Part 5

Applications and New Directions in Psychology

Chapter 14

Clinical Psychology from a Control-Theory Perspective

14.1 Introduction

Clinical psychology is a subfield of applied psychology in which the psychologist applies the facts, theories, and methods of psychology to the goal of helping people solve personal problems. Clinical psychologists engage in two major kinds of activities, psychological testing and psychotherapy. Clinical psychologists currently do not prescribe drugs. For those instances where drugs might be helpful, clinical psychologists work with consulting psychiatrists or other physicians.

In this chapter I (DMG) shall describe applications derived from control theory as I use them in my work as a clinical psychologist. They help to show how this new model is beginning to contribute to the clinical field of applied psychology.

The first such contribution is the possibility of bringing about a unified approach to assessment and treatment. This means that the same set of concepts forms the basis of assessment and treatment methods. This makes it easier for the clinician to translate the results of psychological testing into diagnostic and treatment suggestions. A second benefit is that the clinician can measure therapy progress in the same terms as the initial assessment.

14.1.1 Brief Review of Control Theory Concepts

The terms printed in italics are the basic concepts of control theory which I shall use in this presentation. A person checks perceptions (*perceptual signals, p*) against his or her reference value for the perception in question (*reference signal, r*). As an example, imagine a person driving a car. He or she compares (automatically, unconsciously) what he or she is sensing against what he or she should be sensing. One typical driving goal might be: Am I safe? The goodness of fit between the current perception, *p*, and the reference perception, *r*, determines the size and direction of the momentary error condition (*error signal, r-p*). *Error signals* can vary from zero (perfect match) to some large (positive or negative) number. The person's brain functions to keep *error signals* as small as possible.

Continuing with the above example, if the driver perceives that the car ahead has stopped suddenly, this creates an *error signal* with respect to the goal of driving safely. When there are no *error signals* related to a given perception, actions related to this perception do not change. When there is a non-zero *error signal*, actions do change to bring about a correction. *Error signals* in the control system

for driving safely result in corrective actions such as turning the wheel, sounding the horn, or stepping on the brake. (Which action it will be is determined by the particular subsystem in which the current error exists.)

As *error signals* are being corrected, there are physiological and biochemical changes in body state accompanying the actions. Actions cause changes in the physical environment which, in turn, alter perceptions. Thus, an *error signal* in the control system for safe driving also would involve arousal in the body. In this case, the person might experience surprise and/or fear.

Perceptions are always combinations of the effects of the interaction between current action and environmental factors. The person-independent influences are *disturbances*. The sudden stopping of the car in front is the *disturbance* in the driving example.

Adequate control of perceptions having to do with everyday life is what everyone wants. Adequate control in the example of driving means: (1) Perceptions will be matching reference values ($p = r$). The person is achieving his or her goals —he or she perceives himself or herself driving safely. (2) The perceptual impact of actions (feedback) will be exactly equal and opposite to the impact of disturbances. The person maintains goals in spite of changes in the physical environment. He or she adjusts actions to keep perceiving "driving safely," no matter how conditions change.

Sometimes people have chronic error signals resulting from conflicts between competing goals (two different and incompatible reference values for the same perception). In the driving example, the person may want to drive fast in order to reach his or her destination on time. On the other hand, he or she may want to drive slowly in order to be safe. The car cannot be driven fast *and* slowly. If chronic error signals continue, the person's inborn reorganization system will go into action. When this starts, the control systems which were in chronic error change randomly, by trial and error. For example, a person driving a car is confronted with a novel situation, if he or she is an American driving a car in Great Britain. This requires some reorganization of driving control systems. Recall from Chapter 7 that many other systems may register error signals as their current perceptions are disturbed by the effects of the random trial and error of reorganization. The spread of error signals can at times be like a whirlwind, resulting in the conditions called anxiety, or, even more severe, panic. Reorganization ends when the error signals in the inborn (life-support) control systems reduce to zero. (Whether the new action is beneficial to the organism, or changes in external circumstances accidentally let the intrinsic system recover normal functioning, reorganization halts, and the new organization persists until reorganization again is turned on.)

Since, however, many persons do not have a conception of reorganization as random attempts to resolve conflicts within their hierarchy of control systems (and perhaps even if one does), one's awareness may be so focused upon the discomfort of the *symptoms* of reorganization as to be unable to identify the inner sources of conflict. In such circumstances, clinical psychologists employ various diagnostic procedures to aid in uncovering the inner workings, of which the victim, client, or patient is not aware. A major part of the clinician's armamentarium for this purpose consists of psychological tests.

14.2 Psychological Testing

Before a clinician can help a person solve a psychological problem, he or she must have a good understanding of what the problem is, and who the person is

who has the problem. Psychological tests can help gain this information.

In the past, it was common to create psychological tests not based on theory. This practice is still the rule among psychologists who apply behavior modification techniques. "Target behaviors" are chosen, based on practical considerations. For example, if a child refuses to do what others want him or her to do, and if this is judged to be problem behavior by significant others, many behaviorist psychologists would have parents and teachers count the number of times this "noncompliant" behavior occurs. The count of this behavior becomes a psychological test of the child's "noncompliance." The efforts of the psychologist would then be directed at finding out how to influence the child to change the noncompliant behaviors.

Today, however, creation of psychological tests is increasingly being based on theory. Theory suggests what is important to measure. A test which gives consistent results is said to be a reliable test. Theory also indicates what relationships to expect between the test and other tests. A test which relates to other tests as expected by the theory is said to be a valid test.

There are ability and personality tests. A classical ability test which you might have heard about is the IQ test. A classical personality test is the Rorschach inkblot test. By way of analogy to a computer, an ability test can be thought of as a measure of performance related to a "hardware" feature of a person. A personality test is a measure of performance related to a "software" feature of a person. Within control theory, the "hardware" features are the control-system hierarchy (perceptual levels) and the reorganization system. The "software" features are the specific control systems which a person acquires.

I shall describe some preliminary applications of control theory in the development of new tests. My discussion is limited to control-theory-based test development, but it will provide a view of psychological testing in general. The interested reader can learn more on this topic from the following books: Rotter (1966) provides an introductory discussion of the standard tests; Vane & Guarnaccia (1989) provide a recent review of the clinical utility of the standard personality tests; and Comrey (1988) provides a tutorial on the methodology of constructing personality tests.

14.2.1 *Ability Tests*

The levels of perceptions could be the basis for some novel ability tests. It would be helpful to clinicians to have a measure of how well a person can control perceptions at each level. A possible test might consist of giving a person an opportunity to control a perception at a given level, then measuring how well the person controls disturbances. The model of the hierarchy presented in Chapter 5, depicting 11 levels of different perceptual abilities, contains the postulate that the perceptual abilities are not independent of one another. The relationship between the perceptual variables of any two adjacent levels is that of superordinate to subordinate.

Powers (1978) has suggested that a statistic called the *stability number* can serve as a measure of how well a person is controlling a perception. How it works can be illustrated by a type of ability test—a task of tracking a target on a computer screen—which Powers developed. Imagine that you are sitting in front of a computer monitor with a game paddle in your hands. On the screen is a target line. It might be of a given color, or a display like this: — —. The computer moves this target line up and down on the screen in a smooth but unpredictable way. You can use the game paddle to move a second line of a different color or style up and down. The line you control might look like this: ****. The task is to

align your line with the target line so the result always looks like this: ——••••——. This requires the ability to control the relationship between the two portions of the line. The amount of discrepancy (like ——•••——), or error signal, can be measured by the computer, and a ratio from which the stability number is obtained can be calculated by dividing the actual off-target variability (variance) by the expected variability (variance). ("Expected" if the disturbance effects and the effects of the subject's actions were unrelated.) This ratio is 1 when a person is completely unable to perform the task, and it grows progressively larger as a person's performance improves. The square root of this ratio is subtracted from 1 to calculate the stability number. Thus, a stability number of 0 means zero control. As the stability number falls, the control of the perception is increasing. Hence, the stability number measures how well a person can perform the task, from no control at all (the performance of a person not turning the paddle) to increasingly better control. It is a function of data from the individual person, and is representative of that person, just as is one's own blood pressure reading.

This approach to performance description is very different from most current ability tests. Performance in standard ability tests typically is measured with reference to group statistics. The statistics compare how well the person did relative to the performance of others who took the test. For example, an IQ score is a standardized score. An IQ of 100 means that the person performed the same as the average person of the same age. An IQ greater than 100 refers to above average performance. An IQ less than 100 refers to below average performance. Thus, the description of a person's performance is dependent on the group of people who have taken the test before (norms). If the so-called norms are changed, the performance description changes.

Performance in the pursuit tracking task has a clear conceptual meaning. It provides information on a person's ability to control a relationship-perception. Can this test be applied to any practical concerns? Goldstein and Sabatina-Middleman (1984) used the pursuit tracking task with a group of special education children. We found that performance on this task appears to measure a separate dimension. It was not correlated with IQ, attentiveness in the classroom, or behavioral problems at home. Goldstein, Powers, and Saunders (1987), using the pursuit tracking task with a number of adults, found that it tended to be somewhat correlated with hypnotic ability.[1]

14.2.2 Personality Tests

Robertson, Goldstein, Mermel, and Musgrave (1987) developed an experimental procedure to investigate the hypothesis that the self concept (or self-image) is a perceptual variable regulated by a control system at the system level of perception. If the hypothesis were true, elements of the self-image would be maintained at particular reference values (presumably by the self-control system; see Chapter 11). The data showed that individuals opposed disturbances of the self-image traits, as predicted by control theory. Unlike the typical personality study, the action of correcting the disturbance was reported for almost all subjects.

I have found this conception of the self as a control system of use in clinical practice. I developed the following procedure to obtain the self-image. I give a person these instructions: "Imagine that your life will become a movie. Imagine that you are talking to the person who will be playing you. Give the person instructions on how to be you. Let your statements take the form: Be_____. Don't be _____. What kinds of instructions would you give? Be as complete as you can in the instructions given." I give my client as much help as necessary to

generate a set of statements. Most people generate some instructions in a little while.

Once a person has created a set of statements, the next step is to find out which aspects of the self-description are controlled perceptions, by attempting to disturb his or her maintenance of them. (Traits or attributes which a person assigns to his or her self-image, but does not correct when disturbed—contradicted—by another person, are not controlled perceptions. They could be thought of as "window dressing," or what is technically called "social desirability rating" in traditional personality research.) Disturbing the self-image can be done by questions, interpretive statements, paraphrases (especially if slightly off-target), and body language gestures by the therapist which might suggest some skepticism or doubt. Negative emotions, body stress, and verbal/motor actions are to be expected as the person counteracts disturbed controlled perceptions. It is important to vary the approach taken and not test the control of the self-image too severely. Otherwise, the patient may start to perceive the therapist negatively.

Some people cannot produce a self-description during a therapy session, for reasons which are not presently clear. A possible explanation for some people might be that they lack awareness of their self-image. Fenigstein, Scheier, and Buss (1975) developed a personality test of self-consciousness to test that hypothesis. In their measure, an individual rates each of 23 statements for how much it is like or unlike himself or herself. Higher scores indicate greater awareness of one's own psychological states than do lower scores. The researchers concluded that a person had to be aware of his or her self concept in order for it to show influence on behavior. Thus, the behavior called self-description would be one kind of action which is difficult for such people. Carver and Scheier (1981) used this test and also concluded that individual differences in self-consciousness tend (on the average) to be correlated with the extent one's actions will be affected by his or her self-image. They also asserted that steps to increase a person's self-consciousness intrapersonally tend to be followed (on the average) by actions showing increased conformity to self-image.[2]

People who lack awareness of their self-concept (or image) might do so because they function at lower levels of perception. Recall that Robertson, et al. (1987) hypothesized that the self-control system, at the highest level, controls perceptions of the self-image. Vallacher and Wegner (1985) reported a personality test which measures the characteristic level of perception from which a person functions. Their test, the Behavior Identification Form (BIF), consists of 25 questions of the following type: "What does tooth brushing mean to you—(a) preventing tooth decay or (b) moving a brush around in one's mouth?" The former choice is at a higher level, while the latter choice is at a lower level. These authors went on to show that higher BIF scorers tend to describe their self-concepts in more abstract terms. Higher BIF scorers (on the average) believe that they have more control over their lives, tend to be less anxious, and are less sensitive about other people's comments.

The Behavior Identification Form uses a testing format called forced choice. The subject is forced to choose one of the two alternatives; no other choices are allowed. Objective personality tests frequently employ this format. An alternative approach is to ask a question and allow the person to give whatever answer he or she wants. The person's response can be judged in terms of the 11 levels of perception. The "(a)" choice in the illustration of the preceding paragraph is at a principle level of perception. The "(b)" choice is at a relationship or sequence level of perception.

The Myers-Briggs Type Indicator (1985) is an objective personality test which uses four personality traits to classify persons into one of 16 possible types. The

second of the four traits is called "sensing versus intuitive." The person with a "sensing" perceiving preference is described by Hirsh & Kummerow (1989, p.36) in the following terms: he or she predominates in using the five senses (vs. the "sixth sense," hunches); what is real (vs. what could be); practical (vs. theoretical); present orientation (vs. future possibilities); facts (vs. insights); preferring established skills (vs. learning new skills); utility- (vs. newness-) mindedness; step-by-step (vs. leaping around). (Obviously, such generalities apply to an imaginary "composite" person, typifying the category more fully than any single real person given this classification.) The person classified as "sensing" would seem to prefer to perceive in terms of lower levels of perception. The person with an intuitive preference would seem to perceive in terms of higher levels of perception. Thus, the sensing/intuitive trait polarity can be interpreted in control-theory terms as corresponding to the idea of lower and higher levels of perception.

Q Methodology (Brown, 1980) is an approach to personality testing which survives many of the control-theory objections to the standard personality tests. The selection of test items can be individualized for the person and issue being studied. The subject sorts the items according to instructions which also can be individualized.[3] The main emphasis of the method is to study the perceptions of the individual person. These features of Q Methodology make it a promising avenue for control theorists to explore.

Goldstein (1987) applied Q Methodology to study the perceptions of clients in therapy. In the case of one individual, three classes of people were identified among his significant others: (1) ideal people (accepting, sociable, and not aggressive); (2) people in his immediate family (aggressive, not submissive); (3) people like himself (depressed, not assertive). He had, as a presenting problem, the fear of talking in front of people at work. He related the people at work to type (2) people, with whom he had associated fear reactions. Another issue was his relationship with a girlfriend, who was a type (1) person, while he described himself (via the Q sort instrument) as a type (3) person. There seemed to be an implication that he did not feel good enough for his girlfriend. His ex-wife was described as a type (1) person.

14.2.3 Practical Considerations in Testing

Now I shall describe how I use standard psychological tests, along with those described above, within a control-theory approach. The basic concepts of control theory provide a working model of a person. Standard psychological tests provide some information which can be used in various aspects of this working model. I shall organize this report using the following outline:

Perceptions
Reference Perceptions (Reference Values)
Error Conditions
Actions
Disturbances

Then I shall formulate treatment recommendations based upon the data I cite in each of the above categories. (An example of my record form is given at the end of this chapter.)

Under each of the control-theory headings in this report, I include the following kinds of information. I give my client a definition of the term which makes up the heading. I follow this by a description of the general kinds of problems

which therapists encounter, related to that term. (See the following discussion on treatment for a description of the kinds of problems involved in each heading term.) Then I indicate for each of the general kinds of problems whether it applies to the person being tested. Finally, I summarize the specific test results which support or do not support the judgments I have made.[4]

14.3 Psychological Treatment

The evaluation methods discussed in the prior section provide limited information regarding how treatment should progress. Control theory encourages the clinician to seek the the answer to two questions: What perceptions are out of control? What aspects of each control system need change? In practice, the therapy sessions themselves become the means to assess as well as treat. I see my job as therapist as helping the individual regain control over his or her significant perceptions. People who come into therapy usually are in some kind of crisis in life and are experiencing significant stress as a result.

I developed the Life Perception Survey (LPS) and Life Perception Profile (LPP) (Goldstein, 1988) to assess and monitor progress in psychotherapy. The reader is invited to complete the LPS and LPP (samples are given at the end of this chapter). The items in the LPS came from reviewing cases and noting the presenting problems during the first few sessions. Does the LPS help you identify what areas of your life are not under control? Does the LPP help you make distinctions among the various aspects of your life?

The Life Perception Profile helps to identify the life areas which are stressful. Then I start a discussion about a stressful topic, and classify the client's statements using the basic control-theory concepts. We continue the discussion until I believe that I know about all aspects of the control system regulating the perception under discussion. The outcome of the therapy discussion is a decision about what to change. Is it the input function, which creates the perception? Is it the memory/comparator function, which defines the reference perception and calculates the error signals? Is it the output function, which produces the action?

This approach to diagnosis departs from the traditional approach, which uses the latest diagnostic and statistical manual of the American Psychiatric Association (DSM-III-R). The control-theory approach to diagnosis is based on the perceptions of the person seeking help, because they have proven to be the important ones to know, in my experience. The DSM-III-R diagnosis is based on the therapist's classification of the client in terms of the manual's diagnostic categories, which were defined in reference to similarities a panel of experts felt they saw in various groups of people. The categories in the manual reflect different kinds of mental "disorders" as seen from the point of view of experienced clinicians. The panelists believed that they had come across these disorders in their clinical practice, but you can see that they represent *combinations* of clients' problems and clinicians' *generalizations* about them. Thus, they are applicable only on the average. Much of the work of traditional clinicians involves discerning why a solution achieved by a previous "similar" client does not work for the present person, and what adjustments to make to relate to this individual.[5]

14.3.1 Reorganization

The goal of therapy is to help people learn how to regain control over the aspects of their lives in which they experience chronic error. Reorganization is the name of the change process. The reorganization system is triggered into

action by error signals in the intrinsic system, the inborn control systems regulating the internal state of the body. When chronic error signals occur in the intrinsic system, reorganization initiates changes in the acquired systems (the learned hierarchy). The change begins with nonsystematic trial and error, and stops when the error signals in the intrinsic system disappear. Changes occur in the person's ability to perceive and act. A new control system forms, or an old control system modifies.

The change process is the heart of therapy. The description of reorganization just given raises the question of the therapist's role. If change is random, why go to a therapist? How can the therapist help? The main reason people seek therapy is that the reorganization process is scary. When a person is afraid, cognitive functioning and problem solving deteriorate. Therapists can be emotionally supportive. They can offer educated opinions about certain directions of change which the patient is considering. Some therapists suggest directions of change for the patient to experiment with. If the patient becomes dangerous to self or others, a therapist can intervene protectively.

14.3.2 Control-Loop Aspects of the Treatment Process

Perceptions

A key concept in control theory is that of controlled perceptions. The meaning of an action is determined by the perceptions which the actions control. What are typical problems seen in clinical practice, in terms of clients' perceptions? (1) A client may be misperceiving a person or a situation. For example, a client may perceive danger in a situation where there is minimal danger. (2) A client may not be able to perceive something well enough. For example, some individuals cannot read the body language of others well enough to keep from missing important social cues. (3) A person might lack good reality contact because of distorted, disorganized, or unstable perceptions. Cases of severe psychopathology are in this class of problems.

Control theory offers two important tools for exploring perceptions. One is the description of the hierarchical order of perceptual variables. The other is the Method of Relative Levels. The 11 levels of perception are useful to keep in mind when talking to a client. People differ in the level of perception from which they typically perceive and communicate. People whose actions tend to control perceptual variables of the upper levels in the hierarchy are said to be capable of considerable abstraction, while people who are said to be more concrete are operating mainly at lower levels of perception. An obvious example of this is that one must speak to children differently from the way one speaks to adults.

The 11 levels of perception are also useful to keep in mind when one is inviting a person to self-observe. Powers' model implies that a person cannot have awareness of perceptions at the same level as, or higher levels than, the one from which he or she is functioning. For example, if a person's highest level of functioning is the category level, then the person can become aware of relationships, events, transitions, configurations, sensations, or intensities. Such a person cannot become aware of categories, sequences, programs, principles, or system concepts.

The Method of Relative Levels is a valuable procedure for exploring and increasing an individual's highest level of awareness. It consists of encouraging one to "go up a level." Suppose a person uses a word or phrase which seems to be clinically significant. I would want to know what it means to the person, so, I might say, "Tell me more about it (the word or phrase) so I can experience it as you do. Describe it (the word or phrase) in the present tense, as if you were see-

ing it now." I look for body language signs that my client is "going up a level"—signs of surprise, puzzlement, increased excitement.

A person gains insight into a problem when seeing it from a higher perspective. Because conflicts between systems of the same level result in behavioral "hangups" or endless oscillations between opposed goals, being able to "look down on" the level where there are systems in conflict allows resetting of the opposed reference signals to values which coordinate them (performed by the level above).

As an illustration of a common type of perception problem, misunderstanding, consider a person "understanding" someone else at the wrong level of perception, too high or too low. Often, the person being misunderstood will say, "You are putting words into my mouth," or "You don't seem to have the whole picture." If it is a situation which is being misunderstood, we might notice that our actions are wrong. For example, a person who misperceives what day it is may miss an appointment. A person who misperceives how close to the curb his or her car is when parking may sense the car wheels banging into the curb. A person who misperceives a stranger for a friend might call out the friend's name, and then say, "Sorry, I thought you were someone else."

The ability of a therapist to understand client's perceptions is called "empathy." Empathizing enables one to make improved guesses about what another might be misinterpreting. I try to model the difficult process of understanding someone else's perspective, experiencing things the way he or she does, by understanding my client's perspective. I also try to involve the perspectives of other people, having different people describe the same incident. The different versions enable me to point out the importance of perspective. A perception starts from physical energy at sensory receptors, but it is a creation of the person.

One must trust one's perceptions. However, one must also realize the subjectivity of perceptions. They are not facts about the objective world, even at the lower levels of perception. At the higher levels of perception, the importance of a "trust but verify" attitude is most important. If I judge that a client is misperceiving something, I attempt to help him or her come to the same conclusion. I might point out at least one other possible meaning, or I might try to get him or her to generate possible alternatives. I could simply say something like "I think you may be misreading this." I might also challenge the patient to prove his or her case.

Extreme cases of misperception are delusions. These are very difficult to get people to modify. In one case I have known, a client believed that "Everyone hates me. They are jealous of me. They want to put me down." In keeping with this belief, he got into physical fights with others. In an outwardly different kind of case, that of anorexia, people misperceive their body size. They see themselves as fatter than they really are. As a result, they often starve themselves.

It is possible that a person might not be controlling a perception because of being unable to perceive it. For example, a child might notice that his parent becomes angry, but may not know why. The child may not see the relationship between his actions and the anger of his parent. By asking the child questions to draw awareness to the relationship, often I am able to help him or her see the relationship. He or she then can choose to alter the disturbing actions or not. A child who does not perceive the relationship cannot control it.[6] In this example, the child must learn to notice the relationship between his or her actions and the parent's anger. Then he or she can set a goal to perceive lower levels of anger in the parent, and take actions to minimize disturbing the parent. (Of course this assumes that the parent's anger is not random; if it is, the child might plunge into chronic reorganization, and finally end up with "learned helplessness," as dis-

cussed in Chapter 11 in reference to the work of Seligman.)

Cases of distorted, disorganized, or unstable perceptions are the hardest to change. The word "psychotic" applies to such cases in which the victim is said to be "out of contact with reality." Often, psychiatric drugs are used in treatment of psychotic conditions, despite the potential for bad side effects. Control theory offers some interesting ideas for understanding and possibly treating psychoses. I have worked with a young woman who experienced hearing voices. The voices said mean, nasty things to her, relating to the issue of her mixed racial identity. She experienced these voices as coming from outside of her. She would become angry at the voices for bothering her. She would state that she was looking for the person who was talking, and would slit his or her throat if she found him or her. I use the following analogy to explain ideas such as these. Most people have watched movies on television. Sometimes the movie is being broadcast at the same time as we view it on television; this is like perceiving something in the environment. Sometimes the movie comes from a videotape in a recorder/playback unit; this is like imagining and remembering it, based on memory. Normally, a person knows whether his or her perceptions are based on physical energy in the environment (like a television broadcast) or memory recordings (like a video tape). When one is hallucinating, one is perceiving based on memory recordings. However, one misperceives the hallucinations as based on current perceptions of the environment.

Why does this kind of misperception take place? The person's self-control system does not include it in the self-image. Therefore, it seems as if one's brain did not create this perception. Thence, it might seem most plausible to the person that the voices must have come from someone else. It is a logical deduction. In cases of multiple personality disorder, in contrast, a person experiences the voices as coming from within, because he or she can link each voice to one of several self systems.

Control theory contains some treatment suggestions for people who are hallucinating. In the case of the woman hearing the voices, one approach I used was that of trying to get her to believe that the voices were created in her brain. When she rejected this idea, I suggested (from an implication of control theory) that she should try to influence her experience of the voice in some way when she heard it. If she could will the voice to change (sex of speaker or language of speaker, for example), then it would support the idea that she controlled the voice. The strength of her rejection gradually grew weaker. She explained that she feared losing confidence in all her perceptions if she accepted my idea.

Control theory suggests that psychotic symptoms can eventuate from endless brain reorganization due to chronic error signals. Thus, psychosis can be a solution (though not a very desirable one) for chronic reorganization. A person who has become psychotic has found a solution to life's problems. The woman with episodic auditory hallucinations admitted to me that, if the voices stopped, then she would have no excuses for not socializing. She also reported that the voices became more frequent and stronger when she was experiencing stress in her life. In extreme psychotic conditions, the individual who lacks both socializing and work skills, thus keeping him or her from supporting himself or herself through working, has solved those problems—from an environment-control point of view—by having made himself or herself "eligible" for support from others in an institution. Therefore, before a person becomes psychotic, efforts should be made to recognize and manage the stress which is present. Parents, schools, and employers need to be better educated on the topic of stress and the signs that a person is moving in the direction of a psychotic solution to life's problems. After people have developed psychotic symptoms, it is very hard to reach them with

psychotherapy. The psychotic symptoms serve to protect them from further error signals. Metaphorically speaking, they are watching video tapes instead of receiving live broadcasts. The accepted treatment approach consists of putting psychotics in disturbance-reduced environments (hospitals), giving them anti-psychotic agents which reduce some of the psychotic symptoms, and providing nice people to take care of and talk to them. Unfortunately, there are negative effects of being hospitalized, and undesirable side effects from the anti-psychotic agents.

The use of anti-psychotic agents stops some of the psychotic symptoms. The approach of biological psychiatry is that the psychotic symptoms are the results of a biological disorder in the brain. For example, some important chemicals in the brain may not be at the right concentrations. Some brain cells may be undergoing seizure activity. In short, psychotics have brains which are "broken" in some way. A stimulating treatment of the topic of psychotic conditions is a book by North (1988), who gives a first-hand account of what is it like to be "schizophrenic." North went on to complete medical training and become a psychiatrist.

Does control theory offer any novel suggestions for the treatment of psychotics? I believe we have to get the psychotic person to start reorganizing again. Psychotics have simply come up with an incorrect solution to life's problems, and have then cut themselves off from environmental feedback effects. As humanely as possible, I believe, we should try to induce error signals. This might mean placing the psychotic person in a strange environment. Examples which come to mind are the kinds of special effects being created by movie studios. The use of electric shock (by means of a cattle prod) sometimes has been found to be effective in stopping life-threatening, self-injurious behavior of autistic people. Perhaps the effective component of this apparently cruel treatment is novelty (unexpectedness), which starts the reorganization process. If novelty is the effective treatment component, then the use of painful stimulation can be eliminated, while other novelty-inducing approaches are developed.

Reference Values

Most perceptions have a preferred state. In controlling a perception, one acts to achieve and maintain it at the preferred state. The preferred state is called the reference perception. Some of the psychological problems of people seem to involve problems of reference values or levels. Here is an example. A preschool child saw his ball roll into the street. He wanted to get the ball, and he wanted to obey his mother, who must have told him not to go into the street. (At that moment, he was paralyzed by a conflict between two opposing reference states of equal strength.) His solution was to ask me to retrieve the ball for him as I walked by.

Some people have goals (reference states) which are very difficult or impossible to reach or maintain. For example, some people are perfectionistic and not very flexible about their goals. One case I had of this nature involved a man who experienced considerable stress at work. The work load increased to the degree that he could not do the quality work he demanded of himself. A related problem which I encounter in some young people is that they do not know what to want. I have had many cases of younger people who did not know what they wanted to do with their lives. They incur stress from frantically trying everything in sight. Others want too many things and try to accomplish their goals in too short a time. These people run out of time or energy to do all of the things they want. They wear themselves out.

People who do not know what to want lack experience in deciding. They lack

confidence, are passive, and have a poor sense of self. During therapy, they must practice deciding, to gain awareness of the importance of their opinions, likes, and dislikes. They are important, and they matter. I spend a lot of time listening to them and getting them to talk. Time is spent discovering and describing their preferences. In cases of people who have a history of being submissive to others, I try not to use a directive style.

People with too many goals experience stress from the inevitable time conflicts which occur. These often are very competent people. The goal of pleasing people is often a higher-order goal behind their high level of activity. However, they often stress other people around them with the high level of activity. Another common higher-order goal is to avoid being bored. They have to learn to monitor the number of active goals, and to keep the number within manageable levels by saying no to new goals. I have found that going over time-management skills is helpful in these cases. It is also helpful to coach these people in relaxation skills. People with too many goals have to learn that they have limits, and that their bodies require some relaxation time.

In all of these procedures, the test for the controlled variable can be extremely useful. It is the control-theory tool to discover or confirm reference levels. The reference perception is the value of the perception which results in no further action taken to obtain the goal. As I indicated above, I often make an educated guess about what my client wants, then disturb this perception by an action or statement. If he or she is controlling the perceptual variable, I expect to see it restored to its original value. We can explore how suitable it is in relation to his or her other goals. We might then discover internal conflicts between equally strong but inconsistent reference states.

The approach to resolving a conflict involves guiding a patient's awareness. Once a therapist notes conflict, the task is to direct the patient's awareness to the two goals in conflict. This may also require use of the Method of Relative Levels. In order for the patient to perceive the conflict, he or she must be viewing it from a higher level. The therapist helps the patient "go up a level," until a level is reached where the conflict does not exist. It is to this level which the patient's awareness must be directed. Changes in awareness can start the reorganization process. The reorganization will eliminate the conflict at the lower level.

Therapists do not have to be right on the first guess. The guess can be revised and tested again repeatedly until the best possible description is obtained. From the point of view of the patient, the therapist may seem to be clarifying, paraphrasing, asking for more information, or offering interpretations. Testing for controlled variables in conflict is a trial and error process, similar to that facing parents of a baby who is crying. The parents make guesses about what the baby wants and then they test each guess. Is the baby hungry? Is the baby wet? Does the baby want to play? When the parents hit upon the correct reason, the baby stops crying and calms down.

Gossen and Good (1988) have suggested the "and" technique to resolve conflicts. A person combines the two conflicting perceptions with the word "and." Then the person tries to figure out a perception which will make the compound statement true. This technique encourages a person to change levels in order to make the new statement true.

An especially difficult type of conflict is seen in the case of perfectionistic people. They can be viewed as people who have very high sensitivity for error signals. They are afraid to be wrong, and often come to therapy with complaints of anxiety. They do not like change. They like to keep their lives the same as much as possible. At the same time, many perfectionistic persons have reference values to please other people. Their obsessions and compulsions function to avoid

rejection from significant others. Their conflicts are between the tendencies to resist a therapist's suggestions and the desire to please. They often come across as rigid and difficult patients. Of all of the techniques for resolving conflict, Powers' Method of Relative Levels often proves most useful with perfectionistic people. When a person is taken to a level of perception at which he or she stops resisting the therapist's suggestions, he or she is free to change. This approach takes time. The person has to be willing to stay in therapy long enough to discover the conflicts and work through them. In working with perfectionistic people, I have used the following techniques as supplementary to the main focus of resolving conflicts. I try to get the person to broaden what he or she wants and how he or she will get it. This increases the chance of success and reduces frustration. It helps the person to think in terms of alternative goals and means to achieve the goals. I try to get the person to deliberately introduce changes into his or her life. If he or she accepts the suggestion, he or she will see that nothing terrible happens. I try to get him or her to be "selfish" and to be a "bad" boy or girl for a change. Perfectionistic people have very strong moral and ethical codes. They may not be interested in or skillful at having fun. I teach them some relaxation skills to get them used to the idea of letting go of themselves. They may learn that they don't have to control themselves so tightly all of the time.

The extreme version of the perfectionist person is the one diagnosed as having an obsessive-compulsive disorder. In these cases, anti-depressant or anti-psychotic agents may be helpful.

Consider the case of people who frustrate themselves because they choose goals which are uncontrollable. One common example is the case of person A, who wants person B to be a certain way. This works out fine as long as person B happens to have the same goals, but when this is not the case, person A will be frustrated and disappointed, or persons A and B will be in conflict with each other. As Ford (1989) explains, the solution to this sort of problem is to recognize that a goal is uncontrollable and then give up that goal. From an analysis of why the goal was important, a substitute goal can be chosen which comes as close as possible to meaning the same thing as the original goal. The substitute goal, however, is reachable and maintainable for the person.

Error Conditions

There is a class of psychological problems which is most closely linked to the control-theory concept of error conditions, rather than to perceptions or reference perceptions. Recall that an error condition starts, stops, and guides skeletal muscle activity, resulting in actions in the environment. The same error signal also increases, decreases, and guides the body's arousal. The degree of arousal must be appropriate to the energy requirements of the action. Emotion (feeling) in control theory is a perception of a body state which starts from an error signal. Some recent references on the topic of emotions are Frijda (1988), Greenberg (1989), Plutchik (1988), and Strupp (1989).

What are the typical error-condition problems seen in clinical practice? Some people do not verbally or gesturally express feelings, and this creates problems for them. They are very private, quiet, inhibited people, whom other people find hard to read because of their emotional nonexpressiveness. Thus, social relationship difficulties result.

Some people do not have higher-order representations which they can use to understand what they are feeling in the body; this creates problems for them. People with this sort of emotional problem seem cut off from their own body experiences. When they decide, feelings do not receive much weight. This results

in logical decisions which ignore the information contained in feeling reactions. As a result, the decisions may disturb other people, sometimes resulting in rejection or noncompliance. People who find it hard to know their own feelings often develop psychosomatic diseases in which they experience pain or bodily dysfunction.

Some people experience bad feelings which are strong, frequent, or changeable. These emotions result in concentration/attention, memory, or decision-making problems. It is hard to function well cognitively when emotions are too strong. This makes it hard to work at solving a problem. If emotions are strong, frequent, or changeable, then a person is having strong, frequent, or changeable error signals. This triggers the reorganization process, which directs awareness to the control systems having error signals. Thus, awareness is directed away from the task at hand to the problem areas; the cognitive dysfunction follows.

I have found that it is helpful to keep the levels in mind when talking about feelings with people. Even people who have a hard time talking about their feelings can tell you something about the feeling at one of the levels. It is not necessary to have a client verbally categorize the feeling. The minimum requirement is that a person can recognize that he or she is feeling something when it is obvious from the body language that he or she is having a strong emotion. Then a therapist can follow up with some additional questions. What was the person wanting to happen when he or she had the feeling? What was he or she perceiving as happening when he or she had the feeling?

I call this approach to working with a patient's feelings the "feeling-wanting-perceiving" method. If successful, the method will clarify the nature of the error signal behind the feeling. This may suggest the kind of action which would reduce the error signal. For people who experience but do not adequately express feelings, writing in a journal is sometimes a successful technique. It allows communication without confrontation. The more introverted person in a couple can express thoughts and feelings in a way which gives the desired privacy. In a hospital setting, one finds other kinds of therapies designed for the nonexpressive person. Some of these alternative therapies include art, music, drama, and movement mediums. The purpose of encouraging emotional expressiveness is to help a person achieve an integration of thought, goal, feeling, and action.

People who do not experience feelings such as joy, sadness, etc., are hard to help. Biofeedback therapy can help them become more sensitive to body experiences. Biofeedback therapy is the use of electronic machines to check body states and feed the information back to the person. This helps the person become more aware of his or her body states. In that feelings are perceptions of body states, biofeedback therapy can help a person become more aware of feelings. It can also help a person learn to relax the body voluntarily. This reduces the perception of stress.

People with very strong or highly variable feelings often demand the help of psychiatric drugs to reduce or stabilize their feelings. They find it hard to engage in psychotherapy until they have some relief from symptoms. Thus, the use of psychiatric drugs on a temporary basis may be a necessary supplement to psychotherapy for these kinds of cases.

Not all perceptions of the states of the body start from error signals. Some may result from diet, physical disease, seasons of the year, etc. Moods are definable as perceptions of body states which are not a function of any specific error signals. It is possible that some cases of mood (affective) disorders may be the result of causes other than error signals. The applied control theorist has to be open to these possibilities. Referral to the appropriate health care professional will be necessary in these instances.

Actions

Some people arrive with difficulties at executing the actions which would help to alleviate the error conditions. What are the kinds of action problems which one sees in clinical practice? Some people lack the actions which would reduce the error signals. These cases are common among children and developmentally disabled persons. Some people have the skills, but never apply them for some reason. An example of this kind of case is a business executive who functions effectively in groups at work but who does not apply the interpersonal skills to his marriage.

Disturbances

The environment does not stay the same. Even if a person can perform actions which reduce error signals to zero, changes in the environment can induce new error conditions. Some psychological problems seem most strongly linked to the concept of disturbances. What are the kinds of disturbance problems which present themselves in clinical practice?

Anything and everything bothers and upsets some people. This is usually a sign that they are experiencing chronic error signals, and are beginning to reorganize. Other people show that nothing bothers or upsets them. These people are defending against chronic error conditions. Control theory helps us to understand that a stimulus is a disturbance only when the person can perceive it and has a goal with respect to the perception being changed. A parent may be upset by the condition of a child's room. The child may perceive that it is messy, but not have a reference value for neatness. Or the child may have a goal for neatness, but doesn't perceive the room as being messy. In either case, the same room causes an error in the parent, but not in the child. Some kind of action is taken by the parent, but the child does not have an urge to act. The objective condition of the room cannot be the cause of action in the parent and the lack of action in the child. Control theory assigns responsibility to the person, not to the environment, for error signals.

Error signals may continue even after a person tries to change the environment or himself/herself. Under these circumstances, a person can separate from the environment. This is when a therapist may advise a person to consider the option of leaving a marriage, neighborhood, or job. This solution may be better than suicide, homicide, becoming physically or mentally sick, criminal actions, etc. This is sometimes a judgment call for therapist and client.

14.3.3 *Other Approaches to Clinical Psychology*

Many clinicians are becoming more eclectic in treatment approaches. This means that they are willing to use any treatment method which works for a person's problem. Some authors also claim that treatment approaches are becoming more similar to each other. Beitman (1987) outlines what is common to all individual therapies. (See also Messer, 1986; Lazarus, 1981; Rotter, 1964.)

14.4 A Control-Theory View of Healthy Personality

Most theories of personality, therapy, and psychopathology provide pictures of the way people would be if they were free of psychological problems and functioned in a way consistent with their human nature. What is a control-theory

vision of healthy personality? It is generally synonymous with a conception of "natural" human nature. It is the condition toward which we hope people move in therapy, or the condition of people who never needed therapy." For instance, many of my clients ask, at some point, how long therapy will last. One answer I like to give is "When all of the different LPS areas which matter to you are in the 'OK zone'." Another answer (which I believe means essentially the same thing) is "When your self description approaches that which would be given by a psychologically healthy person."

Imagine that we obtained the self-image description from a person who functioned according to the control-theory vision of human nature. Suppose that we used the strategy described in this chapter for obtaining self-image. Imagine that the person gave us the following answer when asked to instruct an actor who was going to play him or her in a movie about his or her life:

> You are a person in whom error signals are kept close to zero. This means that you are successful in achieving and maintaining goals regardless of environmental obstacles. You are a person who selects your own goals and the ways to reach them. You do not let circumstances or other people do this. This includes the goal of the kind of person you are. Goal selection is done in a way which avoids internal conflicts. You are a person who is internally consistent. Internal conflicts, which are a major source of error signals, are addressed and resolved.
>
> You are a person who can become aware of your own experiences. This means that you can become aware of any level of perception within you from the systems level to the intensity level. This ability to shift awareness is important for monitoring error signals and for learning.
>
> When minor environmental changes occur, you are a person who adjusts actions automatically. You are flexible when it comes to the means to your goals. When major environmental change makes old ways of controlling ineffective, you are a person who can learn new ways.
>
> You are a person who prefers reducing error signals by realistic means (actions in the environment) rather than by psychological defenses. This is because only actions in the environment can lead to long-term reduction of error signals.
>
> As a result of successfully controlling your life, you mostly experience positive emotions, not negative emotions. You often feel calm and relaxed, not stressed. You are a person who lives in harmony with others. In this way you avoid the error signals which can result from interpersonal conflict and disturbing others. Good communication and social skills are important to allow you to live in harmony with others. You are a person who addresses and resolves conflicts with others in a democratic way. You understand that other ways of dealing with interpersonal conflict lead to chronic error signals in the the long run. You will treat each person in a unique way. You will not treat them in a standard way.

The Golden Rule in control theory might read: Treat others the way they want to be treated. One cannot assume that everyone has uniform goals.

Andrews (1989) discusses the views of human nature in several theories of personality, therapy, and psychopathology. At the end of his discussion, he comes out in favor of the what he calls the existential view. The control-theory and the existential views seem similar. Students might pursue the study of other views of human nature by referring to Andrews' article.

14.5 Clinical Research

The foregoing discussion has pointed out the possibility of developing some new cognitive-ability tests based on the control-theory levels of perception. I am working in a developmental center for adults with mental retardation and psychological problems. The standard methods for evaluating cognitive abilities in this population have limited usefulness. If we could assess which levels of perception a person could control as he or she goes about his everyday activities, then this would be potentially very useful. For example, suppose that we learned

that a person could control sequence perceptions (and lower-level perceptions), but not any perceptions at a higher level. In devising ways to teach activities of daily living (for example, washing and drying hands) to such persons, we would be careful to avoid the use of levels of perception higher than the sequence level (for example, by avoiding program level rules which would alter the sequence of steps, depending on circumstances).

Some control-theory clinicians are in the process of developing new personality tests. Control theory may lead to new ways of scoring standard personality tests, such as the TAT[10] and the Rorschach. When scoring the TAT, I have used the concepts of perception, reference perception, error condition, action, and disturbance to summarize the story a person tells for a picture. I have used the levels of perception to code each statement in a TAT story. When scoring the Rorschach, I have used the levels of perception to code a person's response to an inkblot stimulus. The advantages of using the control-theory concepts to score these tests could be investigated in future research.[11]

New clinical research methods will doubtless follow the lines of Maher's (1988) discovery-oriented suggestions. Maher advises that we take a much closer, detailed look at what happens in psychotherapy. One approach consists of choosing some psychotherapy event or phenomenon which is of interest. For example, one topic which is of interest to me is what impact therapy has upon the development of morals and personal standards for judgments. Examples of this phenomenon could be obtained for a given case over several sessions. The levels of perceptions could be used to classify the levels on which a person's morals resided. We could examine the data for what they suggest about the effect of therapy upon the process of forming moral judgments and drawing inferences.

A second discovery-oriented approach consists of studying sequences of interaction between the therapist and client. For example, if the therapist uses the Method of Relative Levels to explore topics, what changes take place within the client? If the client is in conflict, what are the best ways the therapist can help him resolve the conflict? Given that the client has reorganized, what role has the therapist played in achieving this? Data specific to each of these questions could be obtained by examining therapy audio or video tapes.

Control theory provides a unified approach to psychological evaluation and treatment. Much research needs to be done to evaluate the utility of control theory in clinical practice. Students are invited to join this exciting adventure.

Notes

1. Performance on the pursuit tracking task has not been applied to any further practical matters to date. It will require additional research to learn what else of interest it might tell about a person.

2. An alternative approach is to use the idea of error sensitivity. Rather than trying to change the degree of self-awareness, a clinician might target the error sensitivity of the person for deviations from the self-image. Error sensitivity is the amount of corrective action produced for a given amount of error signal. A person with a high self-consciousness score might have a higher error sensitivity score for deviations from the self-image. Powers is working on modelling different approaches to how error sensitivity might be changed.

3. The statistical analysis done on the data (correlations; factor analysis) is not completely mechanical; some room is left for the judgment of the person doing the analysis. Norms are not necessary to interpret the results. Individual case studies (that is, n = 1) are possible.

4. It is beyond the scope of this introductory chapter to describe each of the individual tests in detail, and the kinds of contributions they will make to the psychological evaluation.

5. Interested students can learn more about the DSM-III-R in abnormal psychology courses.

6. The specific course followed by therapy is often unpredictable, because of the nature of reorganization. Powers (1973) has compared the reorganizational changes during psychotherapy to the task of two people unraveling a ball of yarn together.

7. See Robertson (1985) for a case report on an individual with almost no self system, and whose values therefore were controlled by other people, with minimal influence from her judgment as to what would be beneficial for herself.

8. Powers (1979) has described the sequential development of a new control system as a sequence as first perceiving a new variable of stimulation, then settling on a value of this variable as the reference level (probably the perceptual value most frequently recorded in memory), then learning how to use the existing control systems to achieve and maintain that perception at the reference value. The first phase of control system acquisition is the coming into existence of a new sensitivity or ability to perceive. This step sometimes is called perceptual learning. For further views on this topic, see a book on perceptual learning and development, such as that by Gibson (1969).

9. Whether there can be perfectly "natural" people in complex modern civilizations is controversial.

10. The Thematic Apperception Test, in which the client tells stories about pictures, and the clinician then interprets the projected self-image of the storyteller.

11. I have started to research the LPS and LPP tests. Some of the questions of interest to me include these: Are the 38 topics comprehensive enough? Can the LPS and LPP be used to track progress in therapy as intended? Is the number of life areas indicated as problematic related to the overall stress level of a person? What is the best way to follow up on the problem areas identified, in order to "zoom in" on the controlled perceptions?

Also, I have completed a pilot study on the use of control-theory concepts in psychotherapy. I have found that it is possible to code live sessions using control-theory concepts. However, this is a difficult task which places an additional burden on the therapist. The preferred methodology would be based on coding videotapes of the therapy sessions, rather than live sessions. The research would be aimed at improving the way a therapist identifies problem control systems, and improving the way a therapist guides a person through reorganization.

Record Form Used by David M. Goldstein

PSYCHOLOGICAL EVALUATION

Name:

Address:

Identifying Information:

Reason for Referral:

Tests Given:

Observations During Testing:

Description of Person Based on Test Results:

PERCEPTIONS:

REFERENCE PERCEPTIONS:

ERROR CONDITIONS

ACTIONS:

DISTURBANCES:

Treatment Recommendations Based on Test Results:

Life Perception Survey (LPS) Developed by David M. Goldstein

LIFE PERCEPTION SURVEY

Which areas of your life are NOT going OK? Circle the associated number of each of the following areas of your life which should be changed, improved, or made better in some way.

1. marriage
2. money
3. child(ren)
4. work/job/career
5. physical health/condition
6. psychol. health/condition
7. school
8. brother(s)
9. sister(s)
10. friend(s)
11. body appearance/condition
12. parent(s)
13. relatives (aunts, uncles, etc.)
14. physical environment conditions
15. family life
16. social life
17. strangers
18. material stuff/possessions
19. day-to-day time schedule
20. the way free time is spent
21. the use of substances
22. house, neighborhood
23. concentration/paying attention
24. memory
25. decision making
26. feelings/moods
27. thoughts/images/sensations
28. sleeping
29. religious/spiritual life
30. sex life
31. eating/food
32. status with police/courts
33. self-image
34. life goals chosen
35. success in reaching life goals
36. conflicts
37. talking/understanding people
38. movements/motor coordination

Instructions: Consider only the life areas circled. The three most important ones are (write in the associated numbers):

___ ___ ___

Life Areas	Describe the Change Wanted

Life Perception Profile Developed by David M. Goldstein

LIFE PERCEPTION PROFILE

Instructions: Refer to the Life Perception Survey.

Step 1: The three MOST OK areas of my life are: ___ ___ ___

The three MOST NOT OK areas of my life are: ___ ___ ___

Cross out the six life area numbers which you used above:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

Step 2: Among the remaining life areas,

The four MOST OK areas of my life are: ___ ___ ___ ___

The four MOST NOT OK life areas are: ___ ___ ___ ___

Go back to the life area numbers of step 1 and
Cross out the eight life area numbers which you used in step 2.

Step 3: Among the remaining life areas,

The six MOST OK areas of my life are: ___ ___ ___ ___ ___ ___

The six MOST NOT OK life areas are: ___ ___ ___ ___ ___ ___