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Perceptual Control Theory (PCT) Applied to Personality, Psychotherapy, and Psychopathology

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This paper describes the application of Perceptual Control Theory (Powers, 2005) to several clinical areas--personality, psychotherapy, and psychopathology. The concept of negative feedback control, which is central to PCT, provides a way of unifying the understanding of biological, psychological, and social phenomena. These PCT applications have features of all the major clinical approaches, but this is done in a conceptually uniform way rather than an eclectic way. PCT will likely be of interest to people looking for a general theory of psychological functioning which can be used by the practicing clinician, academic researcher, and layperson.

Key terms: perceptual control theory, negative feedback control, personality, psychotherapy, psychopathology.

We discuss Powers (2005) Perceptual Control Theory (PCT) as a personality theory in terms of Maddi's (1996) classification scheme and then presents its application to psychotherapy and psychopathology. Mayer (2007) and McAdams and Pals (2006) have also focused on how personality theory can be a way of integrating knowledge about people. Frustration with satisfactorily accomplishing this goal has led to the development of micro-theories about a specific task or area of study, or an eclectic approach. PCT, which is based on the concept of a negative feedback control system, may be the conceptual framework that allows the integration of the biological, psychological, and social worlds (McClelland & Fararo, 2006). The purpose of this essay is to acquaint the reader with PCT and its clinical applications. By doing this, we hope that the reader will come to realize that PCT has wide applicability to all areas of human behavior from typical to atypical, and can even be useful in daily life.

PCT helps the observer to view behavior in a different way. According to PCT, the focus should be on experiences, with behavior functioning as the way experiences are controlled; control is the central idea and means that a person adjusts behavior when circumstances change in order to experience what the person wants to experience. New research and design methodologies will be necessary which takes into account the PCT idea that we are closed loop, negative feedback control systems (Marken, 2011). New ways of

analyzing data will be needed which allows one to analyze data in a way that emphasizes what is happening on the individual, observational level rather than the population, aggregate level in order to test causal hypotheses (Grice, 2011),

The PCT approach is accepted among those of us who have studied it in detail, but it is clearly "a work in progress" that would benefit from having wider participation of researchers and practitioners. We will include reference to PCT compatible ideas to show the reader how one can sometimes utilize prior knowledge and skills within a PCT conceptual framework, or at least see its relevance. However, the reader is warned that ideas in PCT do offer some significant conceptual challenges to those views of people which are not based on negative feedback control as discussed in Vancouver (2005). These challenges to conventional ways of thinking do lengthen the learning curve for mastering PCT, but at the same time, provide excitement and promise of new ideas.

The term "negative feedback" (an engineering term) has a technical definition which differs from the way that most non-engineers probably use it. It simply means that the actions of a control system result in a reduction of the difference, or improvement in consistency, between the actual input (what goes into the system) and wanted input (the input that the system is organized to achieve). In a person, successful negative feedback would reduce distress or tension and result in wanted experiences. The engineering definition of "feedback" is something that a system (person) can give

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to itself as a result of the effect of its action on the environment; it is not something one system (person) gives to another, for example by making a comment about another person's actions. If the action of the system makes the actual input/wanted input difference larger, this is called positive feedback, which usually results in experience instability. The concept of homeostasis has been thought of as potentially useful for understanding psychological functioning in the past. For a good overview of the concept of homeostasis including its history, the reader is referred to "Homeostasis" (1968) and Cofer & Appley (1964) in the references.

In essence, PCT generalizes the concept of homeostasis of biological control (regulatory) systems to the psychological domain of experiences. In PCT, a control system is the structural-functional unit of organization. Each control system has three parts—an input, comparator/memory and output component. The description of each part and how a control system works as a whole will be discussed in this paper. The closest structural-functional concept within conventional psychology is Piaget's concept of scheme (Piaget & Inhelder, 1969); a stimulus is assimilated to a scheme (input component) and the scheme accommodates (output component) in order to maintain a state of equilibration (comparator/memory component). The control of experiential variables and the control of body variables work on the same principle of negative feedback control which implies that the mind and body work the same way.

All higher organisms control their body states by **homeostatic mechanisms** to keep them close to states specified by genetic information (Riggs, 1976). Furthermore, these biological control systems have reference levels ("set-points") which are adjustable by what are apparently higher (superordinate) control systems. As an example of this, the reference level for body temperature is raised in a fever, and the new temperature is defended against factors that tend either to decrease or increase body temperature (Mrosovsky, 1990). There are also light and sound reflexes, negative feedback control systems that actively control the experienced intensity of light and sound energy (the negative feedback was once thought merely to protect the senses from damage). We are born with these types of regulatory mechanisms, most of which have adjustable set-points. When light and sound energy are significantly more or less intense than one would wish, one might experience an uncomfortable feeling/emotion or, with too much stimulation, even pain, though the perception itself is not a painful kind. The body is regulated by these inborn homeostatic mechanisms.

PCT as a Personality Theory

To show that this theory is not limited to motor behavior or physiological homeostasis, the first part of this essay will explore Perceptual Control Theory as a personality theory, making use of Salvatore Maddi's meta-theory for personality theories (Maddi, 1996). Maddi proposes that all personality theories can be described in terms of core, peripheral, developmental, and data statements. Core statements describe the basic properties of the inherited brain and body as they are before a person's adult personality is constructed through interactions with the environment. Peripheral statements describe the aspects of personality that change or develop during subsequent interactions. Data statements are the detailed ways that each person is unique and behaves in concrete situations - the result of the interactions after they occur. Developmental statements are focused on the processes of change between the core and peripheral description of a person. As will be seen, PCT as a personality theory contains all four kinds of statements.

Maddi (1996) subdivides the core category into conflict, fulfillment, and consistency subcategories. The conflict model is exemplified by Freud's theory (Maddi, 1996) in which a person is in conflict between wanting to please self (id) and wanting to please others (superego). The fulfillment model is illustrated by Rogers' "client-centered" therapy (Maddi, 1996) in which a person is expected to develop and express inherent potentialities with the help of a non-directive therapist, and thus, the focus is on self-satisfaction. The consistency model indicates that a person wants to eliminate discrepancies among cognitive elements, or between customary and current activation levels, which produces an emotional state that provides the energy and direction for behavior. Examples of consistency models which Maddi (1996) discusses are those developed by George A. Kelly, Seymour Epstein, David C. McClelland, and Donald W. Fiske, & Salvatore R. Maddi.

PCT has features of the conflict, fulfillment, and consistency models but, we will argue, comes closest to a consistency theory. An advantage of the PCT Theory over the other consistency theories is that it makes explicit recognition and use of the engineering concept of negative feedback control systems as described in Powers (Powers et al.1960; Powers, 2008). The other consistency theories are described in a way that can be seen as implying a negative feedback control system type of organization, but they do not describe the implications of it for psychotherapy and psychopathology as we hope to in this paper. Most importantly, PCT emphasizes the importance of experiences (inputs) and the control (regulation) of experiences by behavior (outputs). The concept that we are negative feedback control systems implies that control of inputs, not outputs is how we are organized.

Core Statements

Maddi (1996) defines Core Statements as: The specific, unlearned characteristics all people bring into life that express the overall purpose of human living. PCT personality theory describes core characteristics in considerable detail. For example, in PCT theory, a core statement is:

- *All people are the same in that they try to control their perceptions as much as possible while at the same time avoiding conflicts (self-contradiction).*

The above statement is a consistency principle and refers to all the levels of “perception,” from the most concrete to the most abstract. The word “perception” in PCT is defined differently than the way it is usually defined, namely, “The selection, organization, and interpretation of sensory input” (Weiten, 2007, p. 107). Powers (2005, p. 299) defines perception as: “A neural signal that is a continuous analog of some aspect of the environment”. By defining perception in terms of nervous system activity, PCT allows the definition of the concepts of sensation, perception, cognition, and meta-cognition as a perceptual signal.

In PCT, the generalization is made that “It is all perception.” For example, a feeling/emotion is a perception. An image is a perception. An idea or thought is a perception. Bodily sensations are perceptions. PCT specifies how these different topics are conceptually connected, whereas conventional approaches do not. The way that the negative feedback control concept can serve to integrate different topics in Psychology is suggested and is discussed in this article. Figure 2 can be used to organize an Introduction to Psychology course in a novel, integrated way.

As explained above, in PCT, the term “control” means to act on the environment (behave) as required to obtain and keep a wanted experience; it does not mean to try to manipulate, influence or persuade another person. Consider the following elementary example. Imagine that you are talking to another person. The distance between you and the other person can vary from very close to very far. Many studies (for example, Hayduk, 1981) have shown that there is usually a preferred value of the distance perception, called the reference, or preferred distance. If the other person moves too close, you will step backward. If the other person moves too far

away, you will move forward. You are controlling the distance between yourself and the other person so as to maintain a specific distance. The distance between persons is the way that some experience is being controlled; why a person wants to control this experience would have to be investigated through further research.

We try to control inner experiences (hidden to outside observers) by varying actions (which are visible to outside observers) to achieve and maintain the inner experience. Experiences are center stage in PCT with behavior functioning as the variable means of achieving them. For example, an abused wife may leave (the behavior) her husband in order to achieve the feeling of safety, or simply to reduce experiences of physical pain and psychological humiliation (the experience being controlled). PCT offers a new perspective about behavior: its importance to other people in a social setting is mainly how it affects the environment, but its importance to the behaving person is mostly its effects on that person’s experiences. **When a person’s behavior is observed, PCT teaches the observer to ask the question: what variable of experience is the person attempting to control within the current state of the environment, by means of that behavior?** Behavior is not just a result, but a cause of experience modification of the behaving person. The function of the behavior for the person is necessary to fully understand the behavior.

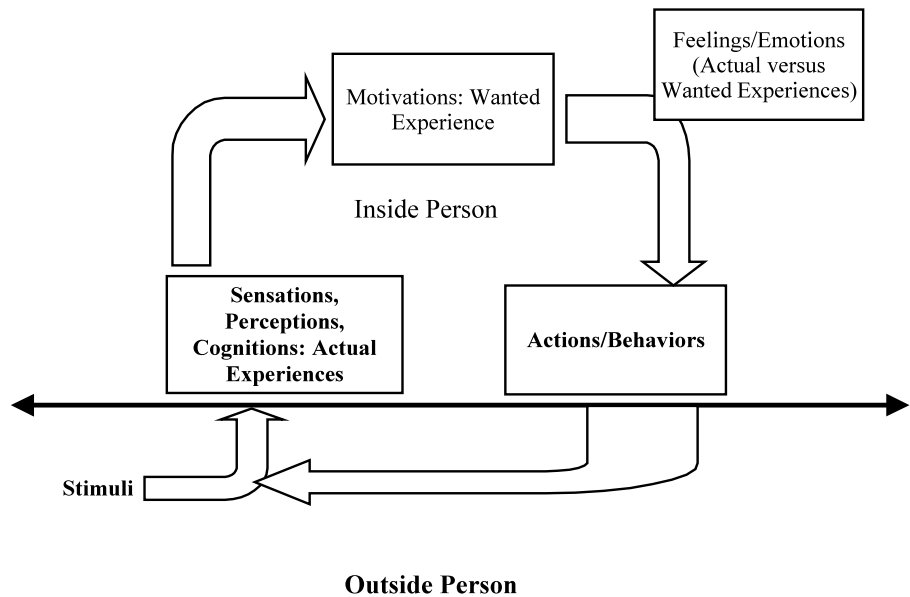


Figure 2: Topics in Psychology Connected

One premise of PCT is that human organisms are composed of control systems (one control system per controlled experiential variable) that are organized into

levels with a hierarchical relationship between levels. In Figure 2, sensory input is changed sequentially through different levels of information processing. Consider this quote from Powers et al. (2011, p. 6) which names the eleven levels:

The main levels currently proposed are named intensity (magnitude of stimulation of sensory receptor; energy flow), sensation (quality of intensity; vector), configuration (an object, pattern, arrangement, or invariant of the present moment), transition (time and space changes; partial derivatives), event (a familiar space-time package of perceptions that follow one particular pattern), relationship (a regularity in the simultaneous space-time behavior of two or more independent lower-order elements), category (a perception that arises when any one of the some set of lower-level perceptions is present), sequence (a list of perceptions that occur in a fixed order), program (a network of choice-points characterized by tests at the nodes), principle (generalizations drawn from many different examples of lower-order perceptions; facts, heuristics, laws, beliefs) and system concept (organized entities; models; beings).

There may be subdivisions within these categories. Despite having been formulated and revised and worked over for more than 50 years, they are still tentative and subject to more revisions (especially the so-far-highest level). But under the present definitions (Powers, 1998) the basic concept is illustrated and the definitions have proven useful (e.g. Van de Rijt & Plooij (2010)). We have some idea of how the correct structure, when ultimately found through research, will encompass all levels of human organization from the spinal level to whatever the top level proves to be (assuming we can recognize and characterize it, which is not at all guaranteed)

Consider this example of the levels by Powers which illustrates the eleven levels:

As an example, consider a nurse in a maternity ward. The nurse experiences something: an intensity. Each intensity is one among a collection of pitches, tones and timbres: auditory sensations. The pattern made of pitches, tones, and timbres occurring together is an auditory configuration: crying. It is getting louder: a transition. It is coming in intermittent bursts: events. The sound is coming from this baby, not the other one: a relationship. The nurse silently names what the baby is doing: 'crying', the name of a category. The baby was fed just before it started crying: a sequence of two categories. It may need burping: a logical conclusion from a simple program of reasoning. Crying babies should not be neglected: a principle; the nurse is being a comforter and nurturer: a system concept. The nurse picks up the baby, patting and comforting it, without trying to analyse the whole experience or even noticing that it is composed of a pyramid of perceptions. (This example did not make it into Powers et al, 2011).

A control system is the basic functional-structural unit in PCT. There are many control systems at each level of perception. Each control system controls a single perceptual variable, whether accessible to consciousness or not. The eleven levels of experience form a more detailed spectrum covering the range between what is conventionally described as concrete to abstract.

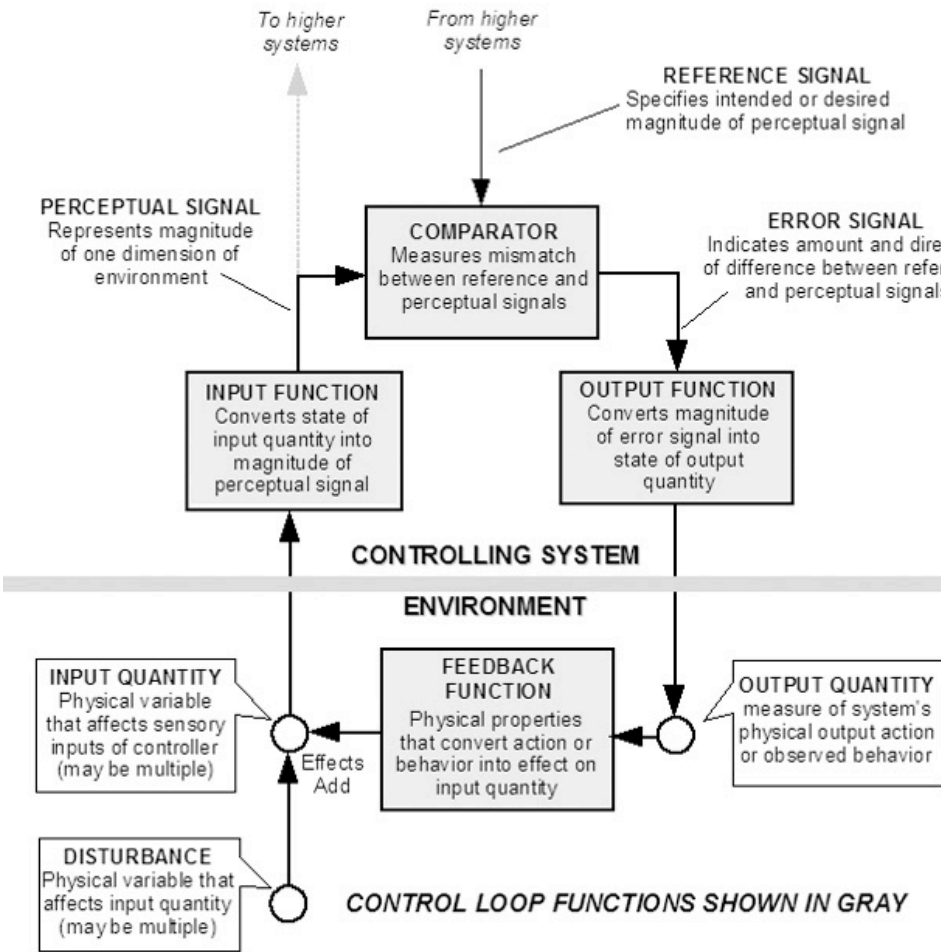
A perception is defined as afferent nervous system activity which starts with physical energy impinging on sensory receptors; the receptors generate a "signal" measured in impulses per second, a measure of how much of the stimulus is present (Powers, 2005). This way of defining a perception allows all the different perceptions to be put in the common language of nervous system activity. A perception at any level is built from perceptions at lower levels and therefore, takes more time to form than any of the component perceptions; the exception to this is the lowest level which is based on the energy acting on the sensory receptor. A perception at a higher level is controlled by means of changing the reference signals at lower levels that set the momentary goals for all the control systems that are immediately subordinate to the higher control system. Figure 1 overleaf depicts the diagram for one single control system, showing how it works according to Powers (2008). The whole system is built from units like this one, many units at each of many levels. In the example of the nurse in a nursery, all the different levels are illustrated.

The concept of levels in PCT was derived from a social interaction between author WTP and a colleague in which after each statement made by one person, the other person basically asked "why," - meaning what experience is accomplished by being/behaving in a way consistent with the statement; this was done in a non-directive way which in MOL psychotherapy is described as noticing the background topic for a given foreground topic. For example, if the statement was I play tennis, the answer to the why question could be: because it is fun, or because it is healthy for me. If the other person asked a "how" question of the tennis player, that would mean that the person was supposed to give an example of the means by which the person accomplishes the statement. The answer to a "how" question to the statement "I play tennis" could be: by hitting forehands, backhands, volleys, and serves.

Powers has clarified the meaning of levels as follows. Perception A is at a higher level than perception B if A is the experience that is the goal when a person controls for perception B; and perception A is made from components that include perception B. The perception of a written word, say "dog" is a higher level perception compared to the perception of the letters "d," "o," and "g." The letters are components of the word. Without all the letters, in the specific sequence, we would not have the written word dog, but another word, for example—god. The difference between the word dog and god,

which have the same letters, points to a higher level perception, namely sequence. The sequence level is at a

some perceptions are not controlled as determined by the person), there is a preferred value within the range of possible values called the **reference level** of *p*; this is the amount of the perception that the person wants to obtain and maintain; as will be shortly seen, this is determined by another signal called **the reference signal r**. That signal sets the amount of perception that the person might control by various means such as **approaching** or **avoiding** its cause. The **importance** to a person for controlling a perception *p* is measured by **the gain G** of the control system (determined primarily by **K_o** in Figure 1). **K_o** stands for the output gain of the system, which represents how much effort will be generated to correct a given deviation of the perception from its reference level.



higher level than the configuration level. Within Personal Construct Therapy, there is a procedure called laddering that is very similar to the above process for “why” questions (Butler, 2006)

The next five paragraphs attempt to give the reader a more precise understanding of how a control system works; the reader can also download the free computer simulations in Powers (2008) to experience a control system in action by going to the following url: www.livingcontrolsystems.com/lcs3.html. The basic PCT terms are shown and defined in Figure 1. (The reader who prefers words to mathematics is free to skip the next five paragraphs.)

In Figure 1, **p** stands for a **perceptual signal**. It can vary from zero (the person is experiencing zero amount of the perception) to the maximum value that can be perceived. For many perceptual signals (but not all, since

As is shown in Powers et al., (2011), the basic equation for this structural-functional unit is:

$$p = [G/(1+G)]r + (K_oK_fK_d)/(1+G)$$

This equation makes it clear that a perception is the result of the person and the environment; perception and action are not independent concepts as they are usually thought of; the person and the environment interact from the lowest level of perception. The first term on the right in this equation consists of the organism’s contribution to a perception **p** and says that this is based on **the reference signal r** (coming from the perceptual level immediately super-ordinate, which selects the preferred value of the perception) and **G**, the “loop gain” of the control system that measures how much effect a change in one variable affects that same variable after one trip around the loop; the loop gain **G** is equal to $[K_oK_fK_i](-1)$. The output gain in particular, **K_o**, determines the importance to a person of controlling the perception.

If **G** is 100 and there is no disturbance **D** acting (that is, **D** = 0), the second term becomes zero and the first term says that $p = (100/101) r$. The perception **p** is almost equal to the reference signal **r**. A control system is designed to keep a perception matching a reference perception, even a changing one. Common examples are the cruise control system in cars, the temperature control system in a house and the float-valve water level regulator in a toilet.

The second term in this equation consists of the environment's contribution to a perception p . When there is no feedback, the loop gain G is zero. The output action does not affect the perception, and the amount of the perception is determined entirely by the disturbance D , the environmental factor K_a (which determines how much effect the disturbance has on the input to the sensors) and the sensory input sensitivity K_i (which determines how much perception arises from a given amount of input stimulation). When feedback does exist, the output varies so as to prevent the disturbance from affecting the input to the system by more than a very small amount.

In PCT, this is called "**the behavioral illusion**" because to an outside observer who does not know what experiences are being controlled, D appears simply to be a stimulus acting on a person's senses, acting through the nervous system to cause motor responses (change in output, Q_o in Fig. 1). Psychology seems to assume this model and studies organisms as if they were open-loop systems (no feedback) (Marken, 2011) or tries to arrange experimental conditions to minimize feedback effects or keep them constant across experimental conditions. By taking into account feedback effects, as Marken (2011) shows, one can improve prediction accuracy in a tracking task. (A task in which a person sees a target stimulus move and makes a different stimulus move the same way). More generally, new methods of looking at psychological research design and data analysis are needed (for example, Grice, J.W., 2011; Runkel, 1990/2007) to create and evaluate models of people's internal experiences.

In PCT, the change in output is the means by which the organism prevents the stimulus from affecting the perception being disturbed, or alters the sensed result of the stimulus as it is occurring to keep it matching what is desired. The person is in charge, not the environment. To use a metaphor from work with animals, the Skinner box (environment) (Skinner, 1974) does not care whether the rat (person) presses the lever, but the hungry rat does what it has to do in order to reduce its hunger (induced by the disturbance or "establishing operation" called deprivation). The rat is controlling its experience of hunger by means of pressing the lever. In most cases, both **the environment's contribution to a perception p** , which is called **the disturbance effect**, and **the organism's impact**, which is called **the feedback effect**, are easy to see.

Rotter (1966) has carried out extensive work on the individual difference variable called "locus of control." He explains that some people believe that the locus of control is inside them and place the greatest emphasis on internal factors, developing a mindset that they are more responsible for their behaviors than are other people or external factors. Other people believe the locus of control is external and attribute their behaviors to external

factors. They have developed a mindset that their behavior is more controlled by others and the environment. PCT tells us that both factors are always operating: external factors determine what behavior a person must perform to control a perception in any specific way, but it is the organism, not the environment, that determines what specific state of the perception is wanted and, if possible, adjusts the behavior in the way external factors make necessary to control it -- to bring the perception to a match with the current setting of the reference signal. Belief in control has no effect on the facts of control, but as articulated by Reeve (2009), beliefs about locus of control can affect whether a person tries to control (as one would typically do if she/he believed the behavior to be under her or his own jurisdiction) or judges that the attempt is futile (as would be more likely if a person believed a behavior to be outside of his or her jurisdiction). The locus of control belief seems to operate at the principle level of perception in the hierarchy. Principle level perceptions are generalizations that a person has acquired. For example "Treat others the way that you want to be treated" is a principle level perception.

The above equation applies to all levels of perception and has implications for understanding the locus of control variable. People with an internal locus of control could be overestimating the feedback effect. This means that maybe the locus of control perception overestimates how much a person is in control in a given area of life, underestimating the strength of external disturbances or overestimating the person's own ability to act as required. People with an external locus of control could be overestimating the disturbance effect. The person may incorrectly accept the idea that the environment will probably win and will determine a person's experiences.

Given the above possibilities, in therapy, it may sometimes seem like a good idea to have the client specifically state what s/he will monitor to know that control is improving; in cases of severe psychotic problems, which are discussed below, this may prove difficult because the person may be experiencing delusions or hallucinations. Nevertheless, asking for this self-evaluation could provide information about the person's ability to conform to the commonly accepted reality of others who know the person. In PCT, a person is trying to control his/her perceptions, even if other people perceive things differently.

A person is controlling a perception well when the feedback effect remains equal and opposite to the disturbance effect even as the disturbance changes; the perception p will then approximate the reference perception r and remain nearly unchanged in spite of changing circumstances. For, example, a person may try to maintain a marriage "for the children" even if the perception of the spouse changes significantly. In summary, when a person is controlling a perceptual

variable well, the perceptual signal equals the reference signal. **This means that we are controlling a perception, not an action.** And the feedback effect plus the disturbance effect on the input quantity approaches zero. This means that the perception is being held more or less constant despite disturbances from situational factors. In other words, the person in fact perceives what s/he wants to perceive, as when a person wants to feel pleasure and, in fact, is actually feeling pleasure.

If a person is not controlling a perceptual variable well compared to the wanted perception, it could be due to problems anywhere around the control loop. There could be problems in the input, comparator/memory, or output function parts of the control system. The disturbance could be beyond the ability of the control system to resist. The gain factor could be close to zero, which means that the perception is not important to a person. Finally, the person may lack the skill needed for control. MOL psychotherapy emphasizes the comparator/memory source of problems in the form of internal conflicts.

PCT View of Traditional Concepts in Psychology

The following discussion talks about some traditional concepts in Psychology in view of the just explained core statements of PCT. We have already seen that the concept of perception in PCT is defined differently and encompasses the terms sensation, perception, cognition and meta-cognition. The following topics will be briefly discussed: stimuli and responses, emotions and feelings, motives, internal conflicts, learning, awareness, resistance to change. While these terms are not a part of PCT per se, the purpose of this section is to show how PCT addresses the content referred to by the terms. The reader is referred to Figure 2.

Stimuli and responses can be most clearly defined for the lowest level of perception, the intensity level. A stimulus corresponds to the input quantity in Figure 1 while a response relates to the output quantity.

Emotions and feelings in the PCT view flow from the control of experiences. The kind of emotion is defined mainly in terms of the value of the goal, whether one wants to obtain more of (positive emotions) or less of (negative emotions) the experience. It is the goal that gives the cognitive meaning to an emotion. The emotion and feeling could be a momentary one or a lasting one as in a **mood**. Some goals are inborn, for example, liking the taste of sweet substances, while most goals are acquired through a learning process.

Negative emotions (for example, anger, fear, sadness, disgust) involve sensations that are a person's perception of his/her state of physiological arousal (stress), as well as perceptual goals and the resulting effort to control a perception that the person wants to experience less of, or avoid. The error signal (the difference between the perceptual signal **p** and the

reference signal **r**) results in the body feeling distressed because the error signal specifies strong action and corresponding physiological preparation for action (felt as having a strong feeling/emotion, etc.). The error signal decreases when the negatively valued experience is avoided. The amount of effort and the changes in the experienced physiological state backing up that effort show how important the perception is to the person (the gain of the control system). **Thus, a negative emotional experience can be the result of any control process that does not lead to satisfactory control, especially when the action does not take place and the error persists.**

Positive emotions (for example, joy, acceptance, anticipation, surprise) involve the control of perceptions which a person wants to experience more of, or approach. The error signal in this case decreases when a person is experiencing the positively valued experience.

A person may or may not be aware of the emotional experience, but can at least usually articulate what action they wanted to carry out, for example, run, hit, cry, laugh. There is no specific list of emotions/feelings proposed in PCT. Errors in any control system could potentially result in an emotional experience. Given what others have said about emotions/feelings, it is likely that they involve lower level learned perceptions or unlearned biological control systems.

PCT compatible ideas about emotion can be found in Plutchik, (2003). For example, Plutchik's ideas about fear can be stated in PCT terms as: fear is the emotion experienced with the perception of "danger" from some "threat" (disturbance), the reference perception of "zero amount of danger (avoid perceiving danger)," and the action of "escape" or increasing the distance from the disturbing stimulus. A person who experiences fear often and in many situations may be described by others as showing the individual difference variable or trait of being "timid." The person may "defend" or unconsciously reduce the intensity of fear by "repression" (which does not alter the neural signals of fear) by redirecting awareness away from the control system involved in the perception of danger (which does alter the conscious experience of fear); or consciously reduce the intensity of fear by the coping style of "avoidance," which imagines the disturbing stimulus before it happens and prevents it from occurring. If the experience of fear becomes part of the person's self-image, the personality diagnosis disorder of "dependent or avoidant" may be applied by others to describe the person. In summary, feelings/emotions are perceptions, not the cause of behavior, and are understood in PCT to be the result of control processes within a person.

Motives are related to goals, preferred values of experiential variables. This means that a motive is the reference signal specifying a particular experience to be attained. There are no specific motives proposed in PCT.

Any perceptual variable which is important to a person can become a motive, because any perceptual variable can have a preferred value and the gain factor for controlling the variable can be high, making it important to a person. However, given the motives proposed by others (for example, McClelland, 1985; Rotter, 1964), it is likely that they will involve principle and system levels of perception variables. A person may or may not be aware of the reference perception. It is likely that the Method of Levels described below, or a similar approach for gaining insight (Castonguay & Hill, 2007) will be needed to help a person become aware of a motive.

The idea of hierarchy in PCT is somewhat similar to Maslow's (1943) ideas of motivation involving physiological, safety, love, esteem and self-actualization basic needs. However, the ordering proposed by Maslow can be thought of as determined by the loop gain (importance) of the control systems rather than different levels of perceptual abilities. Reeve (2009) summarizes research which casts doubt on the five levels proposed by Maslow, but supports two levels involving deficiency and growth needs. On a more micro-grain analysis, Sachse (1990) has done research on the importance of the level of the therapist statements in relation to the client's statements; a therapist can encourage a client to move the focus of awareness up or down in the hierarchy.

Plutchik's (2000) ideas on four "existential issues" relates to the topics of motivation and emotions and to PCT. The four issues he discusses are hierarchy (where one fits in the vertical dimension of social life), territoriality (what parts of the environment and of the body belong to the core of the self), identity (the issue of who we are) and temporality (the universality of death and with the need to cope with the anxieties connected with it). Associated with each existential issue are basic emotions, and a behavioral process. While each of the four issues can be related to PCT, the issue of territoriality seems to have a special connection. The issue of territoriality is associated with the emotions of surprise and anticipation according to Plutchik (2000); the action associated with surprise is "close boundary" or "desire less" (freeze) while the action associated with anticipation is "open boundary" or "desire more" (explore.). When a person does not feel in control of one's experiences because one is facing a novel situation, one may feel surprised; when one's experiences are being controlled adequately in a familiar circumstance, one feels anticipation. The motivation underlying this issue may be the desire to know and explore one's environment and one's self. George Kelly (Feist & Feist, 2009), whose theory of personality also falls in the category of consistency, says that people can be understood as functioning in the role of a scientist who is trying to understand her/his world.

Because there are many control systems at each of the numerous levels, **internal conflict** is possible and likely.

A conflict occurs when a control system receives two reference signals from the next higher level, which call for different values of an experiential variable (for example, "sit down" versus "stand up"). Conflict in a control system destroys good control for perceptions super-ordinate to the control system as will be explained later in the paper.

Conflict in PCT is typically modeled as intrapersonal, not interpersonal. However, a conflict between two people will often require each person to address and resolve an internal conflict before the interpersonal conflict can be resolved. This has implications for marital and family therapy situations to which PCT is only starting to be applied. Unlike other system approaches, PCT takes the view of the individual person within the context of the family or marriage; from a PCT perspective, family or marital change can only take place if one or more of the individuals reorganize or change.

Reorganization, a technical term in PCT, is a proposed particular means by which changes happen when existing acquired control systems do not correct the errors that are producing experienced distress. Reorganization is proposed as the way that new perceptual levels and new control systems are acquired; it is the learning concept in PCT. The reorganization system can bring about biochemical, physiological and anatomical changes in the person's biological and acquired control systems. It is hypothesized to be responsible for all developmental changes. As a fundamental capacity of an organism it may even play a role in evolution as a kind of internalized natural selection.

Awareness is hypothesized to play a significant role in reorganization. Awareness is drawn to the experiences whose control systems have error signals in them. The parameters of the control systems are modified, as if reorganization follows awareness. Clinical experience with temperature biofeedback by author DMG shows that if one focuses awareness on a patch of skin and keeps it there, the skin temperature will increase, indicating a local vasodilation of blood vessels in the skin. The effects of awareness occur at physiological as well as psychological levels of function. Research of learning during sleep indicates that unconscious learning is very limited to simple things and happens only when a person is in a near awake state (Simons & Emmons, 1956). However, there are informal reports of people solving complicated problems during sleep which suggests that reorganization can take place without awareness. The relationship between awareness and learning in the reorganization sense needs more research. The important role of awareness in the theory of reorganization is that it functions to select which control systems need 'fixing' so that not all the acquired control systems need to be changed; it reminds one of the saying "If it is not broken, don't fix it" The nature of awareness,

however, remains a mystery; we are limited to naturalistic observations of its seeming effects, as written about by Fehmi & Robbins (2007).

Fehmi & Robbins (2007) discusses the dimensions underlying different ways of being aware which relate to aspects of PCT. There is the diffuse versus narrow dimension and the objective versus immersed dimension. Regardless of the specific content of awareness, inflexibility in the “style of awareness” can make a difference in the distress that a person experiences. Fehmi teaches people to think of the space that they are in when they are thinking of a topic and teaches people to be flexible about their style of attention. He also makes use of neurotherapy (EEG Biofeedback) in the form of “alpha synchrony” across the scalp to support a more “open focus” attitude.

The objective versus immersed dimension is similar to the MOL psychotherapy strategy of encouraging a person-in-therapy to be aware of a background topic when talking about a foreground topic; one must “step back” and look at things from a higher level perspective (objective) at the same time as one is focusing on a topic. When one is immersed in an experience, one loses his/her sense of self, and lives the experience.

The diffuse versus narrow dimension can be described as including as many different experiences in awareness as possible from all the senses (diffuse) versus limiting the diversity of experience. The working memory of a person (7 plus or minus 2 in normal adults) (Miller, 1956) may place a limit on the number of experiences a person can simultaneously be aware of. In PCT terms, awareness content with a diffuse attitude consists of including experiences from many different control systems in the same level or in different perceptual levels, and in different sensory modalities.

All four styles of attention are available to a person who has an “Open Focus” attitude. The person is able to adjust the style of attention to the most appropriate one for the task being addressed. The “MOL Attitude” for a therapist can be thought of as synonymous with an Open Focus attitude; MOL psychotherapy is the application of PCT to a therapy situation.

Peripheral Statements

Maddi (1996) gives the following definition of Peripheral Statements: The habitual, learned modes of functioning, such as motives, traits, or defenses, that are readily apparent in the person as he or she becomes an adult (p. 14)

Like other consistency theories, PCT personality theory emphasizes the uniqueness of each person. However, author DMG has used PCT concepts to organize the person specific information obtained from traditional psychological tests (for example, IQ, TAT, Rorschach, sentence completion) in order to write psychological evaluations. The information that these tests provide about a person can be discussed under PCT headings

such as: Perceptions, Reference Perceptions, Error Conditions, Actions, Internal Conflicts, Reorganization, Disturbances.

To describe a person adequately in PCT means that one must know the most important perceptual variables that a person is trying to control. It also means that one must know the major internal conflicts that are present. Since both specific kinds of control and specific conflicts arise from interactions with the particular environment a person experiences throughout life, there is no standard description that fits everyone. Each individual must be treated as a special case. Yet, as just explained, one could incorporate the information provided by traditional psychological testing into a PCT description of a person. The MOL- psychotherapy-clinical interview-approach and the test-for-the-controlled-variable are the PCT specific methods for assessing a person, not the traditional psychological tests.

Within PCT, the closest concept to “a person’s personality” is the self-image. The self-image is a system level perception that a person controls (Robertson, Goldstein, Mermel, & Musgrave, 1999); in their research, Robertson et al. used college students (n = 8) who were asked to describe what they would do if a person who knew them very well, disagreed with statements which the student considered to be relevant (5 statements) versus neutral (5 statements) as a personality description. Using Grice’s OOM (2011) software, and based on the idea of the self-image as a control system at the system level of perception, it was found that 61 out of 80 or 76.25 % of the observations were correctly classified (10 responses per person X 8 persons). The prediction evaluated was that when a person was presented with a challenge to a relevant (self-image descriptive) statement that the person would correct it as opposed to a neutral statement that a person would accept. A third response category “modification” was used if the person said something, but it was not a correction. Out of 1000 randomized trials, the probability of obtaining this result by chance is less than 0.001.

Each person seems to have more than one self-image (Goldstein & Goldstein, 2005; Butler, 2006). In a case study involving a woman in therapy with author DMG, three self-image factors emerged from the Q-Methodology study. Butler found four factors which could be used to describe the self-images of the people (n = 419 adults) in his study which was based on George Kelly’s Personal Construct Theory.

In the study by Goldstein (2005), the self-image perception was described in terms of the principle and program level perceptions that make up the components of the self-image. However, in clinical work with two Dissociative Identity Disorder (DID) therapy cases, author DMG found that by asking the alters about their favorites was a way to distinguish which alter was

present and talking to the therapist. There may be “an observer self” which can monitor and change any of the self-image control systems (as well as any of the control systems within the hierarchy). Even people with DID may have only one observer self, as discussed in a peer supervision group of therapists who work with DID clients to which author DMG belonged. This observer self may be the locus of awareness and a sense of oneness, even though there are multiple self-images at the system level of perception; it may also be important to understanding psychological defenses.

Each person is unique in his/her perceptual control hierarchy. There are no specific traits, motives, features or types proposed in PCT. -- the specifics are simply individual examples of more general aspects of organization. Ideally, a description of a person’s perceptual control hierarchy for the problem life areas would be the desired result.

MOL psychotherapy, and the test for the controlled variable are the main PCT avenues of identifying controlled perceptual variables. Each person can be described in terms of what perceptions s/he controls as well as why and how s/he controls them; and each person’s problems can be described in terms of what perceptions the person is having difficulty in controlling.

The test for the controlled variable consists of the following. A hypothesis is made about what experience a person is controlling. A disturbance is presented which is designed to change the experience which is believed to be controlled. If the person acts to undo the effects of the disturbance, this supports the hypothesis that the experience is being controlled. If the person ignores the disturbance, then the experience does not seem to be controlled. An example of “the test” in an everyday setting is as follows. One day one of us and a friend were in a restaurant where we always heard them playing Elvis music. The question was asked of the waitress: Who is the Elvis fan? She looked puzzled and asked why we asked. We told her that we always heard Elvis music in the restaurant. She explained that this was the only station that came in clearly. She was controlling for the clarity of the station, not its content. Among PCTers, there is a saying: You can’t tell why a person is “doing” by observing them. It is necessary to identify what a person is intending in order to understand his/her actions; in other words, one must discover the experience that the person is trying to control by the behavior. Author DMG works with a elementary-school aged clinical case of selective mutism who will talk normally to immediate family members at home and to same age peers, but not to the teacher at school or to other adults; when in the therapy room, the client will whisper to his mother or brother. It is not entirely clear at this point why he is doing what we observe him doing. A therapy goal would be to discover the experience he is controlling.

PCT teaches that **resistance to change** is to be expected, because people are negative feedback control systems and this is the way a negative feedback system works. There are no specific defenses or coping mechanisms proposed. However, as mentioned previously, Plutchik (2000), whose ideas originate from a psychoanalytic viewpoint, has PCT compatible ideas about defenses and coping mechanisms and tests to measure them which can be explored as a starting point for PCT researchers investigating the role of unconscious factors. Plutchik has proposed specific defenses/coping mechanisms for specific emotions.

Gramzow et al. (2004) provide a link between PCT and the individual differences approach to personality assessment as reflected in the “Big Five” individual difference variables. They look at two individual difference variables discussed by (Block, 1971), namely, “ego-control” (undercontrolled, overcontrolled) and “ego-resilience” (brittle, resilient) in a group (n = 199) of undergraduates. The California Q-set was given to the subjects from which the scores for ego-control and ego-resilience were calculated. Four groups were found using these measures of self-regulation: undercontrolled resilient(energetic, active, curious, exploring, recoups, resilient, interesting, arresting); overcontrolled resilient (compliant, calm, relaxed, empathic); undercontrolled brittle (restless, fidgety, undercontrolling of impulse, externalizing, vulnerable, brittle, narrow margin of integration); overcontrolled brittle (inhibited, constricted, worrying, anxious, intolerant of anxiety, rigidly repetitive under stress, interpersonally reserved, withdraws under stress, manifests inappropriate affect, manifest behavioral mannerisms).

From a PCT view, ego-control seems to translate into level of perception. People differ in the typical level of perception that they prefer to be aware of (overcontrolled equals higher levels of perception). Vallacher & Wegner (1985) who were influenced by PCT created a similar test called the Behavior Identification Form. Ego-resilience seems to translate into how well a person is controlling in a given situation and making adjustments for the social context. People differ in the degree to which situational context makes a difference to them. They found that the more ego-undercontrol (the lower the preferred perceptual level), the more ego-resilience (the better the control), up to a point and then the relationship reversed. Superimposed on this curvilinear relationship was the status of the four groups on the “big five factors” of neuroticism, extraversion, openness, agreeableness, and consciousness. As one went from cluster 1 to cluster 4, the neuroticism score increased, which in PCT terms implies more internal conflicts; neuroticism was related to lower levels of ego-resilience (poorer control) and higher levels of ego-undercontrol (higher levels of perception).

VanEgeren (2009, p. 105) also discusses the relationship between the “Big Five” personality traits and the concept of a negative feedback control system. He states: “...four of the traits (Extraversion, Conscientiousness, Openness, and Neuroticism) are closely related to dispositions needed for the control of solo, independent goal-directed actions and the fifth trait (Agreeableness) is related to a disposition needed for the control of collective actions.”

The research of Grice, Jackson, & McDaniel (2006) shows that knowing a person’s status on the “Big Five” variables will be not be fully informative of her/his personality as assessed by the person’s personal constructs. This supports the emphasis of PCT personality theory on the importance of knowing the uniqueness of each person. Grice et al. (2006) state: “It cannot be said, therefore, that the Big Five Model is generally true for the persons in this study. It may be generally true as a model applied to aggregate data, but it has not be shown to be generally true at the level of the individual” (p 1213)

Goldstein (1989) used Q-Methodology to address the problem of how to assess a person’s personality from a PCT viewpoint which emphasizes uniqueness, but still allows a person to use a standard set of individual difference variables which allows comparisons with other people. It was found that in a therapy case with an adult male client, he classified the people of his social world into three categories. The client did 19 q-sorts of 24 adjectives involving all the significant people in his life, including a self-description. Three items each were selected from the eight scales of the Personality Profile Test (Plutchik, 2000); this study used the same model to describe all the people in the study, namely a circumplex model. The client’s self-description fell into one of the categories along with one of his sisters; the other people fell into the other two categories. The results allowed the therapist and client to see the ways in which the client perceived himself to be the same as, but different from the people in his life. The categories which emerged did relate to the presenting problems of the client, one of public speaking phobia and one of difficulty committing to a personal relationship, which were addressed by MOL psychotherapy.

Developmental Statements

Maddi (1996) defines Developmental Statements as follows. The early interactions between a person and significant others that have a formative influence on learned aspects of personality. The changes in a person over time as the result of learning and development (p. 15).

PCT views the people in our environment, including significant others, as functioning in the theoretical role of “disturbances,” as are all stimuli, whether positive (happiness) or negative (anger). Parents provide care

and protection while children are too young to be on their own and socialize children until the children can function on their own. Internal conflicts are undesirable and parents should avoid actions or words which unnecessarily increase the likelihood of internal conflicts. This is probably the major practical parenting lesson from PCT. People can serve as models which are observed in real life or media. They can socialize with operant conditioning and/or classical conditioning, and can educate through verbal instruction.

More than the other consistency theories, PCT Personality Theory contains statements about the change process which underlies all learning and development. “Typical” personality development results in a person being able to control his/her experiences adequately from the person’s viewpoint. The person will probably be experiencing all the emotions, but not to an extreme degree or chronically. Signs of internal conflicts will be minimal. The person’s life does not seem to be out of control to the person. A person who develops in an “atypical” way has internal conflicts, probably negative emotions and a sense of his/her lifestyle being out of control.

Reorganization is the basic mechanism for learning and development in PCT. It answers the question of what happens when a person is confronted with a situation when the person does not have any inborn or acquired control systems to deal with situation. As strange as it may sound, the way that E. coli bacteria move up and down concentration gradients has been taken as a model for the way that change can happen when a person is in a new situation for him/her and does not have control systems to handle the situation. See Ecoli demonstration in Power (2008). It reminds one of the game of “hot and cold” where one person is trying to find something and the other person is saying “hot” if the searcher is getting closer and “cold” if the searcher is moving away from the hidden object. Reorganization operationally defines the kind of trial and error learning or creative process that must happen when a person does not know how to solve a problem. Powers (2008) has shown how this could work in reorganizing the output function of the 14 control systems of a human arm doing a tai chi movement which was the reference signal; in the beginning each control system output was connected to all the joint angles; at the end, “pruning” had taken place and each control system was controlling only one joint angle. The developmental principle that development moves from a holistic state, to a more differentiated state and back again to a new holistic state is seen in this mathematical model of reorganization of the 14 control systems in the arm.

People have the beginnings of all the levels of perception by the end of infancy. There are no specific stages or phases of development which are proposed in PCT after infancy as there are in some other personality

theories; learning of new control systems describes person age changes after infancy. When a new control system is acquired, the acquisition is hypothesized to occur in this order: input function, comparator/memory function, output function (Powers, 1979). For example, a child learning to tie her/his shoes needs to perceive the changes that take place from being untied to being tied. Preference for the tied state is encouraged by parents for safety reasons and for reasons of 'being grown up.' The means of changing the shoes from the untied to the tied state needs to be within the skills of the child or the child needs to acquire them.

All the standard forms of learning studied, including classical conditioning, operant conditioning, observational learning, and verbal learning, can be re-framed in PCT terms because all learning involves reorganization. As described in Powers et al. (2011), classical conditioning is viewed as primarily involving input reorganization, while operant conditioning is understood as mainly involving output function reorganization. Observational and verbal learning involve mixtures of input, comparator, and output function reorganization. A detailed discussion of the relationship between reorganization and the standard forms of learning is beyond the scope of this paper.

In summary, the developmental statements in PCT are more specific about the mechanism of change, namely, reorganization by means of the Ecoli model. All the levels of perception are developed and present by the end of infancy. After infancy, learning is responsible for any person changes with age. A new control system is acquired in the order--input component, comparator/memory component and output component. There are no developmental stages or phases described after infancy; it is all individualized learning. This is more similar to the behaviorist take on development that it happens continuously and is based on individual experiences rather than a stage-theory such as Erikson (Maddi, 1996).

Data Statements

Maddi (1996) defines Data Statements as follows: The concrete, everyday expression in living (e.g, actions, reactions, descriptions of self and of living) of the peripheral characteristics contained in the personality types.

PCT Personality Theory has very few data statements, because they are unnecessary given the nature of a control system. By the nature of control systems, each control system will make necessary adjustments when the experiential variable it controls is disturbed by non-self-situational factors. Once the important perceptual variables are identified in any given situation, one can predict how a person will handle changes in the situation if one knows the preferred value of the perceptual variable when a disturbance comes along that

overwhelms the control system, distress is experienced, and reorganization starts. When a person is in a life/death situation, the person will likely try a number of trial and error solutions until a solution works or death occurs.

PCT as a Psychopathology Theory

PCT views psychopathology differently from the medical model and the DSM-IV classification system, which has its usefulness but is not based on an integrated model of how a person works psychologically. PCT starts from the view of the healthy or "normal" personality in which a person is satisfactorily controlling important areas of her/his life. **A psychological problem is defined as an experience which is very important to a person, but which a person does not control satisfactorily.** The person experiences distress about the problem, which may include strong feelings/emotions and impaired functioning. As was seen in the discussion on PCT as psychotherapy, any topic that the person-in-therapy wants to discuss because the person is distressed with the way things are going with the topic can be a psychological problem. Examples of psychological tests which are based on this kind of approach are Diener, Emmons, Larsen, & Griffin (1985) and Frisch, Cornell, Villaneva, & Retzlaff (1992).

What is the PCT explanation of strong feelings for a person with a psychological problem? When error signals continue unabated in important control systems in the perceptual control hierarchy, the person experiences physical distress in his/her body. The person perceives this as an uncomfortable emotion/feeling. Mansell (2005) discusses at length the PCT hypothesized link between internal conflicts and psychological problems.

What is the PCT explanation of impaired functioning for a person with a psychological problem? The PCT answer relates to the concept of the reorganization system. PCT hypothesizes that the larger the error signals and the longer they remain present, the faster the rate of reorganization. When the reorganization system is running at a rapid rate, many control systems are being changed, which functionally removes them from normal use in everyday life, at least temporarily. (It would be like a computer system that becomes downgraded to an earlier, simpler "Safe Mode" version as the repair-and-fix-it system, or the reorganization system, is working.) In therapy, a person is likely to be observed as jumping from one topic to another or to show dysfluency in verbal expression. ("conceptual disorganization" in Brief Psychiatric Rating Scale terms, which is briefly described below). PCT conceptualizes that successful reorganization depends on evaluating the results of changes, so as to know whether more reorganization is needed. Continuous reorganization results in a person not recognizing a solution to a problem when it appears and not pausing to see the results.

PCT does not offer a classification system for psychological problems. However, let us consider a three category distinction of “normal,” “neurotic,” and “psychotic.” We have already discussed the “normal” case. In PCT, “neurotic” problems can be viewed to be the result of significant internal conflicts. Most of the supportive evidence for this comes from clinician reports. However, the reader is referred to Dorough, Rice, & Parker (2007), Todorovic, 2002)and to Stangier, Ukrow, Schermelleh-Engel, Grabe, & Lauterbach (2007) who have conducted research which supports the link between internal conflicts and psychological problems. A person is likely to experience strong negative feelings/emotions, for example anxiety, and show a good deal of inconsistency or indecisiveness in actions. Neurotic problems are the ones that psychotherapy alone, including MOL, can most effectively address. If the reorganization process continues to work on restoring homeostasis for a period of time without periods of consolidation, a person may start to show more serious symptoms.

For the “psychotic” problems, some therapists may find the two-dimensional psychopathology classification system of Overall & Klett (1972) to be useful and interpretable in PCT terms. The system is based on 16 variables of problems which are rated by the therapist on a 0 to 6 scale; this is called the Brief Psychiatric Rating Scale (BPRS). The 16 variables form four groups of three problems: thinking disturbance (conceptual disorganization, hallucinatory behavior, unusual thought content), hostile-suspiciousness (hostility, suspiciousness, uncooperativeness), withdrawal-retardation (emotional withdrawal, motor retardation, blunted affect), and anxious depression (anxiety, guilt feelings, depressive mood). Two “contrast” functions are defined using the 16 variables of problems. One function is called the schizo-depression contrast and is equal to the sum of the thinking disturbance ratings minus the sum of the anxious depression ratings. The other function is called the coping versus resignation contrast and is equal to the sum of the hostile-suspiciousness ratings minus the sum of the withdrawal-retardation ratings. These two functions define a nine category, psychopathology space which are based on the 16 variables. Clients from all around the world have been described in terms of the BPRS (Overall & Klett, 1972).

Looking at the BPRS profile of the category in which a person is placed may suggest to a therapist a treatment focus in MOL psychotherapy. For example, the simple-paranoid category involves the overuse of imagination and remembering in everyday life situations instead of perceiving (high ratings for suspiciousness, unusual thought content, hostility, and anxiety). Therapy which helps the person discriminate between perceiving on the one hand, and imagining/remembering on the other hand, can be helpful. Apparently, people with these kinds

of psychotic symptoms have lost this discrimination, perhaps because they are reorganizing at the higher levels of perception. The issue of reality versus imagination is a theme that writers and film makers have addressed throughout history and it is a very profound issue.

From a PCT view, “psychotic” problems can be thought of as the reorganization system using imagination and remembering modes of functioning excessively, which creates experiences that a person takes to be real, but significant others may perceive as misperceptions or misinterpretations or worse (thinking disturbance-- conceptual disorganization, hallucinatory behavior, unusual thought content). A person with delusions has a hard time knowing whether his experience is based on remembering/imagining or on perceiving. It is helpful if the person has someone in his/her life whom he/she trusts completely and can serve as a way to relearn the distinction between real and pretend; a therapist may be able to function in this role. PCT therapists may give a person a DSM-IV diagnosis for insurance purposes or to communicate to the physician who is being asked to consider medication. However, when providing psychotherapy to a client, it is more helpful to think of significant life problem areas that are not being satisfactorily controlled.

First author DMG had a female client who was having “a major depression with psychotic features,” do the pursuit tracking task. Her control in this task was very poor in the beginning sessions but improved when her depression remitted with the help of medication and therapy. The control mode requires perceiving and acting as discussed in Powers (2005,) which contains full explanations of the different modes of functioning of a control system.

The PCT concept of levels of perception might also be useful for informally monitoring the therapy progress of a person experiencing psychotic symptoms. His/her performance in controlling perceptions at different levels might be a way of describing the impaired functioning state compared to the normal functioning state of the person. A simple deck of playing cards could be used to ask the person to control perceptions at different levels (for example, color of cards, suit of cards, name of cards, relationship between two cards chosen at random, sequence the cards from 2 to ace, counting a set of cards chosen at random, playing a game of “war.”). As a person’s functioning improves in treatment, one would expect that the time to control perceptions at different levels would decrease and then level off. Research would be needed to show that this is what happens as a person improves control over the life problem areas.

In PCT, there is no explicit discussion of defenses or coping mechanisms or unconscious factors, but the discussion by Plutchik (2000) which is PCT compatible is helpful and talks about the relationship between

emotions, defenses/coping mechanisms and personality disorders. Within PCT, unconscious factors are clearly involved when higher order perceptions are operating. For example, if a person has an attitude of pessimism (versus optimism) this will bias lower level perceptions to be consistent with the more generalized, upper level attitude. If a person has an internal locus of control attitude, this will also bias lower level perceptions. A person may be unaware of these higher order perceptions except through a process similar to MOL psychotherapy. Just as with biological control systems, most of the acquired control systems operate without awareness as long as there are no problems (error signals). Certain personality disorders in which a person shows a good deal of inconsistency, for example borderline personality disorder, may be a sign that a person is unsuccessfully reorganizing.

In PCT, the concept of personality refers to a person's self-image(s), not the way other people describe a person; however, a person's self-image may be influenced by what others say about him/her which the person has accepted and incorporated into the self-image(s). It may be typical for people to have more than one self-image, for example, distinguishable roles they play. However, a person can usually become aware of the different self-images, with some therapist help. In the case of Dissociative Identity Disorder it seems as though when a person is operating from one self-image (alter), one or more of the other self-images may not be available to awareness. From a PCT view, this may be an extreme way of resolving internal conflicts; a conflict does not exist if there is only one side in awareness. The basic PCT concepts apply to even this extreme case (Johnson, 2009). Each of the less extreme forms of personality disorder could be viewed from a PCT kind of view, similar to the ideas presented by Plutchik (2000).

As a result of experiencing distress for a long period of time, the supply of neurotransmitters of brain circuits may become "chemically unbalanced." In these kinds of cases, medication to restore the depleted neurotransmitter may be needed, as well as psychotherapy to help a person discover how to better control the problem life experiences. A person may not be able to work on learning better ways of controlling life experiences if reorganization is destabilizing the system too much. To the person experiencing severe distress, it seems as if his/her cognitive machinery is not working as well or even has shut down. This is why medication and psychotherapy may be needed in cases where psychotic symptoms are present. The physician prescribing the medication needs to balance the need for stabilization and the ability of the person to engage in therapy and change in order to solve the life problems which led to all the error signals; good communication between the physician and the therapist is essential, if the same person is not doing the medication management and the

MOL psychotherapy. Future research will have to determine who the best candidates for MOL psychotherapy are.

The use of both medication and psychotherapy to help people with personal problems raises issues related to the mind/body relationship. A person's mind works as a negative feedback control system, and so does his/her body, yet they work on different variables. Body systems involve physiological and biochemical variables, for example glucose concentrations. Mind systems regulate neurological and experiential variables, for example the loudness of a sound. Homeostatic control systems usually correct problems in body variables. However, when homeostasis fails, PCT says that changes in the control systems associated with mind variables take place by the process of reorganization, continuing until the body ceases signaling its distress. When the body runs short of food, the mind learns how to hunt and gather. When the body is cold, the mind learns to make fire.

PCT based psychotherapy: the Method of Levels (MOL)

The application of PCT to psychotherapy, which is called The Method of Levels (MOL), has features of all the major therapy approaches (Good & Beitman, 2006), namely—humanistic/experiential/client-centered; cognitive behavioral; psychodynamic. However, the emphasis in MOL psychotherapy is on the primary role of the person-in-therapy to engage in self-exploration. As a result of self-reflection, the person-in-therapy will be able to address his/her psychological problems. Psychological problems in PCT are described as a failure to control significant life experiences to the person's satisfaction. In MOL psychotherapy, the therapist plays an important, but secondary role in helping the person-in-therapy make life changes; the PCT view is that the origin of change is only within the power of the person-in-therapy and can't be effectively micro-managed by an outside person. Carey (2008) and Carey (2006) has described MOL Therapy in two books which can serve as manuals for therapists-to-be. Higginson, Mansell, & Wood (2011) provide a description of MOL in terms of the ideas of control, hierarchy, conflict and reorganization. The way that other therapies account for change in therapy in terms of these ideas were discussed.

Perceptual Control Theory (PCT) has been applied to individual therapy. Symptoms are viewed to be the result of a person's problem in controlling significant aspects of his/her life. The major goal of therapy is for the person to improve control over the problem areas with the expectation that the person will feel and function better. The PCT perspective is that restoring the ability to control effectively eliminates the source of distress, and the symptoms will diminish or disappear. The reader is referred to the progress note form that the first author uses to summarize a therapy session, which will illustrate

the basic features of PCT Psychotherapy. It follows the traditional progress note format of Data-Assessment-Plan, but is phrased to include PCT ideas. See the appendix for the progress note form. The Good & Beitman (2006) "engagement" phase of therapy is summarized in section 1 & 2 of the progress note form. Their "pattern search" phase is described in section 3. The "change" phase information is put in sections 3 and 4 and the Assessment part of the note. The "termination" phase information appears in the plan section of the progress note.

A session starts with a "foreground topic." This is the topic that the person would most like to talk about at session time, usually termed "the presenting problem" in traditional psychology. By letting the person choose the topic, the therapist is optimizing the possibility that the person will fully focus awareness on it. The goal is for the client to engage and focus on the topic so that the reorganization process can start to bring about any needed changes. If the client does not bring up a topic, the therapist will select one based on past therapy discussions, or the initial evaluation of session one. How active and involved the client is in the process of self-exploration is noted. See "1" in the progress note. This step in MOL psychotherapy has much in common with "mindfulness" and experiential approaches to therapy with its present-time focus of awareness (Good & Beitman, 2006).

After the client has talked about the foreground topic for a period of time, the client or the therapist may become aware of a "background topic" which is behind or super-ordinate to the comments made by the client. If the client does not redirect attention to the higher level, the therapist simply asks questions about the topic which require at least looking at it to find the answer. PCT teaches that the foreground topic is the means by which the person controls the background topic. The client is asked for more information on the background topic and that is usually enough to focus awareness on it so that the reorganization process can start to work. See "2" in the progress note. This process of redirecting awareness to relatively higher levels is repeated and is the reason that the PCT based therapy is called the Method of Levels (MOL) psychotherapy; the only claim being made is that the background topic is at a higher level than the foreground topic and so, this is called the method of relative levels to distinguish it from the 11 perceptual levels which make up PCT. This step in MOL psychotherapy is similar to cognitive behavior therapies and the identification of "automatic" thoughts behind a beginning one (Good & Beitman, 2006).

The awareness-raising-process is repeated until the client's distress level for the problem is good enough for the client. Once the reorganization system becomes "unstuck" and the person's internal conflicts are resolved to the person's satisfaction, the person is expected to be

able to find a way to control the problem experience. Some help/coaching may be needed for younger clients, clients with limited intellectual resources, or psychotic clients. The reduction or removal of distress is thought of in PCT as a sign that error signals are removed or reduced. The therapist interested in quantifying the results may ask the client to rate distress on a 0 to 6 scale when thinking about the original topic, where 0 means no distress, 1 is very mild, and so on. These client ratings can be incorporated in the therapist rating of progress in therapy. Sometime during the session, the client may be asked whether s/he notices any changes within her/himself. The client's comments are placed in section "4" of the progress note. It is expected that most of the person's changes will be at the level of program, principle, or system levels of perception (the higher levels). The reason for this is that the self-image is thought of as a system level perception that is formed from principle level and program level perceptions. Often changes continue to occur between sessions, so they need to be included in the questions.

During the process of awareness-raising, the person or therapist may notice an internal conflict. A person may want and not want a particular experience at the same time. This is how an internal conflict is defined in PCT. In PCT, an internal conflict is considered to be very harmful. This is because the two or more control systems that are in conflict with each other cancel each other out as they try to control the same perception at the next lower level in different ways. This prevents a higher level control system (which uses the fought-over-perception as a component of its perception) from having good control of the higher level experience that depends on it. See "5" in the progress note. For example, a person on a diabetic diet wants to/but does not want to eat the kinds of food allowed on the diet. The person wants to eat the prescribed kinds of food in order to maintain healthy levels of blood glucose. The person wants to eat "junk" foods because they prefer the taste of these foods. The conflict results in inconsistent adherence to the diet and potential health problems. This step in MOL psychotherapy is similar to the emphasis on conflict in psychodynamic approaches; however, in MOL psychotherapy, the presence of conflicts, not the specific content of the conflict is what is important (Good & Beitman, 2006).

According to PCT, conflict involves three levels of control systems. We have "the worker" level control system that receives conflicting orders from two "supervisor" level control systems. The worker level control system comes up with a "compromise" which leaves both supervisor control systems in error. The supervisor control systems cannot control their perceptions because decreasing the error in one control system increases it in the other. The "supervisor's supervisor" level control system loses some control over

its perception which is built from the “compromised” perceptual signal and others which make up its perception. The more internal conflicts that are present in the hierarchy, the harder it is to control a perception that is built from parts that reflect numerous compromises.

The conflict resolution process in MOL Psychotherapy consists of asking the person to focus awareness on each side of the conflict successively. What are the reasons for wanting “A?” What are the reasons for wanting “not-A?” “A” refers to the perceptual variable that is the topic the person is talking about. The therapist helps the client go back and forth between both sides of the conflict until a point is reached when the client can focus awareness on each side of the conflict and can describe each side from a new, common viewpoint. The therapist then asks questions that encourage the person to focus awareness on the new, common point of view. The awareness raising process continues as before until the client’s own reorganizing capacities reduce the distress satisfactorily. While the resolution of internal conflict is considered to be the major problem which brings people into therapy, problems of control can be anywhere around the control loop (Goldstein, 2007). At the beginning of a new session, the client can be asked to describe any changes in herself/himself since the last session. The rest of the progress note is mainly traditional and includes places to put comments about psychiatric medication, therapist rating of progress on treatment goals to date, risk factors, referral/outreach efforts, and next appointment date/time.

Research into MOL psychotherapy has begun in several countries (see Bird, Mansell, & Tai, 2009; Tai & Turkington, 2009; Carey, Carey, Mullen, Spratt, & Spratt, 2009; Goldstein & Goldstein, 2005; Goldstein, 2007). This research must be continued and extended in order to evaluate the theoretical expectations which are based on the concepts of negative feedback control, reorganization, redirection of awareness to higher perceptual levels, and internal conflict resolution.

So far, MOL psychotherapy has been found applicable to the usual kinds of cases that confront therapists, including anxiety, depression, mood and thinking problems. Mahrer (2004) wrote about the reasons for doing psychotherapy research. MOL psychotherapy purports to be based on elements that any successful therapy incorporates, and so, MOL psychotherapy research is likely to have implications for all therapies.

In MOL, the topics to be discussed come from the client, not others. The PCT reason is that unless a person considers something to be a problem, awareness will not be redirected to it and there will be no affect to drive the process of reorganization. This is most applicable to voluntary and non-psychotic clients, but is theoretically true for all clients (Tai, 2009). An MOL therapist will ask questions designed to keep the person engaged in talking

about a topic. This helps to direct the person’s awareness on the significant topic which is necessary for the change process to work. The therapist will try to redirect discussion to higher level topics from the presenting problem at the appropriate time. This is because higher level perceptions control lower level perceptions. The therapist is hesitant to offer interpretations, suggestions, or advice. The PCT reason is that this will minimize resistance to change and defensiveness on the part of the client, probably because change originates in the client anyway and suggestions from the therapist can never take into account all the goals, beliefs, and perceptions that are disturbed by external suggestions. The therapist will help the client identify conflicts and help with exploring them until the client’s own reorganization capacities resolve them. The PCT view is that internal conflicts are the major reason that a person needs outside help because the reorganization process is “stuck,” most probably at the wrong level; conflict resolution functions like a reset button in a computer; it frees up the person. The relationship between therapist and client in PCT is more egalitarian. The PCT view, as in many therapeutic methods, is that the client/therapist relationship is important mainly because the client must trust the therapist and feel safe enough to self-explore her/his experiences.

Based on the above discussion of MOL psychotherapy, one can describe some treatment goals as follows:

1. Be aware that the purpose of therapy is to change in order to better control life experiences (Client version: “I will report changes in myself to the therapist which are helping me control my life better.”)
2. Discuss the problems which are causing stress. (Client version: “I will talk about the problems which are upsetting me now and will focus my full awareness on them.”)
3. Self-explore and report to the therapist the foreground topics and background topics that are observed. (Client version: “I will self-explore and report to the therapist the foreground and background topics that are observed.”)
4. Learn how to “go up a level” which brings into awareness background topics when future problems arise. (Client version: “I will practice the “go up a level” strategy in my everyday life now and in the future.”)
5. Remain focused on a conflict until it is resolved or a more important one is identified. (Client version: “I will learn to notice when conflicts are present and learn to resolve them by focusing awareness on both sides of the conflict.”)
6. Choose the time between sessions and the duration of sessions (this has been tried by Carey & Spratt (2009) and works quite well). (Client version: “I will decide how often I will have sessions.”) Of course,

this applies to voluntary clients, not ones obliged to attend.

7. End therapy when the significant life experiences which are the focus of therapy are brought into a state of "good enough." (Client version: "I will decide when it is time to stop therapy.") Again, this mostly applies to voluntary clients.

Summary

- PCT Personality Theory is a consistency theory in Maddi's terminology (1996), although it has some features of the conflict and fulfillment models.

- The core and developmental statements are more quantitatively described than in other consistency theories. All people are the same in that they try to control their experiences. All people reorganize when learning or development is needed.

- The peripheral statements are similar to other consistency theories in emphasizing the uniqueness of each person. The perceptual control hierarchy for each person is unique. A person's self-image(s) becomes the description of a person's personality.

- PCT applied to individual psychotherapy results in the Method of Levels. Intrapersonal conflict resolution is a central issue. Insight in the form of going up levels is an important part of the therapy. PCT has qualities in common with humanistic/client-centered/experiential therapies, cognitive/behavioral therapies, and psychodynamic therapies, but integrates them in a theoretical, non-eclectic way through the concept of negative feedback control.

- PCT research applied to psychopathology is still at the early stages of "empirical validation." However, PCT offers some novel ideas about neurotic and psychotic symptoms, and personality disorders which help to understand these problems in terms of problems in the control of experiences.

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Appendix: MOL Progress Note Form

Client name:	
Session Date:	
Others Present--Modality: <input type="checkbox"/> Individual <input type="checkbox"/> Family <input type="checkbox"/> Group <input type="checkbox"/> Other	
Subjective & Objective Data:	
<p>1. Does the client engage (requests sessions, attends sessions, initiates topics, interested in talking to therapist, trusts therapist)?</p> <input type="checkbox"/> Yes <input type="checkbox"/> No	
<p>2. What are the main Foreground Topics discussed in therapy? Does the client talk about the Foreground Topics in a way that suggests he/she is 'in touch', 'mindful' or 'present' with his/her feelings, thoughts?</p> <input type="checkbox"/> Yes <input type="checkbox"/> No	
<p>3. What are the main Background Topics which the client has become aware of, or gained insight into, and talks about? <input type="checkbox"/> None</p>	
<p>4. Does the client believe he/she is changing?</p> <input type="checkbox"/> Yes <input type="checkbox"/> No	
<p>5. What are the main internal conflicts which the client has become aware of and talks about?</p> <input type="checkbox"/> None	
Psychiatric Medication:	
Assessment:	
He/She is making <input type="checkbox"/> No <input type="checkbox"/> Very Mild <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Moderately Significant <input type="checkbox"/> Significant <input type="checkbox"/> Extremely Significant progress on his/her treatment goals. There are Risk Factors to: <input type="checkbox"/> Self <input type="checkbox"/> Others <input type="checkbox"/> None.	
Plan:	
Referral/outreach efforts: Next appointment date: _____ Licensed Therapist (State)	