performed before and after acquisition disrupted the behavioral component of the conditioned response (taste aversion). In contrast, Am and VMH lesions did not affect conditioned taste aversion. The behaviorally conditioned suppression of splenocyte proliferation and cytokine production (interleukin-2 and interferon-γ) was differentially affected by the excitotoxic lesions, showing that the IC is essential to acquire and evoke this conditioned response of the immune system. In contrast, the Am seems to mediate the input of visceral information necessary at the acquisition time, whereas the VMH appears to participate within the output pathway to the immune system necessary to evoke the behavioral conditioned immune response. The present data reveal relevant neural mechanisms underlying the learning and memory processes of behaviorally conditioned immunosuppression.	
		Schedlowski, M. and G. Pacheco-López (2010). "The learned immune response: Pavlov and beyond." Brain, Behavior, and Immunity **24**(2): 176-185.	The ability to associate physiological changes with a specific flavor was most likely acquired during evolution as an adaptive strategy aimed at protecting the organism while preparing it for danger. The behaviorally conditioned or learned immune response is an exquisite example of the bidirectional communication between the central nervous system (CNS) and the peripheral immune system. How is it possible that specific immuno-modulating properties of a drug or substance (unconditioned stimulus) can be re-enlisted just by the mere re-exposure to a particular taste, odor or environment (conditioned stimulus)? To answer this key question, we review the neurobiological mechanism mediating this type of associative learning, as well as the pathways and mechanisms employed by the brain to harness the immune system during the execution of the conditioned immune response. Finally, we focus on the potential therapeutic relevance of such learned immune responses, and their re-conceptualization within the framework of “learned placebo effects”.	

		Wirth, T., K. Ober, et al. (2011). "Repeated recall of learned immunosuppression: Evidence from rats and men." Brain, Behavior, and Immunity **25**(7): 1444-1451.	Akin to other physiological responses, the immune system can be modified, via Pavlovian or behavioral conditioning. It is unknown, however, whether and to what extent learned immune responses can be repeatedly recalled over time. Here we demonstrate in both rats and humans that repeated contingent pairing of a novel taste (conditioned stimulus, CS) together with the immunosuppressive drug cyclosporine A as unconditioned stimulus (US) leads to the acquisition of a learned immunosuppression. Sole presentation of the CS caused a significant inhibition of interleukin (IL)-2 and interferon (IFN)-γ production by rat splenic T cells and human peripheral T lymphocytes, closely mimicking the effect of the drug. More importantly, a comparable suppression of cytokine production was also observed after a second, unreinforced exposure to the CS that was separated from the first evocation by an interval of 6 (rats) or 11 (humans) days, respectively. Together, our findings demonstrate that a learned immunosuppression can be repeatedly recalled in both animals and humans, which is an important prerequisite for the implementation of conditioning paradigms as supportive therapy.	
		Swack, J.A., *"A Study of Initial Response and Reversion Rates of Subjects Treated With The Allergy technique",* in *Anchor Point,* Vol 6, No2, Feb 1992		
		Kahn, A. U., M. Staerk, et al. (1974). "Role of counter-conditioning in the treatment of asthma." Journal of Psychosomatic Research **18**(2): 89-92.		

Anchoring		Brandis A. D., (1986) *A neurolinguistic treatment for reducing parental anger responses and creating more resourceful behavioral options*. Dissertation Abstracts International 47(11), 4642-B California School of Professional Psychology (Order = DA8626141): 161, 1986.	This study tested an experimental intervention utilizing techniques of Neuro-Linguistic Programming (NLP) to help parents reduce their angry responses towards their children. A new instrument, the Parental Provocation Inventory (PPI), was developed to assess changes in parental anger responses. The PPI is composed of 16 vignettes of parent-child situations requiring a parental response, which were grouped into four scales by a factor analysis. The scales were reliable by test-retest and were orthogonal, as demonstrated in the Pilot Study. Another instrument, the Parent's Report (PR), was used for comparison. The Parent Training Procedure (PTP) is a highly structured intervention which utilizes Anchoring, in which external stimuli ("anchors") are associated with inner response strategies in order to stabilize, transfer, and combine them. One technique used was the Collapse Anchors procedure in which one anchor, associated with appropriate inner resources or abilities, is "fired" simultaneously with another anchor, associated with an inner representation of a problem situation. The anchors are thus "collapsed" and the needed resources or abilities are then available in the problem situation. A Self-Anchoring procedure, in which subjects were taught to "fire" their resource anchors in actual parent-child situations, was also utilized. A detailed outline of the PTP was adhered to, and Programmer's Checklists were used to record each step of the intervention. The two instruments were administered before and after the PTP. A control group was pre- and post-tested but received no treatment. ANOVA's and Eta('2) coefficients yielded no significance. However, a post-hoc analysis revealed that a strong experimental effect was demonstrated on the PPI by four (half) of the Experimental group subjects, dubbed the "High Change" subgroup (the other four, the "Low" Change" subgroup). The difference between these subgroups could not be explained by differences at pre-test, which were negligible, nor by the differential effect of the two programmers. Analysis of the Programmer's Checklists revealed that the subgroup differences were strongly related to the differential success of the Self-Anchoring portion of the PTP, somewhat less so to the differential success of the Collapse Anchors portion. Recommendations for future research are made.	
		Öhman, A., Eriksson, A., & Olofsson, C. (1975). *One-Trial Learning and Superior Resistance to Extinction of Autonomic Responses Conditioned to Potentially Phobic Stimuli*. Journal of Comparative and Physiological Psychology, 88(2), 619-627.	Human subjects were exposed to pictures of potentially phobic (snakes) and supposedly neutral (houses) objects as conditioned stimuli (CSs) in a Pavlovian conditioning experiment with shock as unconditioned stimulus (US), and skin conductance and finger pulse volume as dependent variables. The skin conductance responses conditioned to phobic stimuli were acquired after one CS-US pairing, and showed practically no extinction, whereas the responses to neutral stimuli showed very little resistance to extinction after both 1 and 5 reinforcements. The superior resistance to extinction of the phobic condition was interpreted to be a specific associative effect. In general, the skin conductance acquisition data showed tendencies similar to those during extinction. For finger pulse volume responses, however, there were very weak conditioning effects, and no effect of stimulus. (PsycINFO Database Record (c) 2010 APA, all rights reserved) (journal abstract)	

		Ohman, A., Fredrikson, M., Hugdahl, K., & Rimmo, P.-A. (1976). *The premise of equipotentiality in human classical conditioning: Conditioned electrodermal responses to potentially phobic stimuli.* Journal of Experimental Psychology: General, 105(4), 313-337	Used pictures of potentially phobic objects as CSs for electrodermal responses to examine the validity of the equipotentiality premise in human classical conditioning. Three experiments with a total of 174 undergraduates involved a long interstimulus-interval differential conditioning paradigm with different pictures as CSs and electric shock as the UCS. In Exp I different pictures proved to be differentially effective as CSs. A group conditioned to potentially phobic stimuli (snakes or spiders) showed greater resistance to extinction than a group conditioned to fear-irrelevant pictorial stimuli (flowers or mushrooms). A 3rd group conditioned to "representative laboratory stimuli" (circles or triangles) fell in between these groups. Exp II showed differences in salience did not produce similar effects to those observed with phobic and fear-irrelevant stimuli in Exp I. In Exp III superior resistance to extinction for phobic stimuli was demonstrated when the UCS was an electric shock, but not when it was a tone to which the S produced reaction times. Thus, the effect appears specific for aversive UCSs, and CS-UCS "belongingness" has been demonstrated. It is concluded that findings challenge the premise of equipotentiality in human conditioning; data seem best explained in terms of biologically oriented constructs, such as preparedness. (2 p ref) (PsycINFO Database Record (c) 2010 APA, all rights reserved)	
		Domjan, M. (2005). "Pavlovian Conditioning: A Functional Perspective." Annual Review of Psychology **56**(1): 179-206.	From a functional perspective, Pavlovian conditioning involves learning about conditioned stimuli (CSs) that have a pre-existing relation to an unconditioned stimulus (US) rather than learning about arbitrary or neutral CSs. In addition, the most important product of learning involves changes in how the organism responds to the US, not in how it responds to the CS, because the US is the more biologically relevant stimulus. These concepts are illustrated using examples from a variety of behavioral and physiological situations including caloric intake and digestion, breast feeding, poison-avoidance learning, eyeblink conditioning, sexual conditioning, fear conditioning, aggression, and drug tolerance and sensitization.	
		Field, E.S. (1990) Neurolinguistic programming as an adjunct to other psychotherapeutic/hypnotherapeutic interventions. American Journal of Clinical Hypnosis. Jan;32(3):174-82.	See Below	

Acting As if		Carney, D. R., Cuddy, A. J. C., & Yap, A. J. (2010). Power Posing: Brief Nonverbal Displays Affect Neuroendocrine Levels and Risk Tolerance. *Psychological Science, 21*(10), 1363-1368.	Humans and other animals express power through open, expansive postures, and they express powerlessness through closed, contractive postures. But can these postures actually cause power? The results of this study confirmed our prediction that posing in high-power nonverbal displays (as opposed to low-power nonverbal displays) would cause neuroendocrine and behavioral changes for both male and female participants: High-power posers experienced elevations in testosterone, decreases in cortisol, and increased feelings of power and tolerance for risk; low-power posers exhibited the opposite pattern. In short, posing in displays of power caused advantaged and adaptive psychological, physiological, and behavioral changes, and these findings suggest that embodiment extends beyond mere thinking and feeling, to physiology and subsequent behavioral choices. That a person can, by assuming two simple 1-min poses, embody power and instantly become more powerful has real-world, actionable implications.	
		Niedenthal, P. M., Barsalou, L. W., Winkielman, P., Krauth-Gruber, S., & Ric, F. (2005). Embodiment in attitudes, social perception, and emotion. Personality And Social Psychology Review: An Official Journal Of The Society For Personality And Social Psychology, Inc, 9(3), 184-211.	Findings in the social psychology literatures on attitudes, social perception, and emotion demonstrate that social information processing involves embodiment, where embodiment refers both to actual bodily states and to simulations of experience in the brain's modality-specific systems for perception, action, and introspection. We show that embodiment underlies social information processing when the perceiver interacts with actual social objects (online cognition) and when the perceiver represents social objects in their absence (offline cognition). Although many empirical demonstrations of social embodiment exist, no particularly compelling account of them has been offered. We propose that theories of embodied cognition, such as the Perceptual Symbol Systems (PSS) account (Barsalou, 1999), explain and integrate these findings, and that they also suggest exciting new directions for research. We compare the PSS account to a variety of related proposals and show how it addresses criticisms that have previously posed problems for the general embodiment approach.;	
		Riskind, J. H. and C. C. Gotay (1982). "Physical posture: Could it have regulatory or feedback effects on motivation and emotion?" Motivation and Emotion 6(3): 273-298.	109 undergraduates participated in 4 studies that examined whether variations in physical posture could have a regulatory or feedback role affecting motivation and emotion. Results of the 1st 2 studies reveal that Ss who had been temporarily placed in a slumped, depressed physical posture later appeared to develop helplessness more readily, as assessed by their lack of persistence in a standard learned helplessness task, than did Ss who had been placed in an expansive, upright posture. The 3rd study established that physical posture was an important cue in Ss' verbal reports of depression in another person. Results of the 4th study indicate that Ss who were placed in a hunched, threatened physical posture verbally reported self-perceptions of greater stress than Ss placed in a relaxed position. Findings are interpreted in terms of self-perception theory. It is suggested that physical postures of the body are one of several types of cues that can affect emotional experience and behavior. (42 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	

		Laird, J. D., J. J. Wagener, et al. (1982). "Remembering what you feel: Effects of emotion on memory." Journal of Personality and Social Psychology 42(4): 646-657.	In Exp I, 60 undergraduates' mood responses to manipulated expressions were assessed. Ss then read 2 passages of the same emotional content, either anger-provoking editorials or humorous selections by Woody Allen. Later, one selection was recalled while frowning and the other while smiling. In the self-produced cue group (i.e., those whose mood was affected in the original assessment), recall was significantly better for the editorials when frowning and for the Woody Allen stories when smiling. In the nonself cue group, expressions did not affect recall. In Exp II, 20 undergraduates heard and recalled 3 kinds of sentences—angry, sad, or fearful—in the same 3 expressions. Again, only in the self-produced cue group was recall significantly better when sentence and expression were consistent. Findings indicate that these effects are due to mood rather than expression and to the match between expression and content at the time of recall. (31 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Carney, D. R., A. J. C. Cuddy, et al. (2010). "Power Posing: Brief Nonverbal Displays Affect Neuroendocrine Levels and Risk Tolerance." Psychological Science 21(10): 1363-1368.	Humans and other animals express power through open, expansive postures, and they express powerlessness through closed, contractive postures. But can these postures actually cause power? The results of this study confirmed our prediction that posing in high-power nonverbal displays (as opposed to low-power nonverbal displays) would cause neuroendocrine and behavioral changes for both male and female participants: High-power posers experienced elevations in testosterone, decreases in cortisol, and increased feelings of power and tolerance for risk; low-power posers exhibited the opposite pattern. In short, posing in displays of power caused advantaged and adaptive psychological, physiological, and behavioral changes, and these findings suggest that embodiment extends beyond mere thinking and feeling, to physiology and subsequent behavioral choices. That a person can, by assuming two simple 1-min poses, embody power and instantly become more powerful has real-world, actionable implications.	
		Riskind, J. H. and C. C. Gotay (1982). "Physical posture: Could it have regulatory or feedback effects on motivation and emotion?" Motivation and Emotion 6(3): 273-298.	109 undergraduates participated in 4 studies that examined whether variations in physical posture could have a regulatory or feedback role affecting motivation and emotion. Results of the 1st 2 studies reveal that Ss who had been temporarily placed in a slumped, depressed physical posture later appeared to develop helplessness more readily, as assessed by their lack of persistence in a standard learned helplessness task, than did Ss who had been placed in an expansive, upright posture. The 3rd study established that physical posture was an important cue in Ss' verbal reports of depression in another person. Results of the 4th study indicate that Ss who were placed in a hunched, threatened physical posture verbally reported self-perceptions of greater stress than Ss placed in a relaxed position. Findings are interpreted in terms of self-perception theory. It is suggested that physical postures of the body are one of several types of cues that can affect emotional experience and behavior. (42 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	

		Riskind, J. H. and C. C. Gotay (1982). "Physical posture: Could it have regulatory or feedback effects on motivation and emotion?" Motivation and Emotion 6(3): 273-298.	109 undergraduates participated in 4 studies that examined whether variations in physical posture could have a regulatory or feedback role affecting motivation and emotion. Results of the 1st 2 studies reveal that Ss who had been temporarily placed in a slumped, depressed physical posture later appeared to develop helplessness more readily, as assessed by their lack of persistence in a standard learned helplessness task, than did Ss who had been placed in an expansive, upright posture. The 3rd study established that physical posture was an important cue in Ss' verbal reports of depression in another person. Results of the 4th study indicate that Ss who were placed in a hunched, threatened physical posture verbally reported self-perceptions of greater stress than Ss placed in a relaxed position. Findings are interpreted in terms of self-perception theory. It is suggested that physical postures of the body are one of several types of cues that can affect emotional experience and behavior. (42 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Laird, J. D., J. J. Wagener, et al. (1982). "Remembering what you feel: Effects of emotion on memory." Journal of Personality and Social Psychology 42(4): 646-657.	In Exp I, 60 undergraduates' mood responses to manipulated expressions were assessed. Ss then read 2 passages of the same emotional content, either anger-provoking editorials or humorous selections by Woody Allen. Later, one selection was recalled while frowning and the other while smiling. In the self-produced cue group (i.e., those whose mood was affected in the original assessment), recall was significantly better for the editorials when frowning and for the Woody Allen stories when smiling. In the nonself cue group, expressions did not affect recall. In Exp II, 20 undergraduates heard and recalled 3 kinds of sentences—angry, sad, or fearful—in the same 3 expressions. Again, only in the self-produced cue group was recall significantly better when sentence and expression were consistent. Findings indicate that these effects are due to mood rather than expression and to the match between expression and content at the time of recall. (31 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
Well-Formed Outcomes	As models of Intrinsic Motivation	Deci, E. L., & Ryan, R. M. (2008). Facilitating Optimal Motivation and Psychological Well-Being Across Life's Domains. Canadian Psychology 49(1), 14–23.	Self-determination theory (SDT) differentiates motivation, with autonomous and controlled motivations constituting the key, broad distinction. Research has shown that autonomous motivation predicts persistence and adherence and is advantageous for effective performance, especially on complex or heuristic tasks that involve deep information processing or creativity. Autonomous motivation is also reliably related to psychological health. Considerable research has found interpersonal contexts that facilitate satisfaction of the basic psychological needs for competence, autonomy, and relatedness to enhance autonomous motivation, which comprises intrinsic motivation and well-internalized extrinsic motivation. SDT has been applied in varied cultures and in many life domains, and research is reviewed that has related autonomous and controlled motivation to education, parenting, work, health care, sport, and close relationships. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Baumeister, R. F., & Heatherton, T. F. (1996). *Self Regulation Failure: An overview*. Psychological Inquiry, 7(1), 1-15.	Discusses patterns of self-regulatory failure as a contributing factor in social problems, and presents a cognitive model of self-control. Underregulation occurs because of deficient standards, inadequate monitoring, or inadequate strength. Misregulation occurs because of false assumptions or misdirected efforts, especially an unwarranted emphasis on emotion. The evidence supports a strength (limited resource) model of self-regulation and suggests that people often acquiesce in losing control. Loss of control of attention, failure of transcendence, and various lapse-activated causes all contribute to regulatory failure. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Hulleman, C. S., Durik A. M., Schweigert S. A., & Harackiewicz, J. M. (2008).Task values, achievement goals, and interest: An integrative analysis. *Journal of Educational Psychology, 100*(2), 398–416. DOI: 10.1037/0022-0663.100.2.398.	The research presented in this article integrates 3 theoretical perspectives in the field of motivation: expectancy-value, achievement goals, and interest. The authors examined the antecedents (initial interest, achievement goals) and consequences (interest, performance) of task value judgments in 2 learning contexts: a college classroom and a high school sports camp. The pattern of findings was consistent across both learning contexts. Initial interest and mastery goals predicted subsequent interest, and task values mediated these relationships. Performance-approach goals and utility value predicted actual performance as indexed by final course grade (classroom) and coach ratings of performance (sports camp). Implications for theories of motivation are discussed. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
		Koestner, R. (2008). *Reaching One's Personal Goals: A Motivational Perspective Focused on Autonomy.* Canadian Psychology, 49(1), 60-67.	The present article reviews recent research on motivational factors that influence the success of personal goals. Although achieving progress on personal goals is made difficult by limitations in self-regulatory strength, it is argued that individuals who feel autonomous regarding their goals will benefit in distinct ways. The issue of autonomy concerns whether a goal reflects an individual's interests and personal values versus whether it is adopted because of social pressures or expectations of what an individual "should do." Recent research indicates that autonomous goal motivation can lead directly to greater goal progress by allowing individuals to exert more effort, experience less conflict, and feel a greater sense of readiness to change their behaviour. It also allows individuals to make better use of implementation plans specifying how, when, and where they will enact goal-directed behaviours. Support from other people (health care providers, etc.) can play a vital role in facilitating goal pursuits, especially when such support enhances feelings of autonomy. Successful goal progress results in enhanced positive affect and reduced negative affect, particularly if the goal pursuits involved satisfaction of intrinsic psychological needs. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Notz, W. W. (1975). *Work Motivation and the Negative Effects of Extrinsic Rewards.* American Psychologist (September 1975), 884-891.	Considers the possibility that intrinsic and extrinsic motivation are not independent, that they do not summate, and that a consequence of arousing extrinsic motivation is to reduce intrinsic motivation. The research relating personal causation to the interaction between the types of motivation is reviewed, and empirical evidence is presented. The interaction effects are noted to be symmetrical in some conditions, and the adequacy of current theories of work motivation is questioned. Innovations such as job enlargement, job enrichment, and participative management appear designed to simultaneously manipulate both types of motivation. (23 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Doemland, Julia H. **Language and Performance: An NLP Meta-Model Analysis of Performance Descriptions by Elite Canoe-Slalom Athletes** Dissertation Abstracts International, B: Sciences and Engineering, 2001, 61, 10, Apr, 5267-B	Research investigating performance enhancement in sport psychology has primarily focused on theory and practice related to cognition and behavior. Little attention has been focused on the mechanisms responsible for those cognitions or behaviors. One such possible mechanism, language, was addressed in this research. The relationship between an athlete's cognitive model of performance, as expressed through language, and level of athletic achievement was examined. The hypothesis under study was that a positive relationship would exist, between the level of attained athletic achievement anti degree of representational organization present in verbal performance descriptions, as measured by the neurolinguistic programming (NLP) meta-model. Existing transcripts of verbatim interviews describing the use of imagery in canoe-slalom performance by 12 elite canoe-slalom athletes (6 of whom were world ranked) were analyzed using the NLP meta-model. Individual interviews were treated as case studies of performance descriptions, providing data for qualitative interpretation and statistical analysis. Qualitative interpretations included in-depth text analyses illustrating the application of the meta-model in assessing the representational organization of performance models. Quantitative analysis included univariate and multivariate analysis of 13 linguistic patterns, goal statements, and level of athletic achievement. Gender was examined to determine significant differences in the linguistic performance models of males and females, and if these differences could explain the relationship seen between level of athletic achievement and representation organization. Results indicated that world ranked athletes generated a statistically significantly greater number of well-formed goal statements than non-ranked athletes. No other significant differences emerged between world ranked and non-ranked athletes. Analysis of gender differences revealed that male athletes utilized more global generalizations and disassociated points of view when linguistically representing performance models than their female counterparts. Qualitative findings suggested that the effect of meta-model violations on linguistic representations of individual performance models varied, ranging from the expected limitations to sophisticated adaptations. It was found that the sophisticated adaptations enhanced the functional qualities of performance representations, nullifying the proposed limitations imposed by recta-model violations present, in the model	

	Higher Value	Prochaska, J. O. (1994). *Strong and Weak Principles for Progressing From Precontemplation to Action on the Basis of Twelve Problem Behaviors*. Health Psychology,13(1): 47-51.	Two principles for progressing from the precontemplation stage of change to the action stage were discovered. The strong principle states that progression from precontemplation to action is a function of approximately a 1 standard deviation increase in the pros of a health behavior change. The weak principle states that progression from precontemplation to action is a function of approximately a 1/2 standard deviation decrease in the cons of a health behavior change. In Study 1, these principles were derived from cross-sectional data on 12 problem behaviors relating the pros and cons of changing to the stages of change. In Study 2, these principles were validated on cross-sectional data from an independent sample of 1,466 smokers. Discussion focuses on the implications of these principles for individual psychology and public health policy. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Hall, K. L. and J. S. Rossi (2008). "Meta-analytic examination of the strong and weak principles across 48 health behaviors." Preventive Medicine: An International Journal Devoted to Practice and Theory **46**(3): 266-274.	Objective: The strong and weak principles of change state that progress from the precontemplation to the action stage of change is associated with a one standard deviation increase in the pros and a one-half standard deviation decrease in the cons of change. In this study these relationships, originally developed by Prochaska [Prochaska, J.O., 1994. Strong and weak principles for progressing from precontemplation to action on the basis of 12 problem behaviors. Health Psychology, 13, 47-51] based on an examination of 12 studies of 12 different behaviors, were re-examined using many more datasets and much more rigorous statistical methods. Methods: The current study analyzes 120 datasets from studies conducted between 1984 and 2003 across and within 48 health behaviors, including nearly 50,000 participants from 10 countries. The datasets were primarily analyzed utilizing meta-analytic techniques. Results: Despite the range of behaviors and populations, the results were remarkably consistent with the original results (pros = 1.00 standard deviation, cons = 0.56 standard deviation). Few potential moderators showed any impact on effect size distributions. Conclusions: This updated and enhanced examination of two important principles of behavior change is a significant contribution to the field of multiple health risk behaviors, as it clearly demonstrates the consistency of the theoretical principles across multiple behaviors, which has implications for developing multiple health risk behavior interventions. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

		Young, Jennifer Ann. Developing leadership from within: A descriptive study of the use of neurolinguistic programming practices in a course on leadership. **Dissertation Abstracts International Section A: Humanities and Social Sciences (0419-4209)** p.0080	*The focus of this study was the design, delivery, and receipt of an experiential, graduate-level leadership course emphasizing the development of self as leader and structured around principles of neurolinguistic programming. The study explored the questions: How did participants perceive changes in their own growth and development? What were the experiences and emergent outcomes of being engaged in a curriculum and learning environment designed to facilitate personal change? The rationale for this course was rooted in the instructors' beliefs that at the heart of organizational change is individual change; at the heart of individual change is the capacity to change beliefs, values and perceptions; and this capacity resides in the inner world of the individual. The rationale for the research included the recent emphasis in leadership literature on self-leadership, personal mastery, and the character and thought processes of the effective leader. The objective was to begin to address the marked absence of academic research into the how of effective leadership and to research the use of NLP principles and processes in the area of leadership development. The study drew upon four literatures: those on learning organizations, individual change and development, leadership, and neurolinguistic programming. Issues addressed included the notions of perception, dialogue, disclosure, identity, empowerment and personal change. Essential aspects of the study were the use of NLP tools and concepts within the scope of a ten-week course. Would these facilitate change and accelerate the development of leadership potential? Would certain exercises and interventions be more important than others? Would any students still be using NLP-based processes in their lives a year later? The research was conducted using qualitative methods, including interviews, video- and audio-taping, journals, course evaluations, and follow-up interviews one year later.*	
		Jemmer, P. (2006). "Beliefs, Values and the Vacuum of Choice." European Journal of Clinical Hypnosis 6(4): 16-21.	In this article a definition of the concept of 'beliefs,' 'values' and 'attitudes' is first presented, their formation and manifestation are then described, and the relationships between them are delineated. This is followed by a discussion of their crucial role in a therapeutic context, and an investigation of mechanisms for fundamental therapeutic change using Neuro-linguistic programming methodologies, concentrating on 'submodality change' and 'reframing,' together with a presentation of illustrative examples. This article concludes that one main task of the therapist is to instigate an appropriate relationship with the client, to respect and respond to their needs, and to help effect congruent and lasting positive outcomes in order to allow them to expand to fill the wonderful 'vacuum of choice' arising from being in control of one's own beliefs, values and attitudes.	
Reframing		Eckstein, D. (2004). "'Reframing' as an Innovative Educational Technique: Turning a Perceived Inability into an Asset." Korean Journal of Thinking & Problem Solving **14**(1): 37-47.	New learnings are inhibited by early formed paradigms. Reframing, forming new impressions, creates a new version of habitual patterns. This article presents specific reframing techniques as: Senoi dreamwork; neuro-linguistic programming; cognitive restructuring; and the Adlerian psychology technique of "turning a perceived 'negative' into a 'positive'." It concludes with specific suggestions for educators and an example of reframing by a seventh grade teacher. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	A

Miscellaneous Applications	Alleviation of distress	Kirenskaya, A.V., Novototsky-Vlasov, V.Y., Chistyakov, A.N., Zvonikov, V.M. (2011) *The relationship between hypnotizability, internal imagery, and efficiency of neurolinguistic programming*. International Journal of Clinical and Experimental Hypnosis. Apr;59(2):225-41.	Subjective scoring and autonomic variables (heart rate, skin conduction span) were used to verify the reality of inner experience during recollection of emotionally neutral, positive, and negative past events in 19 high (HH) and 12 low (LH) hypnotizable subjects in hypnotic and nonhypnotic experimental sessions. Also, the influence of hypnotizability on the effectiveness of an imagery-based neurolinguistic programming (NLP) technique was evaluated. Results demonstrated that subjective scores of image vividness and emotional intensity were significantly higher in the HH subjects compared to LH in both sessions. The past-events recollection was followed by increased autonomic activity only in the HH subjects. The NLP procedure was followed by decreased negative emotional intensity in both groups, but autonomic activity decline was observed in the HH subjects and not in the LH. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
		Bigley, J., Griffiths, D., Prydderch, A., Romanowski, A. J., Miles, L., Lidiard. H. (2010) *Neurolinguistic programming used to reduce the need for anaesthesia in claustrophobic patients undergoing MRI* The British Journal of Radiology, 83, 113–117.	The purpose of this study was to assess the success of neurolinguistic programming in reducing the need for general anaesthesia in claustrophobic patients who require MRI and to consider the financial implications for health providers. This was a prospective study performed in 2006 and 2007 at a teaching hospital in England and comprised 50 adults who had unsuccessful MR examinations because of claustrophobia. The main outcome measures were the ability to tolerate a successful MR examination after neurolinguistic programming, the reduction of median anxiety scores produced by neurolinguistic programming, and models of costs for various imaging pathways. Neurolinguistic programming allowed 38/50 people (76%) to complete the MR examination successfully. Overall, the median anxiety score was significantly reduced following the session of neurolinguistic programming. In conclusion, neurolinguistic programming reduced anxiety and subsequently allowed MRI to be performed without resorting to general anaesthesia in a high proportion of claustrophobic adults. If these results are reproducible, there will be major advantages in terms of patient safety and costs.	
	Positive Self Image	Hossack, A., & Standidge, K. (1993) *Using an imaginary scrapbook for neurolinguistic programming in the aftermath of a clinical depression: a case history*. Gerontologist. 33(2):265-8.	Employed neurolinguistic programming (NLP) principles to develop a positive self-identity in an elderly male patient in England recovering from clinical depression. This novel technique encouraged recall of intrinsically rewarding past experiences. Each experience was conceptualized in an image and compiled chronologically in an imaginary book, providing continuity to what were chaotic and fragmented recollections during the immediate postdepressive stage. The scrapbook approach to alleviating depressive symptoms combines NLP principles, sensory modality preference in information processing, guided reminiscence and recall therapy, and the lifebook method. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	

		Duncan, R.C., Konefal, J., Spechler, M.M. (1990) *Effect of neurolinguistic programming training on self-actualization as measured by the Personal Orientation Inventory*. Psychological Report. Jun;66(3 Pt 2):1323-30	Within-person changes occurred on self-actualization measures of the Personal Orientation Inventory following a 21-day residential training in neurolinguistic programming for 18 master practitioners and 36 practitioners (aged 21 to 50+ yrs). Findings are consistent with the hypothesis that training increases self-actualization scores. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Vianna, L. A. C., G. F. T. Bomfim, et al. (2006). "Self-esteem of raped women." Revista Latino-Americana de Enfermagem **14**(5): 695-701.	This qualitative study shows the results of workshops held with health workers and public health users (raped women), aimed at raising these women's self-esteem and creating awareness among health workers who attend them. Neuro-Linguistic Programming techniques were used to bring back life experiences, which contributed to a re-reading and to minimize causal factors of low self-esteem. Themes like repugnance, fear and the fruit of rape; image and place; death; revenge; support and solidarity; domestic violence and bad care delivery to victims were addressed during the meetings. The stories were transcribed and analyzed, preserving content fidelity. Experiences lived at home and with loved and admired people, and mainly experiences resulting from the rape were responsible for the low self-esteem. The evaluations indicated the workshops as an opportunity to reflect, to return to normal life and to reconstruct self-esteem, for the raped women as well for the health workers who deliver care to them. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
	Self-efficacy	Zamini, S., S. D. H. Nasab, et al. (2009). "The effect of NLP strategies training on self-efficacy and problem solving among girl students." Journal of Psychology **13**(3): 258-271.	The aim of this study was to investigate the effect of NLP training on the self-efficacy and problem-solving of girls students. The pre-test and post-test design was used. Participants were 56 second grade Art school female students in Tabriz, who were selected in a clusteral random sampling. 28 students were in the experimenatal group and 28 students were in the control group. Subjects in both groups answered to both the Sherer's General Self-Efficacy Scale (GSES) and the Cassidy and Long's Problem Solving Scale as pre-test. Then, the Experimental group recived 18 weekly sessions (80 minutes each). NLP strategies training were designed using subjects such as dealing with goal setting, time management , assertive skills, representational systems and neurological level. One week after the last training session subjects in both groups were post-tested by the same measures. Data were analyzed through ANCOVA analysis. The results showed a significant difference between the per-test and post-test scores of self-efficacy for the experimental group. However, there was no significant difference between the pre-test and post-test scores of problem solving for the experimental group. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

	Parental Anger	Brandis A. D., (1986) *A neurolinguistic treatment for reducing parental anger responses and creating more resourceful behavioral options*. Dissertation Abstracts International 47(11), 4642-B California School of Professional Psychology (Order = DA8626141): 161, 1986.	Abstract: This study tested an experimental intervention utilizing techniques of Neuro-Linguistic Programming (NLP) to help parents reduce their anger responses toward their children. A new instrument, the Parental Provocation Inventory (PPI), was developed to assess changes in parental anger responses. The PPI is composed of 16 vignettes of parent-child situations requiring a parental response, which were grouped into four scales by a factor analysis. The scales were reliable by test-retest and were orthagonal, as demonstrated in the pilot study. Another instrument, the Parents' Report (PR), was used for comparison. The Parent Training Procedure (PTP) is a highly structured intervention which utilizes Anchoring, in which external stimuli ("anchors") are associated with inner response strategies in order to stabilize, transfer, and combine them. One technique used was the Collapse Anchors procedure in which one anchor, associated with appropriate inner resources or abilities, is "fired" simultaneously with another anchor, associated with an inner representation of a problem situation. The anchors are thus "collapsed" and the needed resources or abilities are then available in the problem situation. A Self- Anchoring procedure, in which subjects were taught to "fire" their resource anchors in actual parent-child situations, was also utilized. A detailed outline of the PTP was adhered to, and Programmer's Checklists were used to record each step of the intervention. The two instruments were administered before and after the PTP. A control group was pre- and post-tested but received no treatment. ANOVA's and Eta(2) coefficients yielded no significance. However, a post-hoc analysis revealed that a strong experimental effect was demonstrated on the PPI by four (half) of the Experimental group subjects, dubbed the "High Change" subgroup (the other four, the "Low Change" subgroup). The differences between these subgroups could not be explained by differences at pre-test, which were negligible, nor by the differential effect of the two programmers. Analysis of the Programmer's Checklists revealed that the subgroup differences were strongly related to the differential success of the Self-Anchoring portion of the PTP, somewhat less so to the differential success of the Collapse Anchors portion. Recommendations for future research are made.	

	Dyslexia	Bull, L. (2002) *Parents Use of Complementary Medicine with their Children who have Learning Difficulties. The Case of the Sunflower Method.* Early Child Development and Care. 172(3), pp 247-257.	his paper describes in-depth interviews with parents of children (aged 8-16 yrs) who have learning difficulties who have used a complementary therapy called the Sunflower Method. In-depth interviews explored parental motivations for using complementary medicine with their children along with levels of satisfaction with the treatment received and perceived effectiveness of treatment. Parental reasons for using complementary medicine could be classified into two groups. Some parents demonstrated a wholehearted commitment to natural medicine while other parents were using complementary medicine as a last resort following disappointment with conventional interventions. Satisfaction with the treatment and perceived effectiveness were influenced by the degree of improvement that parents had witnessed in their children. However, it is unclear if parents with a pre-existing commitment to complementary medicine are more likely to regard any improvements in their child as directly attributable to the use of the Sunflower Method compared to more skeptical parents. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Bull, L., (2007) *Sunflower therapy for children with specific learning difficulties (dyslexia): a randomised, controlled trial*. Complementary therapies in clinical practice 13 (1): 15-24.	The aim of the study was to determine the clinical and perceived effectiveness of the Sunflower therapy in the treatment of childhood dyslexia. The Sunflower therapy includes applied kinesiology, physical manipulation, massage, homeopathy, herbal remedies and neuro-linguistic programming. A multi-centred, randomised controlled trial was undertaken with 70 dyslexic children aged 6–13 years. The research study aimed to test the research hypothesis that dyslexic children 'feel better' and 'perform better' as a result of treatment by the Sunflower therapy. Children in the treatment group and the control group were assessed using a battery of standardised cognitive, Literacy and self-esteem tests before and after the intervention. Parents of children in the treatment group gave feedback on their experience of the Sunflower therapy. Test scores were compared using the Mann Whitney, and Wilcoxon statistical tests. While both groups of children improved in some of their test scores over time, there were no statistically significant improvements in cognitive or Literacy test performance associated with the treatment. However, there were statistically significant improvements in academic self-esteem, and reading self-esteem, for the treatment group. The majority of parents (57.13%) felt that the Sunflower therapy was effective in the treatment of learning difficulties. Further research is required to verify these findings, and should include a control group receiving a dummy treatment to exclude placebo effects.	

	Pain Control	Bowers, L. A. (1995). A*n exploration of holistic and non-traditional healing methods including researching the use of neuro-lingistic programming in the adjunctive treatment of acute pain.* Thesis (Ph. D.) — Graduate School of the Union Institute, Cincinnati, OH.	Abstract: This study begins with a survey of holistic healing and pain control methods, from hands on healing techniques; to vitamin, mineral, herbal and diet-based therapies; body manipulation and movement; visualization, hypnosis, and guided imagery; meridian-based treatments of applied kinesiology and Chinese medicine (acupuncture and acupressure); art and music therapies; and several talk-based psychotherapies. This is followed by an analysis of Neuro-Linguistic Programming (NLP), from its development by Bandler and Grinder in 1975, through and including recent (1995) "state of the art techniques. The author pays particular attention to using NLP in pain management, andto the recent transpersonal direction of NLP. The research involved 48 chiropractic patients in acute pain. They were randomly divided into treatment and non-treatment groups of 24 each. Non-treatment group patients received regular chiropractic care while treatment group patients received adjunctive NLP treatments from the author, a psychologist. Before each chiropractic and NLP session, the clinicians measured pain level using a Visual Analogue Scale (VAS). The author compared pain reduction between the two groups. On a scale of 0-10, 0 being the absence of any pain and 10 being extreme pain, the treatment group experienced an average reduction of 6.2 over an average of 2.1 NLP sessions (6 days), and the non-treatment group experienced a reduction of 1.7 over the same time. The researcher concluded that NLP is an excellent adjunctive treatment for chiropractic patients in acute pain. She notes limitations of the study (group size, lack of control on degree of patient participation, therapeutic judgment) and makes suggestions for further study. The author suggests future researchers obtain funding to permit use of larger groups, multiple and varied therapists, different milieus (e.g. medical or physical therapy offices) and other types of pain (chronic pain, PMS, cancer pain, etc.). She also suggests eval (PsycINFO Database Record (c) 2005 APA, all rights reserved).	
	Anxiety	Konefal J, and Duncan R. (1998). Social Anxiety and Training in Neurolinguistic Programming. Psychological Reports, 83:1115-1122.	The Liebowitz Social Phobia Scale measured the effect of training on social anxiety responses of 28 adults (aged 20–60 yrs) prior to and following a 21-day residential training, and at 6 mo follow-up. Significant reductions posttraining and at follow-up were evident in the mean self-reported global scale scores on fear and avoidance behavior in social situations. The item scores, aggregated to reflect the situational domains of formal and informal speaking, being observed by others, and assertion, showed significant and continuing reduction from posttraining through follow-up. These findings are consistent with the hypothesis that this training may be associated with reduced responses to social anxiety, but as there was no formal control group, pretest scores from another study were used. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	

		Konefal J, Duncan R, Reese, M. (1992). "Effect of Neurolinguistic Programming Training on Trait Anxiety and Internal Locus of Control." Psychological Reports, 70:819-832, 1992.	Examined within-person and between-group changes in trait anxiety and locus of control as measured on the State-Trait Anxiety Inventory and the Multidimensional Health Locus of Control Scale. Ss were 27 men and 30 women participating in a 21-day residential training program in neurolinguistic programming. Significant within-person decreases in trait-anxiety scores and increases in internal locus of control scores were observed as predicted. Results confirm the effectiveness of neurolinguistic programming in lowering trait anxiety and increasing the sense of internal control. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
		Peterson-Cooney, Lorrie1991'***Effect*** of ***neurolinguistic programming training*** on ***self-actualization*** as measured by the Personal Orientation Inventory': Addendum to the Duncan, - I et al. -R study. Psychological Reports, Vol 68(2), Apr 1991. pp. 593-594.		
	Phobias	Einspruch, Eric L.; Forman, Bruce D.: Neurolinguistic Programming in the treatment of phobias. Psychotherapy in private practice, 6(1), p. 91-100, 1988.	Abstract: This article evaluated a program for treating phobias based on R. Bandler and J. Grinder's (1979) Neurolinguistic Programming (NLP) and Ericksonian approaches to psychotherapy within the context of a multifaceted treatment program. Thirty-one phobic patients seen in group/class treatment programs completed Mark's Phobia Questionnaire and Fear Inventory and the Beck Depression Inventory before and after 8 weeks of treatment. Seventeen patients seen in individual therapy completed part of the phobia questionnaire before and after treatment. Results indicate marked improvement by those who were treated. Findings suggest that NLP holds promise for becoming an important set of therapeutic techniques	

		Ferguson, David M.: The effect of two audiotaped Neurolinguistic Programming (NLP) phobia treatments on public speaking anxiety. Dissertation Abstracts International 49(4), 765 University of Tennessee, 95 pp. Order = DA8810355, 1987.	Abstract: This study was designed to investigate the ability of two Neurolinguistic Programming phobia cures to reduce public speaking anxiety. Audiotaped versions of the two phobia cures, the Phobia Cure and the Fast Phobia Cure, were compared to an audiotaped massed systematic desensitization procedure and a no-treatment procedure. Two hundred eighty-five subjects volunteered for this study. To be included in the study each subject had to score 1/2 standard deviation above the mean on the Personal Report of Confidence as a Speaker and exhibit no obvious signs of pathology. Subjects who met that criteria were assessed using the Personal Report of Public Speaking Anxiety, the Audience Anxiousness scale, and the Self Assessment of Mastery of Public Speaking scale. Each subject was then randomly assigned to either the Phobia Cure, the Fast Phobia Cure, the massed systematic desensitization procedure, or the no-treatment procedure. The Phobia Cure, the Fast Phobia Cure, and the massed systematic desensitization procedure were administered in one session via an audiotape. Subjects assigned to the no-treatment procedure were requested to wait in a waiting room for 30 minutes. After completing his/her respective treatment, the subject was requested to complete the Personal Report of Public Speaking Anxiety and the Audience Anxiousness scale. Approximately three weeks after the completion of his/her treatment, each subject was requested to complete the Personal Report of Public Speaking Anxiety, the Audience Anxiousness scale, and the Self Assessment of Mastery of Public Speaking Scale. Data were gathered from 20 subjects for each of the four procedures. The data from these three dependent measures were analyzed with repeated measures analysis of variance. The results of the repeated measures analyses failed to support the hypothesis that the Neurolinguistic Programming phobia cures, when administered via an audiotape, were more effective than an audiotaped massed systematic desensitization procedure or a no-treatment waiting procedure.	

		Hale, Richard L.: The effects of Neurolinguistic Programming (NLP) on public speaking anxiety and incompetence. Dissertation Abstracts International 47(5), pp 2167 Drake University, 93 pp. Order =DA8617682, 1986.	Abstract: Public speaking anxiety and incompetence are common problems for individuals of all ages and social status. While there are procedures documented in the literature which effectively reduce public speaking anxiety and increase performance quality, the treatments can be costly and time consuming. The developers of Neurolinguistic Programming (NLP) claim their techniques are effective in treating phobias in general and speech phobia in particular, and that such treatment can take place in one session. These claims have not been scientifically tested. Description: PROCEDURE: Eight introductory psychology students identified as having speech anxiety and incompetence were repeatedly assessed during three or four speech and measuring sessions with behavioral, subjective, and physiological measures. After one baseline speech and measurement session for six subjects, and two baseline sessions for two subjects, four subjects received treatment for their speech problems with NLP and four received treatment with Rogerian oriented therapy designed to be a placebo treatment. For six subjects, the treatment conditions were reversed for the next session, while for two subjects the same treatment was repeated with one receiving two sessions of NLP and one receiving two sessions of insight therapy.	
		Kammer, D.; Lanver, C.; Schwochow, M.: Controled treatment of simple phobias with NLP: evaluation of a pilot project. University of Bielefeld, Department of Psychology,unpublished paper, 1997.	Abstract: An NLP treatment program (6-8 sessions) for patients with specific phobias is evaluated in a pre-post-follow-up waiting list control group design. Twenty-four patients (12 intervention group, 12 control group) diagnosed with the DIPS interview schedule cf. DSM-III-R criteria performed adequate graded behavioral tests (in sensu, in vivo) and completed questionnaire measures of anxiety (Fear Survey Schedule FSS; DIPS; Trait/State Anxiety STAI -X1 and X2), general health complaints (BEB), depressed mood (BDI) and attributions of control (general FKK and anxiety-specific FKK). The sessions were videotaped, and for each NLP module (goals on all logical levels format; parts integration or reframing format; V-K-dissociation format) subjects rated its helpfulness. Preliminary analysis of the data revealed positive anxiety-specific pre-post intervention effects. The overall body of data incl. follow-up is being processed at present. In a process-oriented analysis, Brandl (1997) contrasts the interaction characteristics of a more and a less successful intervention.	

		Liberman, Marla Beth: The treatment of simple phobias with Neurolinguistic Programming techniques. Dissertation Abstracts International 45(6), St. Louis University, 86 pp. Pub. = AAC8418664, 1984.	Abstract: This study represents the first experimental test of the effectiveness of Neurolinguistic Programming (NLP) techniques in ameliorating phobic behavior and attendant fear and discomfort. Twelve subjects meeting the DSM-III criteria for Simple Phobia were recruited by referral and advertisement in local newspapers of Middlesex County, New Jersey. Treatment was evaluated in a pretest-posttest control group design. The experimental (NLP) treatment involved the imaging of scenes related to feelings of the phobias from a dissociated position of subject watching viewer watching actor. The control procedure involved the imaging of pleasant scenes. All subjects were treated for two sessions within one week, each lasting less than one hour. Subjects were evaluated at pretest, posttest and three week follow-up with measures of approach to phobic stimuli, fear of approach to graded phobic stimuli, in vivo or in vitro (fear thermometer), discomfort, general symptomatology (SCL-90R), global fears (FSS- III) and with self-report questionnaires. Subjects were administered a test of hypnotic susceptibility (SHSS) and received a final self-report form two months posttreatment. The NLP treatment was demonstrated to be effective in reducing phobic behavior and subjective distress, and was superior to the control condition in improving approach behavior and in reducing fear, discomfort and the intensity of a wide range of symptoms. Hypnotic susceptibility was not significantly related to any dependent measures at pretest, posttest, or follow-up. Treatment outcome compared favorably with more conventional treatments and speculations about possible critical factors and mechanisms of action were discussed. Positive Results	
	addiction	Gray, R. (2002). "The Brooklyn Program: Innovative Approaches to Substance Abuse Treatment." Federal Probation Quarterly **66**(3).	The United States Probation Department is charged, inter alia, with executing orders of the Federal Court regarding the correctional treatment of Federal Offenders. Among the orders enforced by the Probation Department are those requiring substance abuse treatment. Some offenders have already completed extensive treatment regimens while in prison. Others report that they have misrepresented their substance abuse histories in order to obtain more lenient sentences or in order to become eligible for the Bureau of Prisons' early release program (for offenders who have completed their 500 hour in-house program). Beyond the normal burden of persons with various levels of substance abuse problems and history, these categories of offenders account for a large amount of wasted time, effort and funds.In addressing its own need to care for persons with a spectrum of substance abuse issues, the United states Probation Department for the Eastern District of New York has undertaken an innovative substance abuse treatment program that is cost effective, has high rates of retention and provides powerful tools for abstinence, recovery, and life.	

		Gray, R. (2010) The Brooklyn Program: Applying NLP to Addictions. Current Research in NLP: Proceedings of 2008 Conference, 1(1), 88-98.	From 1997 to 2004 the US Probation Department, EDNY, operated a 16 week, NLP-based program for offenders with various levels of substance use disorders (Gray, 2001, 2002). The program was based upon Jungian and Maslowian concepts of personal growth and development (Gray, 1996; Maslow, 1970; Progoff, 1959; Zoja, 1996) and was closely tied to The Stages of Change Model and the work of James Prochaska (Prochaska, DiClemente & Norcross, 1994). It made use of standard NLP tools for the creation of: peak experiences—using submodality analysis, accessible resource states—using anchoring understood as a classical conditioning paradigm, and the well-formed outcome frame to instantiate Prochaska's preferred future. All changes worked to move the participant towards identifying and realizing and individualizing/self actualizing future. Later, the program was informed by research into the mechanisms of incentive salience in the midbrain dopamine system (Robinson & Berridge, 2001, Robinson, 2004). Through 2004, the program graduated more than 300 participants. 30 percent (29.6%) of participants who had previously tested positive for abused substances remained abstinent for one year following treatment. Statistical analyses showed that the NLP treatment obtained results that were equivalent to results obtained by participants in intensive outpatient treatment despite being much less expensive and much less time intensive—the program required two hours per week and periodic individual sessions. Positive affect, increased self efficacy and general participant satisfaction were hallmarks of the program completers (Gray, 2002).	
	Headache	Bacon, Stephen C.: Neurolinguistic Programming and psychosomatic illness: a study of the effects of reframing on headache pain. Dissertation Abstracts International 44(7), 2233-B University of Montana, 110 pp. Pub. = DA8326959, 1983.	Abstract: This study compared the effects of reframing, a neurolinguistic programming technique, and relaxation therapy on headache pain. Through advertising, 32 subjects were recruited who suffered from a variety of nontraumatic headaches. They were randomly assigned to four experimental cells formed by the interaction of the two treatments and two therapists. Following four weeks of baseline headache monitoring, the subjects received three weeks of treatment and then continued to record headache data for a four week follow-up period. The results showed significant pre-post gains for both therapies but there were no differences between the treatments. However, there were significant differences in therapist's effectiveness. The literature of psychotherapeutic approaches to headache control is selectively reviewed and reframing is analyzed and compared to similar extant treatments. The results are discussed and a limited recommendation is offered for further research.	
	Skill Acquisition	Holdevici, Irina: Neurolinguistic programming: a form of mental training in high-performance shooting. Revue Roumaine des Sciences Sociales, Serie de Psychologie; Jul-Dec Vol 34(2) 169-173, 1990.	Abstract: Discusses the use of neurolinguistic programming (NP) in psychological preparation of sportsmen engaged in high-performance shooting. A mental training procedure that included NP techniques combined with relaxation and breathing exercises is outlined. The method was used effectively in the training of the Romanian Olympic shooting team. (PsycLIT Database Copyright 1992 American Psychological Assn, all rights reserved)	

		Malloy, Thomas E.; Mitchell, Christine; Gordon, Oakley E.: Training cognitive strategies underlying intelligent problem solving. Perceptual and Motor Skills, 64, p. 1039-1046, 1987.	Abstract: Cognitive strategies underlying excellent performance of intelligent people in the Raven's Progressive Matrices Test were used to develop a teaching package. 24 subjects in a Cognitive Strategies group were trained using this teaching package. An Exposure group of 17 subjects were not trained but solved all the examples of the puzzles in the package. A Control group, with 13 subjects, received no intervention. Subjects were pre- and post-tested on matrix solving ability and were post-tested on a Piagetian multiplicative classification task. The Cognitive Strategies group showed the greatest improvement pre- to post-tested, followed by the exposure group and then the Control group. The Cognitive Strategies group was superior to both control on the Piagetian task, indicating a broad improvement in cognitive functioning.	
		Davis, Gerald L., Jr.: Neurolinguistic Programming as an interviewing technique with prelingually deaf adults. Dissertation Abstracts International 46(5), 1247-A 1248-A Oklahoma State University, 91 pp. Order = DA8515247, 1984.	Abstract: Scope of Study: Hearing loss is the number one handicapping condition in the United States. The major problem faced by deaf individuals is that of communication. Prelingually deaf adults volunteered for this study and they, as a group, were either born deaf or became deaf prior to language acquisition (usually about age three). This purpose of this study was threefold in nature. First, the study centered on the investigation and reporting of data regarding leisure, social, and recreational activities and needs of prelingually deaf adults. Of major concern in this regard was the deaf individual's educational, social, emotional, and vocational adjustment in relationship to appropriate play experiences and leisure programming activities. Second, the study focused on neurolinguistic programming (NLP), the model or tool utilized in gathering and reporting of data. This communication-based interviewing model was selected because its clinical approach offered a replicable model in addition to having sound theoretical principles. Furthermore, this interviewing method was communication oriented and focused on verbal and nonverbal forms of communication. Finally, this study investigated calibrating, mapping, and replicating strategies relative to successful, peak-performance behaviors. Eye scanning patterns were the basis for mapping particular experiences. Findings and Conclusions: Five prelingually deaf adults were interviewed regarding personal, educational, vocational, disability, and recreational experiences. Their responses were divided into content and process sections for ease of presentation and analysis of the data. NLP was the communication model utilized to interview participants. Its structure, terminology, and sound theoretical principles resulted in gathering valuable process information relative to "successful" and "unsuccessful" behaviors. Particular eye scanning patterns of subjective internal experiences regarding successful and unsuccessful behavior were calibrated, mapped, and recorded.	

	Marital Adjustment	Wilimek, Jay F.: The use of language representational systems by high and low marital adjustment couples. Dissertation Abstracts International 40(7), 3914-A University of Utah, 83 pp. Order = 8000971, 1979.	Abstract: Predicates used in speech (verbs, adverbs, adjectives, and nominalizations) have been hypothesized by Bandler and Grinder (1976) to provide natural language representations of the sensory perceptions that an individual has relied on to gather information about the world. Bandler and Grinder suggest that language representational systems play an important role in interpersonal communication. Representational systems have also been hypothesized to affect the quality of interaction between marital partners (Bandler, Grinder & Satir, 1976). The present study investigated language representational systems in the natural language of high-adjustment and low-adjustment married couples. Two groups of subjects, with 12 couples in each group, were selected on the basis of their Dyadic Adjustment Scale scores, and then compared for differences in their use of speech predicates in samples of natural language. Ratings of the predicates used by each subject to describe satisfying experiences in a five- minute monologue and to describe upsetting experiences in a second five-minute monologue were a dependent variable. These ratings were also compared to another dependent variable, the subject's ability to use mental imagery, measured by the Betts QMI. Analyses of the data indicated that married people used significantly more auditory predicates and fewer visual predicates when they described upsetting experiences than when they described satisfying experiences. High-adjustment couples use significantly more kinesthetic predicates in descriptions of upsetting experiences than in descriptions of satisfying experiences, while low- adjustment couples showed no differences. Individuals in high-adjustment marriages evidenced significantly better auditory and kinesthetic imagery on the Betts QMI than individuals in low-adjustment marriages. Correlations between the auditory, visual, and kinesthetic scales of the Betts QMI and the use of auditory, visual, and kinesthetic predicates in a natural language sample were low. Extending Bandler, Grinder, and Satir's (1976) theory about representational systems to these data, it appears that married people become more aware of auditory experiences when they are upset (particularly low-adjustment wives), and less aware of their visual experience. Also, spouses in high-adjustment marriages become more aware of their feelings when upset, while individuals in low-adjustment marriages do not become more aware of their feelings. These trends may be related to the poorer auditory and kinesthetic imagery of the low-adjustment couples, as poor imagers have demonstrated more confabulation of the original stimuli in their images than good imagers (Sheehan, 1966). This deficit may promote verbal disagreements over differences in the recalled perception of low-adjustment spouses' shared experiences.	

	Bulemia	Scott, Eddie K.: The effects of the Neurolinguistic Programming model of reframing as therapy for bulemia. Dissertation Abstracts International 48(7), 1713-A 1714-A Northern Arizona University, 191 pp. Order = DA8715297, 1987.	Abstract: The purpose of this study was to determine the therapeutic value of reframing within the Neurolinguistic Programming (NLP) model with bulemia. Effectiveness of treatment was measured by the following self-report variables: number of binges and purges per week, average daily caloric intake, duration of binges, and binge obsession intensity. Pre-and posttest scores of the Eating Disorder Inventory and the Tennessee Self-Concept Scale were also employed. The Diagnostic Survey for Eating Disorders was used to obtain background and demographic data on subjects to compare them along these dimensions with bulemic subjects as described in prior research. Binge obsession intensity was measured at each time of day to discern if the obsession to binge is more prevalent at any particular time of day. The research program was conducted with five bulemic subjects who were university students and met the DSM- III definition of bulemia. The study consisted of three phases: three weeks of baseline during which the pre-tests were administered, three or four weeks of treatment depending on the needs of the subject, and three weeks of follow-up during which post-treatment data were gathered. Self-report journals were completed throughout the study. Reframing treatment resulted in positive change in all participants. A complete remission of bulemic symptoms occurred in three subjects, near remission in the fourth, and limited improvement in the fifth. No clear pattern was observed regarding the time at which subjects experienced the obsession to binge except that binge obsession appeared to be higher during unstructured times of day. The subjects were found to be similar in background to bulemics as a whole. While self-report data was useful in assessing change in subjects, further standardization of the instruments is needed. The standardized instruments used both were sensitive to change and measured crucial facets of the disorder. The researcher concluded that bulemia consists of many affective facets in addition to the obvious behavioral aspects. It was suggested that affective and unconscious factors in bulemia need to be considered in future research and treatment of the disorder.	

	Disturbing memories	MacMorran, Paula R.: Brief treatment for disturbing memory: a Neurolinguistic Programming submodality procedure. Dissertation Abstracts International 48(7), 1710-A 1711-A University of Tennessee, 90 pp. Order = DA8721287, 1987.	Abstract: Neurolinguistic Programming (NLP) claims for quick and permanent relief from the unpleasant affect associated with a disturbing memory were tested by examining several subject-rated, and one counselor-rated, measure of improvement following a submodality treatment procedure. The NLP submodality treatment group scores were compared to the scores of an attentional control group (ACG) of subjects who received light trance. Two experienced licensed psychologists who are experts in NLP procedures and trance induction administered both treatments. Sixteen male and twenty-eight female adults from a large protestant church volunteered to participate in the experiment which included a Target Complaint Discomfort Box Scale administered pre-and post- treatment and at 2 weeks post-treatment. Other dependent measures were the Client Post-Therapy Questionnaire, which was administered immediately post-treatment and 2 weeks follow-up; the counselor- rated Global Improvement Rating Scale; and the Counselor Rating Form (Short Form), which were each administered only immediately post-treatment. There were significant differences ($p<.05$) in the participants' ratings of "change as a result of treatment" in favor of the NLP submodality procedure. The NLP group also scored significantly higher ($p<.05$) on a measure of "satisfaction with treatment" than did the ACG. Differences on the counselor-rated Global Improvement Rating Scale made the strongest contribution to the significance of the multi-variate main effect. No other significant differences were found on any of the remaining dependent measures. As well, no significant differences were found between the two therapists, using the Counselor Rating Form (Short Form) immediately post-treatment and for the 2 week follow-up analysis. The results of this study provide partial support for the predictions made, in that the NLP submodality participants did report that they experienced change and that they were more satisfied with their treatment significantly more than the ACG. NLP claims for permanent cure were not supported. Incidental findings from a procedural check bring into question an a priori assumption of this study that people do, in fact, want to "feel better" about a disturbing memory. These findings further bring into question the accuracy of the participants' self-reporting of "improvement" with paper and pencil measuring tools. Several suggestions for future research are included.	
		Struwig, E. and A. D. van Breda (2012). "An exploratory study on the use of eye movement integration therapy in overcoming childhood trauma." Families in Society **93**(1): 29-37.	Eye movement integration therapy (EMI) is a relatively new therapeutic modality, based on a neurobiological model of trauma. This article advances the empirical knowledge base of EMI, by assessing its utility with a cohort of 12 adolescents, aged 14 to 16 years, in South Africa. The results indicate a reduction in a range of trauma symptoms, based on the Trauma Symptom Checklist for Children and post-EMI interviews with the children's care workers. A number of clinical practice issues regarding the utilization of EMI with children are discussed and illustrated with case material. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	

	Suicide Survivors	Juhnke, G. A., K. M. Coll, et al. (2008). "Using a modified neurolinguistic programming swish pattern with couple parasuicide and suicide survivors." The Family Journal **16**(4): 391-396.	Given the frequency of suicides and parasuicides and the often comorbid negatively experienced effects of these behaviors, it is likely that the vast majority of couples, marriage, and family counselors will at one time or another encounter couples who survive family members' parasuicides or suicides. This article succinctly describes a modified neurolinguistic programming technique the authors have found helpful with their surviving couples. The technique is based on their collective couples, marriage, and family counseling experiences and presents a strength-based perspective. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)	
	Analysis of treatment progress	Hagstrom, Garis C.: A microanalysis of direct confrontation psychotherapy with schizophrenics: using Neurolinguistic Programming and Delsarte's system of expression. Dissertation Abstracts International 42(10) 4192-B California School of Professional Psychology, 1981, 187 pp. Order = DA8207545.	Abstract: The purpose of this study was to conduct an in-depth analysis of Direct Confrontation Psychotherapy in an attempt to describe the methods associated with this approach. The investigation involved a microanalysis of verbal, paralanguage, and nonverbal processes occurring between patient and therapist during four treatment sessions. By completing a microanalysis using the three modes of communication it was possible to observe treatment sessions in such a way that they could be described in conjunction with the theoretical framework. The question on which this study was based is: What is Direct Confrontational Psychotherapy with schizophrenics, and how is it done? In order to address this question the study analyzed the communicative behavioral patterns between patient and therapist during the course of psychotherapy. Four psychotherapy sessions were videotaped of a chronic schizophrenic and direct confrontation psychotherapist (Jack Rosberg, founder of this approach) beginning with the first therapy session, followed by sessions 1 month, 1 year, and 2 years later. The communication patterns during the four stages of psychotherapy between patient and psychotherapist were analyzed by two independent observers. Since only three of the four stages were present in the single case study, three additional videotaped segments of other patients were analyzed. The verbal content was analyzed using Neurolinguistic Programming's method of identifying complete or incomplete sentence structure, using the general mechanisms of generalization, deletion, and distortion. The paralanguage was analyzed by breaking down the intonation, determined by pitch; the rate, determined by stress and phrasing; and loudness, determined by the level of intensity and the use of vocal dynamics. The nonverbal communications were analyzed using Delsarte's system of movement expression. Observations of the head, torso, and limbs were recorded; these included gestures and facial expressions. A synthesis was then made in conjunction with theoretical formulations of Direct Confrontational Psychotherapy as they applied to the four sessions. The results indicated interpersonal communicative changes in the schizophrenic patient over the 2-year period, while the therapist remained consistent. Changes in the schizophrenic patient's verbal content revealed a more varied use of complete sentences, more dynamic use of paralanguage, and a more integrated use of nonverbal movement expressions. The methods used by the psychotherapist was described in relation to the theory of Direct Confrontation Psychotherapy. This study was the first complete theoretical and descriptive representation of Direct Confrontation Psychotherapy.	

	As adjunct	Field, E.S. (1990) *Neurolinguistic programming as an adjunct to other psychotherapeutic/hypnotherapeutic interventions*. American Journal of Clinical Hypnosis. Jan;32(3):174-82.	Two case examples demonstrate the therapeutic dissociative techniques of anchoring and 3-part dissociation, neurolinguistic programming treatment paradigms incorporating the idea of division into ego states. These techniques are effective in crisis intervention and as a stimulus for catharsis. Using anchoring, a 23-yr-old male with severe anxiety, manifested by episodes of severe hyperactivity, was able to superimpose inner resources on the situations leading to the episodes. Using 3-part dissociation, the S was able to end the hyperactive episodes. In a 32-yr-old male patient presenting with anger and negativity, 3-part dissociation was used to produce an abreaction and catharsis. Interaction at a cognitive level integrated the S's feelings and knowledge into personal consciousness. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
	Witness preparation	Mayers, K. S. (1993). "Enhancement of psychological testimony with the use of neurolinguistic programming techniques." American Journal of Forensic Psychology **11**(2): 53-60.	Describes the use of neurolinguistic programming techniques in preparing information to be presented in a courtroom setting and in maximizing the effectiveness of testimony. Three cases are included, in which emphasis is placed on obtaining and presenting sensory-oriented descriptions and findings. These techniques have the capability to enhance the listeners' ability to relate to the subject of the testimony, to maintain their attention, and to increase their interest in the material presented. (PsycINFO Database Record (c) 2012 APA, all rights reserved)	
	Unspecified	Genser-Medlitsch, M., Schütz, P. (1997, 2004) *Does Neuro-Linguistic psychotherapy have effect? New Results shown in the extramural section.* Martina Genser-Medlitsch; Peter Schütz, ÖTZ-NLP, Wiederhofergasse 4, A-1090, Wien, Austria/Nowiny Psychologiczne Psychological News. issue 1	Abstract: The objective of the first comprehensive evaluation study on NL psychotherapy (NLPT) was to test whether individual NLP therapy, in principle, is effective in free practice. This study is based on a prospective controlled design with ratings at three points of time and was conducted under practice-related conditions. Data were gathered by means of standardized psychological questionnaires, which in some aspects were related to NLP concepts. The test sample (55 therapy clients and 60 waiting list control group clients) was heterogeneous as to patterns of symptoms and discomforts. The effect of NLPT was studied by examining changes of individual complaints, clinical psychological symptoms, individual coping strategies and locus of control tendencies and by assessmant on the part of the clients and the therapists of the success of treatment. The results were analyzed by means of two probabilistic models better suited for the purpose of measuring such changes. Changes of psychological properties were measured by means of the linear rating scale model (LRSM) and the linear partial credit model (LPCM), and it could be established that, in principle, NLP is effective in accordance with the therapeutic objective. In addition, the influence on the effectiveness of the therapy of duration of treatment, age and sex of the clients were examined.	

		Stipancic, M., Renner, W., Schütz, P., Dond R, (2010) *Effects of Neuro-Linguistic Psychotherapy on psychological difficulties and perceived quality of life*. Counselling and Psychotherapy Research 10(1) - Routledge: 39-49,	Aims: The purpose of this study was to examine the effects of Neuro-Linguistic Psychotherapy on psychological difficulties and perceived quality of life of clients who came for psychotherapy during free practice. Method: A total of 106 psychotherapy clients were randomly assigned to a therapy group or a control group. The outcome was assessed by the Structured Clinical Interview for DSM-IV Personality Disorders (SCID II) with respect to clinical symptoms and by the Croatian Scale of Quality of Life (KVZ) with respect to Quality of Life. The therapy group received the measures at pre-, post- and five-months follow-up occasions, whereas the control group received them initially and after a period of three months. Results: In the therapy group, as compared to the control group, there was a significant decrease of clinical symptoms and increase in the quality of life. With respect to clinical symptoms, effect sizes were 0.65 at post-measurement and 1.09 at follow-up, indicating a substantial reduction of symptom strain, which is comparable to the well established effects of Cognitive Behavior Therapy. We also found a significant increase in perceived quality of life after therapy, as compared to the wait-list control group, with effect sizes between 0.51 and 0.73. Therapeutic improvements were still present five months after the end of therapy, showing further development in the same direction. **Conclusions: Neurolinguistic psychotherapy is an efficient intervention, which is on a par with other, well-established psychotherapeutic techniques.** (PsycINFO Database Record (c) 2012 APA, all rights reserved)"	
		Weaver, M. (2009) *An Exploration of a Research-Based Approach to the Evaluation of Clients' Experience of Neuro-Linguistic Psychotherapy within a Private Practice Making use of the CORE Model.* Current Research in NLP: Proceedings of 2008 NLP Conference. Vol 1. pp67- 83		

Reference list

References highlighted in yellow represent direct tests of NLP-based hypotheses.

References highlighted in green are confirmations of submodality effects from independent-non-NLP related research.

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