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ELEMENTS OF THE SOCRATIC METHOD: II. INDUCTIVE REASONING

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The Socratic method uses systematic questioning and inductive reasoning to help clients derive universal definitions. The present manuscript describes inductive reasoning as used in psychotherapy. Inductive reasoning can be based on enumerative generalizations, analogical comparisons, and eliminative causal reasoning. Enumerative generalizations use pattern identification to support a conclusion about an entire group of events. Analogical comparisons help clients transfer knowledge from familiar to novel situations. Eliminative causal reasoning involves manipulating environmental conditions to examine possible causes of specific problematic events. After a probable cause has been identified, it can be modified through treatment. The clinical utility and fallacies of logical reasoning are discussed as they apply to each of the three forms of inductive reasoning. In general, inductive reasoning plays a central role in the Socratic method and can be a valuable tool in psychotherapy.

The Socratic method plays an important role in cognitive therapy (Beck, Rush, Shaw, & Emery, 1979; Beck & Emery, 1985), rational-emotive therapy (Ellis, 1962), and psychodynamic therapy (Rychlak, 1968; Stein, 1991). Despite its value, the Socratic method rarely is described in adequate detail. The Socratic method uses systematic questioning to guide the flow of inductive reasoning in therapy sessions. The goal of the Socratic method is to cultivate abstract conceptual skills (Nelson, 1980). Often, the focus is on helping the client to derive a universally applicable definition of an abstract concept relevant to therapy (e.g., love, trust, success, friendship). Throughout this process, the therapist and client collaborate in the search for knowledge and definitions. Both therapist and client attempt to minimize their preconceived beliefs in order to remain cautious and skeptical about the information they possess. Although potentially capable of becoming a distinct approach to psychotherapy, the Socratic method is best viewed as a style of clinical interviewing that is compatible with most forms of psychotherapy. The clinical application of systematic questioning has been described in a previous report (Overholser, 1993). The present manuscript describes the use of inductive reasoning as part of the Socratic method.

Inductive reasoning is used to draw general inferences from experience with specific events and therefore can be used to help clients transcend their personal experiences and construct a broad view of reality (Rescher, 1980). Inductive reasoning can help clients distinguish between facts, beliefs, and opinions (Gambrill, 1990). The basic process in inductive reasoning involves analyzing similarities and differences among specific experiences in order to extract a general principle about a class of events (Pellegrino, 1985). As used in psychotherapy, inductive reasoning helps clients develop appropriate expectations and coping strategies at a fairly abstract level. Three forms of inductive reasoning have

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been identified: enumerative generalizations, analogical comparisons, and eliminative causal reasoning. Each will be described as it relates to psychotherapy.

Enumerative Generalizations

Induction by enumeration involves identifying a general category that applies to all members of a group based on experience with only some group members (Zechmeister & Johnson, 1992). Ideally, a strategy can be developed that is both sensitive (i.e., identifies all members of the group) and specific (i.e., identifies only members that belong to that specific group) (Medin & Barsalou, 1987). However, most categories have no clear boundaries (McCloskey & Glucksberg, 1978), thus making the generalization process very complicated.

Clinical Utility of Enumerative Generalizations

The goal of the enumeration process is to combine information into meaningful units so as to reduce the massive amount of information clients need to understand (Evans, 1989). Using this enumeration process, clients can learn to reason from specific events to general principles, classifying specific entities into general categories (Burks, 1980). This provides much useful information about all members of that category (Medin & Barsalou, 1987) allowing clients to comprehend situations in which limited information is available (Lingle, Altom, & Medin, 1984).

Clients often perform enumerative generalizations in a faulty and idiosyncratic manner. Many types of irrational thinking are based on inaccurate overgeneralizations (Ellis, 1977). Clients tend to seek information that supports their preestablished beliefs (Evans, 1989; Snyder & Swann, 1978). This bias for confirmatory evidence is more likely to be present when testing hypotheses about oneself (Strohmer, Moilanen, & Barry, 1988) than with hypotheses about other people (Strohmer & Newman, 1983). Thus, many cognitive distortions about oneself develop a self-perpetuating nature. Therapy is needed to correct and replace these idiosyncratic and dysfunctional cognitions. Therapy can be useful in encouraging clients to seek a variety of information before inferring a generalization.

Inductive generalizations involve the gradual accumulation of evidence. Over time, clients discuss a variety of events in their lives. As the information accumulates, it becomes easier for therapist and client to identify patterns in the client's life. The generalization process can be applied by asking the client a series of questions (e.g., "How does this problem relate to the things we discussed last week?" "What can we learn from the conflict you had with your parents that could help us here?"). This process helps clients see patterns in their lives and begin to anticipate recurrent problems. Then, useful coping strategies can be identified and implemented.

Subtypes of Generalizations

Inductive reasoning can be used to infer generalizations about people, events, goals (Medin & Smith, 1984) and abstract social concepts (Lingle et al., 1984). Generalizations about people often identify categories of people (e.g., extrovert) and evaluate the extent to which a person fits the general category. Clients develop social expectations based on these categories. However, clients may inappropriately generalize from a small sample to the population as a whole. For example, a socially anxious male reported "Mary is single, unattached, and pretty, and she rejected my advances. Sue is single, unattached, and pretty. Therefore she will reject my advances." The client developed the view that all attractive women were too good for him and would not be interested in getting to know him. However, this client failed to take into account other relevant conditions such as their personal preferences, sexual orientation, and the timing of his interactions with these women.

Generalizations about people also apply to the view clients hold toward themselves (i.e., self-concept). Clients with narrowly defined self-concepts are more likely to be influenced by life stress and vulnerable to depression and physical illness (Linville, 1985; 1987). Furthermore, clients often focus on one type of life experience, creating a biased view of their self-concept. For example, a pessimistic client reported: "My marriage is terrible, I can't find a decent job, and I've put on 15 pounds. What a loser I've turned out to be." This client needed to learn that he could be a good person despite poor performance in certain areas of his life. Discussing what "loser" meant to the client helped him distance himself from these recent events and identify a broader sample of events from which to judge himself. Instead of focusing on his view of being

a failure, this client learned to gather evidence documenting his success in various activities.

Generalizations about events cluster together a number of common actions comprising a particular type of event or repetitive problem situation. For example, a client complained her life was "terrible." When asked to explain what made her life so terrible, she complained that no one remembered her birthday. Another example of "terrible" occurred when she had a flat tire in a bad neighborhood on a rainy night. However, when asked to define terrible in the abstract, she concluded terrible events cause permanent harm to a person. She was able to see her problems were minor inconveniences, not terrible events. Although her flat tire could have resulted in terrible consequences, she realized it was best viewed as an inconvenience.

Generalizations regarding goals focus on qualities that help the client attain a desired outcome. Goal-related concepts are influenced by the frequency and strength with which a particular action is related to the final goal (Medin & Smith, 1984). For example, a depressed client reported: "I've applied for three jobs in advertising, and didn't get any of them. I know I'll never find a good job." This generalization was biased because the observed sample did not adequately represent the characteristics of the population as a whole. In actuality, the client was not qualified for a job in advertising, but could easily get a job in sales. Therapeutic discussions helped this client see how his pessimism had biased his reasoning. Questions forced him to define what a "good job" meant to him, and therefore learn to broaden his scope of possible employment opportunities.

Generalization principles also apply to abstract concepts such as truth, justice, friendship, courage, or beauty (Lingle et al., 1984). For abstract concepts, the generalization process becomes ambiguous and relies on the client's interpretation more than observation (Gergen, 1988; Lingle et al., 1984). Clients often set themselves up for failure by looking at their lives from extreme perspectives. Bifurcation occurs when clients examine only two possible alternatives (e.g., success vs. failure), thereby ignoring the various intermediate gradations. A false dilemma is created when the client implies that only two outcomes are possible, one good and one unacceptable outcome (Zechmeister & Johnson, 1992). For example, a client emphasized the goal of perfection throughout her everyday life. She felt that whenever her performance was less than 100%, it was a complete failure. Therapy and assignments were used to help her appreciate the vast array of possibilities between perfection and failure. These involved recording activities throughout her day and rating her success from 1–99%, encouraging a range of ratings. Furthermore, she was occasionally given paradoxical assignments in which she was instructed to strive for a mediocre performance so that obtaining 100% would be a failure of the assignment, whereas 50% would be optimal.

Process of Generalization as Used in Psychotherapy

The generalization process involves three steps: the critical evaluation of the client's generalization, pattern identification to revise the generalization, and validation to test the new generalization. The use of generalizations often begins when the client makes a statement that includes a broad generalization. Critical evaluation is used to identify the logical implications of the client's generalization. Therapists help clients examine the implications of their generalizations by eliciting further statements that support or contradict the original generalization (Nelson, 1980). Therapist and client use a methodical search for underlying contradictions that may impede the generality of the statement (Navia, 1985; Seiple, 1985). For example, a client complained he had no "real friends." He was asked to define what he meant by a "real friend." He stated a real friend was someone he could trust with any possession or information he had, someone with whom he could enjoy many social activities, and someone that liked him even when he was in a bad mood. Therapist and client discussed different people in the client's life to evaluate these criteria. The client realized there were several people he trusted and enjoyed, and who could be seen as real friends. Alternatively, the client remembered several "real friends" from his past who had not met these criteria. Thus, he needed to redefine what he meant by a "real friend" so as to include the friends he already had.

After identifying weaknesses in the original generalization, therapist and client collaboratively develop a revised generalization based on common elements across different examples. Together, therapist and client construct the meaning of key terms (Keeney, 1987). The therapist re-

quests additional information through questions or self-monitoring assignments conducted between sessions. Pattern identification occurs when therapist and client work together to identify common elements across the diverse items (Chessick, 1982; Lingle et al., 1984) by observing a sample of events and detecting underlying regularities that allow further instances to be categorized accurately (Harnad, 1987). The generalization may need to be broken down into its component parts to identify similarities among category members (Medin & Barsalou, 1987). Pattern identification is influenced by the availability, relevance, and vividness of the information obtained (Evans, 1989) and the frequency and recency with which that category has been used (Lingle et al., 1984). Clients must learn to focus on relevant and ignore irrelevant similarities (Reed, 1972).

Finally, validation involves testing the generalization under a variety of circumstances. Both actual and hypothetical tests may be used. Therapist and client evaluate the strength and diversity of evidence supporting the generalization. As the size and representativeness of the observed sample increases, the probability of an accurate generalization increases (Salmon, 1973; Zechmeister & Johnson, 1992). If a generalization is based on a sample that does not adequately represent the group as a whole, the generalization will not reflect the properties of the larger population. Enumerative generalizations are strengthened by: 1) a greater number of supporting instances, 2) a variety of supporting examples, and 3) a balanced distribution of types of examples (Carnap, 1945). The number of instances is the least important element, being neither necessary nor sufficient for a proper inductive generalization (Manicas & Kruger, 1976). Thus, instead of simply gathering a large number of supportive examples, it is better to seek corroborating information under a wide variety of circumstances (Black, 1952). If the original generalization cannot account for all possible cases, a new generalization is proposed and evaluated. A cycle of proposing and refining parameters is used to improve the identification of features that define a categorical generalization (Fried & Holyoak, 1984).

Limitations of Inductive Generalizations

Inductive generalizations are artificial groupings imposed on natural variations and are strongly influenced by language and culture (Gergen, 1985). Furthermore, induction by enumeration is limited by its susceptibility to falsification (Popper, 1965). A generalization based on numerous supporting examples can be falsified by one counter-instance (Carnap, 1966). In order to protect against falsification, the supporting examples should be as diverse as possible (Carnap, 1966) and the client should check for possible counter-examples (Holland, Holyoak, Nisbett, & Thagard, 1986). Thus, clients need to ask themselves: "Are the examples relevant? Typical? Adequate?."

Risk of falsification can be reduced by framing hypotheses in terms of probabilities or percentages instead of universal statements. Inductive reasoning estimates the probability of a conclusion depending on the quality and quantity of evidence supporting it (Zechmeister & Johnson, 1992). Thus, enumerative generalizations can provide estimates about the probability of different alternatives (Burks, 1980).

Despite the importance of the falsification approach, it is important to avoid overemphasizing the search for conflicting data. It is often useful to refine or expand the generalization so it can accommodate the conflicting data (Lakatos, 1970). In essence, a generalization should not be discarded until a better one is available (Lakatos, 1970). The old generalization often retains its usefulness, but with some limitations that have been identified by the counter-instances (Popper, 1968).

Analogical Comparisons

Inductive analogies build on enumeration processes (Hesse, 1968). However, instead of inferring from an observed sample to the entire population as is common in enumerative generalizations, analogies infer from one sample to another (Simco & James, 1976). Reasoning by analogy involves comparing two objects, events or people based on relevant but not obvious similarities. The observed similarities are assumed to indicate other similarities exist but have not yet been identified. Analogies are used to emphasize abstract properties that are shared across situations (Holland et al., 1986). Thus, inductive analogies lay the foundation for conclusions that extend well beyond any observed similarities.

Clinical Utility of Analogical Reasoning

The use of analogies can increase the client's cognitive flexibility (Brown, 1989), helping cli-

ents understand their problems from a different perspective. Clients are encouraged to step beyond their conventional views of the problem and develop a new perspective. However, the utility of the analogy depends on the client's ability to recognize and use similarities between the novel and familiar situations (Holland et al., 1986). Reasoning by analogy involves looking beyond surface similarities (appearances), and examining the structural similarities (functions) of two processes (Holyoak & Koh, 1987), preserving the relational structure between the familiar and the novel situation (Johnson-Laird, 1989). If this is done properly, analogies help reduce new and complex problems into a simpler and more familiar core (Spiro et al., 1989). A sense of relief occurs when people realize that new problems can be dealt with by transferring familiar information to the new problem, reducing the client's risk of feeling frustrated and overwhelmed (Bransford, Franks, Vye, & Sherwood, 1989).

Subtypes of Analogies

Analogies can be intradomain and interdomain (Holland et al., 1986). Intradomain analogies involve examining similar problems from the past, or similar problems in different situations (e.g., divorce versus retirement). Clients learn to map knowledge from one area to another, maintaining the relationships among problem and solution (Gentner, 1989). The client can be assisted in identifying coping strategies found effective and those ineffective in dealing with the original problem. Then, parallel relationships can be drawn between the original and current problems.

Interdomain analogies involve abstract similarities across blatantly different events. Interdomain analogical arguments can be based on at least five different content areas: natural, medical, mechanical, strategical, and relational comparisons. Analogies based on natural processes attempt to transfer information from some well-known aspect of nature and apply it to a parallel problem situation. For example, a comparison can be drawn between snow on roofs during a bad winter and emotional strain during a stressful period. Some houses have steeply pitched roofs where everything that hits them blows off the roof. Other homes have flat roofs requiring different care. For these homes, it takes work to get up on the roof and shovel off the snow before it causes unnecessary strain and excessive pressure on the foundation and structure of the house.

Analogies based on medical practices involve a description of basic medical procedures as related to the problem areas. For example, the description of someone getting dirt in a wound can be used to describe how a sore will fail to heal unless properly tended. Although it may hurt, the wound must be opened and cleaned (psychotherapy) in order to reduce the infection (psychopathology) that may develop. It is important to clean the wound in a sterile environment (psychotherapy) with a skilled professional.

Analogies based on mechanical processes extrapolate from the actions seen in mechanical operations. For example, describing a car as running on four cylinders, where each cylinder is necessary for smooth running, can be used to point out the need for human functioning to be based on more than one focus. Human functioning can be described as based on four primary elements: work, family, friends, and spiritual beliefs (or other areas relevant to a particular client). Complete neglect of any element will disrupt overall performance, much the same way as a car attempting to run on only three cylinders. If any one of these "cylinders" is not working, it disrupts the functioning of the entire person.

Strategical analogies are based on the tactical strategies involved in various activities, such as the patience required in fishing, or the planning required in chess. Clients who feel comfortable with a behavior or attitude when using it in one situation may learn to apply the same behavior to another. For example, Zimbardo (1977) has described the shy person as similar to a conservative investor in a risky economic market, being more concerned about risk of loss than with possibility of gain. Shy clients can learn to appreciate the benefits of risk-taking and begin attempting new behaviors in social situations.

Relational analogies are based on parallel relationships between two or more parties. For example, clients can learn to extrapolate from the nature of the relationship of parent to child, coach to players, or general to troops. Various aspects of the interactions can be used to exemplify new ways of managing current interpersonal problems. For example, one client with low self-esteem worked as a court reporter. It was helpful for her to see how her difficulties identifying her positive features were similar to a jury that was biased to convict her. She tended to discount or disqualify any positive features without objectively testing the evidence. In session, courtroom

procedures were used playfully to challenge the client's report of recent events as if she were a biased witness. Over time, she learned to appraise her performance from a less critical perspective.

Process of Analogies as used in Psychotherapy

The process of using analogical comparisons in psychotherapy begins with systematic observation. The client describes a problem situation and the therapist uses questions or assignments to elicit background information about the problem situation. After background information has been obtained, pattern identification is used to identify the main elements of the problem. Then, the therapist either proposes or requests the client find a parallel but familiar problem situation which already has been solved. Transfer of knowledge involves identifying the corresponding roles across the two situations (Holland et al., 1986). After problem and solution are transferred from the analogy to the current problem situation, therapist and client evaluate the accuracy of the transfer.

Analogies can guide a problem-solving process by transferring knowledge from familiar to novel situations (Gick & Holyoak, 1980; 1983; Vosniadou & Ortony, 1989). Analogies facilitate the generation of alternatives, identifying new coping options stemming from the analogy. An analogy provides the starting point for a hypothesis (Werkmeister, 1957). Often, the working hypothesis is geared toward the future, providing insights into new ways of coping with a problem situation. Thus, analogies often involve a "Forward search," asking the client "Given the resources available, what can be done to solve this problem?" (Holyoak & Thagard, 1989).

Verification involves therapist and client planning to implement the new coping option. Analogies can paint a picture that is easy for clients to remember (Martin, Cummings, & Hallberg, 1992). Therefore, clients will be more likely to change their behavior when confronted with the problematic situation again. If successful, the common principle underlying both the problem and its analogy should be extracted (Gentner, 1989).

Limitations of Analogies

The utility of an analogy depends on the relevance of the comparison dimensions (Pellegrino, 1985). It is assumed that the current situation in the client's life is similar in some ways to the issues revealed through the analogy. To be effective, the analogy must preserve the relationship between problem and solution (Gordon, 1978). A faulty or misleading analogy can be produced by a comparison of irrelevant similarities (Damer, 1987).

Eliminative Causal Reasoning

Induction by elimination relies on principles developed by David Hume (1748) and John Stuart Mill (1890) to identify the necessary and sufficient conditions for an event to occur. The principle of elimination states that any factor that is absent when the effect occurs can be eliminated as a necessary condition for the effect (Skyrms, 1986). Conversely, a factor that is present whenever the effect has not occurred can be eliminated as a sufficient condition for the effect (Skyrms, 1986). Thus, causal reasoning involves examining the occurrences of an effect under a variety of circumstances (Skyrms, 1986).

Clinical Utility of Causal Reasoning

Attributions regarding causality play an important role when understanding and deciding upon a course of action (Kelley, 1973). Causal reasoning most often occurs in response to unexpected events (Hastie, 1984) and situations whereby the client fails to obtain a desired goal (Weiner, 1985). Causal reasoning helps clients understand, predict, and control their behavior. For example, problems like insomnia, impotence, and loneliness can be caused by numerous common factors. Learning which of many possible causes needs to be controlled can become confusing and overwhelming. Effective treatment relies on understanding and changing the causal sequence (Overholser, 1991). Although classifying one event as the cause of another can be somewhat arbitrary (Efran, Lukens, & Lukens, 1990), clarifying possible causal and maintaining factors can lay the foundation for treatment planning. By changing environmental or intrapsychic factors, the presenting problem often can be alleviated. If a necessary causal condition can be stopped from occurring, the problem can be prevented (Skyrms, 1986).

Causal attributions are more susceptible to the influence of others if the person has low self-confidence, little social support, or has been feeling overwhelmed by problems (Kelley, 1967). Also, depressed clients are likely to distort the

causal attribution process so as to blame themselves for negative events (Sweeney, Anderson, & Bailey, 1986). The attribution process may become biased so as to perpetuate a negative view of oneself (Strohmer et al., 1988). Thus, many clients can benefit from therapy that focuses on developing different causal attributions.

Subtypes of Causal Reasoning

Causal reasoning is based on strategies of confirmation and disconfirmation (Downing, Sternberg, & Ross, 1985; Mill, 1890; Schustack & Sternberg, 1981). Confirmation involves identifying a cause by (1) the joint presence of cause and effect and (2) the joint absence of presumed cause and effect. Thus, causal reasoning based on confirmation examines both the occurrence and nonoccurrence of an effect. It attempts to identify possible causes that are associated with the presence but not the absence of an effect. For example, a client with mild but chronic depression was asked to record her mood and activities throughout the week. She quickly noticed that when she was alone and inactive, her mood worsened. When she was active and socializing, her mood improved. This hypothesis was then tested by encouraging the client to initiate a social activity whenever she felt herself becoming depressed.

Disconfirmation involves critically examining a possible cause by looking for (1) the presence of the cause without the effect or (2) the presence of the effect without the cause. In either case, the causal hypothesis would be rejected and a new one sought. However, most people emphasize occasions in which both presumed cause and effect are present, and minimize the importance of disconfirming evidence (Downing et al., 1985; Schustack & Sternberg, 1981). The emphasis on confirmation instead of disconfirmation encourages evaluating whether a cause is sufficient (rather than necessary) for an effect to occur (Downing et al., 1985).

Although the confirmation approach can be useful, it can be misleading. For example, a client with a panic disorder observed her panic symptoms over time. She noticed that her panic was associated with certain events (e.g., when she felt tired or hungry, while bending over or climbing stairs). Disconfirmation involved confronting these events to see if they did in fact aggravate her symptoms. She found that fatigue and dietary factors played no role in her panic, and the combined activities of climbing stairs and bending over produced mild dizziness but not panic. Therefore, these could be eliminated as sufficient causes of her panic.

Process of Causal Reasoning as Used in Psychotherapy

Causal reasoning builds on the generalities established through enumerative induction (Burks, 1980). Causal explanations are often influenced by the questions asked of the client (Hilton, 1990). Thus, systematic questioning continues to play an important role. The process of using eliminative causal reasoning in psychotherapy involves systematic observation of the problem behavior, hypothesis formation, and hypothesis testing.

Systematic observation occurs when the client describes a problem situation and the therapist requests additional information via questions or assignments. Gathering a wide range of information helps encourage the evaluation of many possible causes (Arnoult & Anderson, 1988). For example, one woman whose child had drowned several years earlier still experienced "unpredictable" episodes of severe depression. She recorded fluctuations in her mood over time and realized her depression was associated with places, events, and images that reminded her of her son or his death.

Hypothesis formation occurs when the therapist and client collaboratively identify common antecedent events and develop a preliminary causal hypothesis. Causal hypotheses are based on covariation in which cause and effect systematically covary over time (Kelley, 1973). Cues to identifying a cause include (1) the consistent covariation between cause and effect, (2) cause preceding effect in time (Einhorn & Hogarth, 1986), (3) temporal contiguity in which there are times when both cause and effect are present and other times when both are absent (Kelley, 1973), (4) consistency over time so that whenever the presumed cause is present the effect occurs (Kelley, 1967), and (5) distinctiveness whereby an effect uniquely occurs while the presumed cause is present and does not occur when the cause is absent (Kelley, 1967). Because any one cue by itself can be misleading, clients are advised to use multiple cues in combination (Einhorn & Hogarth, 1986).

After a preliminary causal hypothesis has been proposed, its logical implications and plausible

rival hypotheses need to be examined. Hypothesis testing involves using hypothetical or actual environmental changes to modify one condition at a time. Subsequent changes in outcome are observed. Manipulation of environmental factors can be done both logically and empirically, in a prospective or retrospective (historical) manner. A hypothesis is tested using deductive logic (Kruglanski, 1988) to examine its ability to successfully predict future events (Giere, 1983). Thus, if circumstances can be observed or manipulated so the presumed cause is present, the effect should occur (Skyrms, 1986). If a particular effect occurs in two very different situations, any element common to the two situations is a probable cause. Alternatively, if a problem occurs in only one of two very similar situations, factors present in the one situation are likely to be the cause. Systematic variation of the presumed causes can eliminate rival hypotheses (Cohen, 1970). As rival hypotheses are manipulated and examined, the most important cause often can be identified. The importance of a cause is reduced if other plausible causes are also present (Kelley, 1973). Finally, therapist and client evaluate the strength and diversity of evidence supporting the causal hypothesis.

Limitations of Causal Reasoning

Causal reasoning is a difficult process for many clients. Perception of possible causes can be influenced by the client's prior expectations (Alloy & Tabachnik, 1984) and can be biased by the improper weighting of one variable in respect to the others. Thus, some clients overemphasize the role they play in causing their problems, while others minimize their role. Also, clients may neglect a common cause, such as when two effects (e.g., poor school grades and loss of appetite) are both caused by a third variable (e.g., recent trauma). In most situations, numerous factors interact to produce an effect (Mackie, 1965). However, clients often look at their problems from a narrow perspective, failing to examine all relevant causes. For example, an adult male client saw his chronic depression as related to his longstanding social difficulties, but biological, developmental, and cognitive variables were also relevant. Examining his problems from multiple perspectives helped him gain a better understanding of himself and his depression.

Many cause–effect relationships occur on an irregular basis. For example, a client complained of headaches several times each week, with no clear pattern readily observable. Therapist and client examined whether the persistent headaches were due to job stress, dietary factors, marital conflict, or other factors. Furthermore, even when a pattern was observed wherein job stress was associated with headaches, not every episode of the cause (job stress) resulted in the effect (a headache). However, it was possible to manipulate one condition and see how the problem changed. When his diet was deliberately changed, it had no effect on his headaches. Later, when the client took an extended vacation, the marital problems continued but the job stress was temporarily eliminated and his headaches subsided.

People often ignore sample size and base rate data (Schustack & Sternberg, 1981). Adequate and representative sampling are needed to ensure accurate causal hypotheses (Crocker, 1981). Examining possible alternative explanations can avoid the premature acceptance of a faulty explanation (Gambrill, 1990). Confusing cause and effect involves perceiving a consequence to be a causal variable (Damer, 1987). For example, a novice therapist assumed that marital discord caused the client's excessive alcohol consumption. However, by observing the problems over time, it was determined that the alcohol abuse served to trigger most of the domestic arguments.

Cognitive biases affect causal reasoning. The client's beliefs about cause and effect will influence what information is observed and emphasized (Crocker, 1981; Kelley, 1973). Beliefs and expectations can aid the inference process or cause it to go astray (Jaspars, 1988). The therapist can provide an independent and impartial view of the behavior when searching for possible causes (Groeben, 1990). It is important to question a client's premises early so clients do not continue with a biased line of reasoning and reach a conclusion that appears to be true but is based on faulty assumptions (Crossley & Wilson, 1979). For example, an adult female client with agoraphobia longed for a close relationship and marriage. She reported that her problems always subsided when she was involved with a man. When discussing relationships, she made vague statements about how her life and her agoraphobia would be improved if she got married. The therapist asked a series of questions to force the client to address her unspoken ideas: "How would your life be different if you were mar-

ried?", "How would your life stay the same after marriage?", "So what would marriage accomplish?". Over sessions, the client was able to see that her progress depended on her effort and attitude, and was largely independent of any romantic relationships occurring over the course of therapy.

Conclusions

Inductive reasoning is compatible with most forms of cognitive psychotherapy. It ensures the collaborative empiricism necessary for cognitive therapy (Beck et al., 1979), it retains the logical aspect of Ellis' (1962) rational-emotive therapy, and it retains the self-focused exploration of client-centered therapy (Rogers, 1961) and self-control therapies (Mahoney, 1974). Because the Socratic method helps clients examine and change their conceptualizations of different problems, the Socratic method can be incorporated as an element of many different forms of psychotherapy. Thus, the Socratic method can provide an organizational framework for some common elements in psychotherapy. Many therapists use principles of inductive reasoning, but the Socratic method makes these principles more focused and explicit. The current description is a contemporary adaptation of the inductive approach used by Socrates. As a rational and scientific approach, it emphasizes cognitive processes in psychotherapy. The Socratic method may be best integrated with other approaches that emphasize the value of affect and the importance of the therapeutic relationship.

The process of using inductive reasoning relies on a cooperative inquiry (Klein, 1986) between therapist and client. The Socratic method attempts to have the therapist facilitate the client's self-discovery (Overholser, 1988), thereby promoting the client's autonomy (Overholser, 1987). The Socratic method helps clients learn how to seek their own solutions (Seeskin, 1987). Explicit instruction is not always an effective way of teaching conceptual skills (Claiborn & Dixon, 1982). Learning by discovery produces better understanding (Legrenzi, 1971) and strengthens the client's ability to solve novel problems (McDaniel & Schlager, 1990).

Fallacies of logical reasoning can be identified and curtailed. It is natural for clients to process information selectively, seeking information that is consistent with their established beliefs (Evans, 1989). However, if left unchecked, these fallacies allow clients to retain invalid hypotheses and distorted views of their world. Rather than trying to increase the objectivity of clients, it may be more appropriate to help clients see their problems from different and more adaptive perspectives (Efran et al., 1990). Inductive reasoning can be used to help clients distance themselves from the emotional aspects of their problems and expand their conceptualization of their problems.

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