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ERRORS IN CLINICAL JUDGMENT: THE EFFECT OF TEMPORAL ORDER OF CLIENT INFORMATION ON ANCHORING, ADJUSTMENT, AND ADJUSTMENT MITIGATION AND CATEGORY OF CLINICAL INFERENCES

by

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Abstract

The anchoring effect influences clinicians to give undue diagnostic importance to client data gathered during the initial appraisal period. Moreover, client data consistent with the earlier diagnostic hypotheses may be given disproportionate credence.

Extending research on the anchoring effect, 40 counsellors were presented with a written casefile in which the order of specific client information (that is, client material characterized as healthy and ailing) was systematically sequenced. A questionnaire was administered to evaluate the impact that the order of presentation of client information had on participant ratings of client functioning, and a "think-aloud" methodology was employed to examine the actual clinical inferences that participants generated as they read through the case material. These approaches unveiled divergent results. Questionnaire data revealed an anchoring effect associated with the presentation of healthy client material. "Think-aloud" data revealed an anchoring effect associated with the presentation of pathognomonic client material.

A number of strategies are proposed to call clinicians' attention to the processes by which they encode details about their clients, and then generate and test hypotheses pertaining to them. ii

Résumé

Les cliniciens influencés par l'effet d'ancrage peuvent déformer les données recueillies auprès d'un client en faveur d'opinions formées au cours de la période d'évaluation inítiale. En outre, ils peuvent accorder un poids indu à des données qui confirment des hypothèses diagnostiques précédentes.

Afin d'approfondir la recherche sur l'effet d'ancrage, on a présenté à 40 conseillers un dossier écrit dans lequel l'ordre des renseignements portant sur les clients (c'est-à-dire, des informations relatives à des clients perturbés et non perturbés) avait été établi systématiquement. Un questionnaire a servi à évaluer l'effet possible de l'ordre de présentation des données sur l'évaluation que faisaient les participants du fonctionnement des clients, et une méthodologie fondée sur une "réflexion à voix haute" a été utilisée pour étudier les déductions cliniques réelles faites par les participants au cours de leur lecture du dossier. Chaque méthode a produit des résultats différents. Les résultats du questionnaire ont mis en lumière un effet d'ancrage associé à la présentation des renseignements relatifs aux clients non perturbés. Les données de la "réflexion à voix haute" ont révélé un effet d'ancrage associé à la présentation de données pathognomoniques.

Un certain nombre de stratégies sont proposées pour porter à l'attention des cliniciens les processus par lesquels ils codent les détails relatifs à leurs clients et ensuite produisent et vérifient des hypothèses à leur égard.

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Advancing Our Understanding of the Anchoring Effect: A Preface

"Traditional" research investigating anchoring effects in clinical judgment has dealt with the end product of clinical judgment. That is, participants read a casefile in which the order of presentation of client information is manipulated, and then indicate their perception of the "client's" level of functioning. While this procedure has shown that various categories of client data do promote anchoring errors, results have not been definitive. One reason that contemporary anchoring research has produced equivocal results may be that the "traditional" approach does not provide information about how a clinician uses the material in a casefile. This study provides that information.

Unlike any other study appearing in the literature to date, this study uses the "think-aloud" methodology, for examining the actual clinical inferences that clinician-participants are entertaining as they read through the case material. This approach allows for the scrutiny of the process by which data are extracted from a case history, given attentive reading, and interpreted or subjected to further elaboration. As such the particular circumstances under which anchoring effects occur are elucidated.

The current study employed both the "traditional" and the "think-aloud" approach to further our understanding of the anchoring effect. Each approach revealed divergent results. Based on the "traditional approach," an anchoring effect

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was found to be associated with the early presentation of healthy client information. That is, the early presentation of healthy client information seemed to unduly temper clinician assessment of subsequently presented ailing client information. The anchoring potency of the healthy material was such that clinicians did not adjust their initially healthy perceptions of the client's overall level of functioning after being presented with and reading new contrasting, pathognomonic client information. No anchoring errors were associated with the early presentation of salient pathognomonic information.

Data collected through the "think-aloud" methodology, however, revealed an anchoring effect associated with the initially presented ailing client material. That is, while early exposure to healthy client information did not appear to produce any significant patterns in the categories of inferences generated by participants, early exposure to the pathognomonic material appeared to induce participants to preferentially generate and confirm specific types and kinds of inferences. These results, as well as strategies that clinicians may undertake to avoid anchoring effects, are discussed in the ensuing chapters.

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CHAPTER I: INTRODUCTION

Background of the Problem

A topic of increasing interest to researchers and practitioners in clinical and counselling psychology is the accuracy of clinical judgments and the inferential and reasoning processes upon which they are based (Dumont, 1993). Nurius and Gibson (1990) suggest that these processes, the most fundamental and frequently used processes in clinical activities, are paradoxically the most vulnerable to unintentional biasing influences.

One of social psychology's major contributions to the contemporary clinical literature has been the identification of inadvertent errors in the reasoning processes of "lay scientists" (Nisbett & Ross, 1980; Turk & Salovey, 1988), errors that have also been found to exist in professional hypothesis testers (Dumont, 1993). One error that has received considerable attention, albeit with equivocal findings, is anchoring. In a clinical setting, anchoring refers to the excessive weighting of initial information derived from (and about) a client that subsequently serves as a template against which further information is judged (Nurius & Gibson, 1990; Tversky & Kahneman, 1974).

Recently, Ellis, Robbins, Schult, Ladany, and Banker (1990) refined the research dealing with anchoring errors in clinical judgment by proposing two additional phenomena: adjustment and adjustment mitigation. According to Ellis et al., *anchoring* errors arise "when initial estimates of a phenomenon bias subsequent estimates towards the initial values" (p. 343). Clinicians who commit anchoring errors do not make sufficient adjustments from their initial judgments to their later ones. Alternatively, *adjustment* occurs when practitioners appropriately accommodate their clinical judgments as they receive new or additional information concerning their clients. Finally, *adjustment mitigation* occurs when new contradictory information serves to induce new judgments that become revised towards a new anchor. In the case of adjustment mitigation, the new judgments are "mitigated by an anchoring bias toward the first set of salient data" (Ellis et al., p.350). That is, while initial client information serves to anchor clinical judgments, at first, subsequent sets of inconsistent client information are appropriately assimilated by a clinician, and ensuing judgments are adjusted to incorporate the new information. The contention of Ellis et al., however, is that the modified judgments are tempered by the original anchoring error.

Contemporary discussion of anchoring and adjustment is reminiscent of early social psychological research bearing on sequential information processing (viz., Asch, 1946). Two constructs that emerged from this early research, which continue to have relevance today, are *primacy effects* and *recency effects*. The *primacy effect* refers to the scenario in which early-presented information has an undue influence on final judgment (Nisbett & Ross, 1980). The *recency effect*, on the other hand, refers to the attendant condition in which later-presented information has undue influence on final judgment (Nisbett & Ross, 1980). Nisbett and Ross state that "several decades of psychological research has shown that primacy effects are overwhelmingly more probable" (p. 172). Primacy effects are synonymous with the premature commitment and insufficient revision intrinsic to anchoring errors.

While there is consistent support for the notion that clinicians tend to form relatively quick impressions about their clients (Gauron & Dickinson, 1966; Sandifer, Hordern, & Green, 1970; Brown, 1970; Strohmer & Chiodo, 1984), and that these impressions tend to anchor and serve as the basis for subsequent inferences and judgments (Bishop, Scharf, & Adkins, 1975; Nisbett & Ross, 1980; Friedlander & Stockman, 1983), the issue of exactly what type of case material stimulates anchoring errors remains open to investigation (Pain & Sharpley, 1988).

To date, researchers investigating anchoring errors in clinical judgment have asked clinician or student raters to read casefiles in which the order of presentation of client information has been manipulated. Participants are then asked to rate the "client's" perceived level of functioning and establish a prognosis. While this approach to investigating anchoring errors suggests that various types of client data promote anchoring errors, it does not provide information about how the clinicians' use of the material in the casefile leads to the anchoring

phenomenon. For instance, Batson and Marz (1979) reported that trained therapists demonstrate a bias toward emphasizing dispositional characteristics (i.e., attitudes, abilities, or personality traits) of the client as a source of problems while minimizing potential situational explanations of problem etiology (i.e., social norms or task difficulty). These authors propose that even when clinicians recognize situational causes, they have a tendency to prescribe treatment designed to address the dispositional rather than the situational symptoms. Perhaps clinicians have a tendency to "anchor" on dispositional attributions of client behavior.

While there is evidence that the attributions that clinicians make about the causes of clients' problems affect both the types of services and treatment recommendations offered to clients (Young & Marks, 1986), little is known about the nature of these attributions (Worthington & Atkinson, 1993). As such, contemporary anchoring research has not benefited from a growing body of clinical literature examining attributional processes (Dumont & Lecomte, 1987; Goodin Waxman, Rapagna, & Dumont, 1991; Dumont, 1993). This is particularly surprising in view of findings concerning the dispositional-contextual dichotomy of the fundamental attribution error (Nisbett & Ross, 1980).

Statement of the Problem

Prevailing research has dealt with the end product of clinical judgment. While this approach serves to determine the presence or absence of anchoring effects, it does not examine how clinicians arrive at their conclusions. Dealing with the end product of clinical judgment does not shed any light on what material in the casefile contributes to anchoring errors, nor does it elucidate in any way the process by which data are extracted from the case history, given attentive reading, and interpreted or subjected to further elaboration. Given that clinicians are exposed to multiple sets of information from a client during the course of treatment (e.g., test data, historical data) the question as to which sets of client information affect clinical judgment the most remains.

What also remains open to question is whether it is the dispositional or contextual nature of distinctive client information that contributes to anchoring errors. Perhaps contemporary researchers on anchoring errors in clinical judgment report equivocal findings as a result of neglecting to distinguish between the contextual or dispositional nature of the presented client data. This issue has empirical importance because it addresses the allegation that clinicians are relatively more sensitive to dispositional information, as compared to contextual information, when making judgments about clients. Needless to say, therapist variables are heavily implicated in patterns of information utilization.

Purpose of the Study

This study has three major objectives. The first is to determine how the order of presentation of salient client information influences a clinicians' formation of judgments about a client. The second is the investigation of the relationship between the fundamental attribution error and anchoring effects. The third and final focus is the determination of which sets of client material are extracted from a case history, given attentive reading, and interpreted or subjected to further elaboration.

To this end, the clinical judgments of clinicians are examined for evidence of anchoring (i.e., confirmatory judgments), adjustment (i.e., disconfirmatory judgments), and adjustment mitigation (i.e., judgments that although altered to reflect new information, are not revised to the degree that they would be in instances of complete adjustment). Clinical judgments are also distinguished according to their attribution *type*, that is, whether they are dispositional or contextual in nature. Finally, clinical judgments are distinguished according to their *kind*. That is, clinical judgments are classified according to the categories of inferences that they represent (e.g., statements pertaining to the casefile client's family history, coping strategies, personality dynamics, etc.).

The current study is unlike any others appearing in the literature to date, by virtue of employing a "think-aloud" protocol to examine the inferential and

reasoning processes that clinicians employ in arriving at their final clinical judgments or diagnostic and prognostic formulations. The think-aloud method, as first described by Newell and Simon (1972), has contributed significantly to methodological and theoretical advancements in cognitive science (Grobe, Drew, & Fonteyn, 1991).

In summary, the objective of this research project, in attempting to further our understanding of clinical judgment, is to examine the types of data that clinicians select in the formulation of their inferences and subsequent clinical judgments. Rather than simply presenting a case history and then administering questionnaires to evaluate anchoring or adjustment effects, this study examines the actual clinical inferences that clinician-participants are entertaining as they read through the case material. Moreover, rather than simply manipulating the order of presentation of client data presented to clinician-participants, both the client data and clinician judgments relative to the client data are distinguished according to their type (i.e., contextual and dispositional, and confirmatory and disconfirmatory), and kind (i.e., category of client information).

Significance of the Study

The effectiveness of almost any form of therapy depends upon accurate diagnosis of the presenting problem (Pain & Sharpley, 1988), and sound clinical judgment (Dumont, 1993). While the suggestion that these skills develop in time

has considerable intuitive appeal, research on what the effects of training and experience are on the validity of clinical judgments has failed to uncover a consistently positive relationship between training and experience and clinical judgment (Garb, 1989; Watts, 1980). In fact, the American Psychological Association Task Force on the Evaluation of Education, Training, and Service in Psychology (1982) reported no evidence in favor of the suggestion that professional training and experience were related to professional competence. Recently, the character of the psychotherapist has become the focus of researchers attempting to investigate issues related to professional expertise.

A series of independently conducted psychotherapy outcome studies suggest that the "person" of the therapist forms the basis for sound clinical judgment and effective psychotherapy. For instance, in evaluating the therapeutic impact attributable to the psychotherapist, the person of the therapist has been found to be eight times more influential than his or her theoretical orientation and/or therapeutic technique (Mahoney, 1991). Bergin and Lambert (1978, p. 180) wrote that whereas "...the largest variation in therapy outcome is accounted for by preexisting client factors...therapist personal factors account for the second largest proportion of change, with technique variables coming a distant third..." Similarly, Norcross (1986) states that "experts estimate that about one-third of treatment

outcome is due to the therapist and two thirds to the client" (p. 15). Dumont (1993) suggests that the attributions counsellors make about the etiology of their clients' problems seem more related to their own personal schemas and preprofessional beliefs (i.e., convictions the clinicians brought into their training program) than they do to counsellors' espoused theoretical orientation. In contrast to Furman and Ahola's (1989) assertion that etiology attributions are related to therapeutic approach or school of psychotherapy, both Worthington and Atkinson (1993) and Dumont (1993) suggest that counsellors develop etiological attributions stemming from personal theories that are not empirically validated. If the person of the therapist is more important than orientation or technique, then psychotherapy may be appropriately conceptualized as a social process in which the persons of the client and therapist engage in a series of social interactions (Heppner & Frazier, 1992). As such, the key to determining what factors account for clinical judgment lies in integrating social psychological and counselling research.

The application of social psychological principles to the informationprocessing operations inherent to clinical judgment has the potential of furthering our understanding of the processes by which practitioners combine client data in forming clinical judgments (Levin, 1984). This study's contribution to the clinical

judgment literature lies in its capacity to provide supplementary conceptual clarifications for prior work that has ascertained both anchoring and perseverance effects in diagnosis. Practical implications include cautioning clinicians as to specific conditions under which diagnostic judgments can be compromised by inferential bias. This investigation, thus has pertinence to clinical training as well as professional responsibility.

The current study advances the social cognitive clinical literature by investigating particular circumstances under which anchoring effects do or do not transpire. By using a "think-aloud" procedure whereby clinicians verbalize their thought processes while analyzing a casefile, the clinician-participants' judgmental processes in a given clinical situation are investigated. This approach enable the *in vivo* assessment of the inferential and reasoning processes of counsellor clinical judgment bearing on anchoring.

The cohesion of science and practice is a long-standing professional goal in the field of psychology (Hoshmand & Polkinghorne, 1992). The present study has the potential of furthering science-practice integration by investigating the cognitive processes used in practice. Depicting the knowledge processes involved in professional practice contributes to an epistemology of practice that will influence the relationship between conceptual understanding and professional

expertise. With a better understanding of the knowledge processes of practice, clinicians will be able to complement the formal body of theoretical knowledge with an experientially based body of knowledge (Hoshmand & Polkinghorne, 1992).

CHAPTER II: REVIEW OF LITERATURE

Review of the Literature : Clinical Judgment

The study of clinical judgment originates from research into thinking known as information-processing. Information-processing researchers undertake detailed analyses of cognitive tasks and construct flow charts of the sequential mental processes involved (Nurcombe & Fitzhenry-Coor, 1987). Groups of adult reasoners for whom mental processes have been charted include chess players, medical students, physicists, counsellors, psychologists (Nurcombe & Fitzhenry-Coor, 1987), physicians (Elstein, Shulman, & Sprafka, 1990), nurses (Grobe, Drew, & Fonteyn, 1991); social workers (Rosen, 1993). The mental processes of health professionals are pertinent to this study.

Research on the process of diagnostic reasoning in the medical field has shown that physicians elicit salient cues from their patients, and assemble them into patterns that synopsize a clinical problem. These patterns, defined very early in the interview, then serve as the basis upon which an array of diagnostic hypotheses are generated. These hypotheses, seldom numbering more than six, serve to guide and structure a systematic inquiry that tests each of the hypothesis-candidates for diagnosis. A diagnostic conclusion is reached according to which of the hypotheses is associated with the strongest confirmation, or which hypothesis yields the maximum difference between positive and negative evidence. The mental operations involved in diagnosis include the eliciting of salient clues, the assembling of patterns, the generation of hypotheses, the search for evidence, the estimation of probability and the reaching of a conclusion (Nurcombe & Fitzhenry-Coor, 1987).

In the field of counselling, Pepinsky and Pepinsky (1954) elaborated a model of clinical judgment to describe how general and specific observations are used to develop inferences and hypotheses about clients. Working from the assumption that counselling can be viewed as an orderly process, Pepinsky and Pepinsky proposed that counsellors observe their client, make inferences about the client's status and the related casual factors, and then, based on these inferences make tentative judgments about the client. Counsellors then proceed in an experimental fashion to state their judgments as hypotheses, and to test them against independent observations of the client. Through a series of such tentative judgments and tests based on these judgments, counsellors construct hypothetical models of the client. These hypothetical models serve as the basis for making decisions (e.g., which treatment approach is most appropriate) about the client. The models of clinician diagnostic reasoning, hypothesis testing, and clinical judgment proposed by Nurcombe and Fitzhenry-Coor and the Pepinsky's, highlight the similarity between clinical problem solving and the methodology of scientific research.

Attribution Theory

Models of clinical judgment bearing on how counsellors make etiological or causal attributions concerning their client's presenting problem(s), have a direct corollary in contemporary social psychological research - namely, cognitive activity that falls under the rubric of attribution theory (Heider, 1958; Kelley & Michela, 1980). Attribution theory developed to describe how people perceive and interpret the behavior of others and of themselves (Funder, 1982). According to Kelley (1973), attribution theory is concerned with "how people make causal explanations, and how they answer the questions beginning with why. It also deals with the information they use in making causal inferences, and with what they do with this information to answer causal questions" (p. 107).

The Fundamental Attribution Error

Within attribution theory, the distinction between situational and dispositional causation provides a key conceptual dichotomy (Funder, 1982). Theorists concerned with the attribution process suggest that social perceivers are disposed to favor dispositional attributions over situational ones, even where such attributions are unjustified by the available evidence (c.f., Heider, 1958). Attribution research has shown that based on whether one is the originator of a behavior or an observer of that behavior, attributions related to the causes of the behavior may differ (Jones & Nisbett, 1971; Jones & Nisbett, 1972). Quattrone (1982), for example, found that while actors (i.e., people who perform behaviors) focus on situational or contextual forces or constraints (i.e., social norms, group pressure, task difficulty) in attributing or explaining the causes of behavior, observers are likely to view the same choices as reflecting some quality of the actor (i.e., abilities, attitudes, motives, or personality trait).

Two explanations regarding the divergent perceptions of actors and observers have been offered by Jones and Nisbett (1972). The first suggests that actors and observers focus on different perceptual cues. Actors, who must coordinate their behavior attend to the exigencies of the particular situation in which they find themselves. Observers, on the other hand, need only focus their attention on the actor. Since the salient cues differ depending on whether one is acting or observing, attributions are also different (Witkin, 1982). The second explanation proposes that because individuals know more about their lives than others do, actors may interpret their behavior on the basis of past situations, incidents, or even events about which observers may have no knowledge (Witkin, 1982). Both explanations may be legitimate.

The *fundamental attribution error* refers to the tendency of people to underestimate the role of situational factors and overestimate the impact of dispositional factors in behavior (Ross, 1977). While some authors argue that dispositional attributions are less accurate than situational ones (Jones, 1979),

others suggest the reverse. Funder (1982), for example, examined the error of attributing behavior to dispositional stimuli and found evidence that dispositional attributions may be more accurate than situational attributions. Funder suggested that the major difference between situational and dispositional attributions is not one of accuracy, but of level of analysis. That is, situational attributions describe environmental circumstances associated with behavior, while dispositional attributions describe how a given action fits into a larger pattern of the actor's behavior over time.

Differences in the attributional processes of actors and observers have an obvious parallel in the relationship between clinicians and clients. The scenario in which a client blames his or her current difficulties on various circumstances or events, such as the behavior of others or bad luck, while the practitioner interprets these problems as manifestations of a personality or character deficit is all too familiar to many clinicians. Moreover, a number of researchers have suggested that trained therapists have a systematic bias towards emphasizing dispositional characteristics of clients as the source of problems while minimizing situational explanations (Batson & Marz, 1979; Rosenhan, 1975; Snyder, 1977). What compounds the biasing effect of these attributional errors is that the attributions and impressions that clinicians make, tend to be tenacious, even in the presence of new, contradictory information (Ross, Lepper, & Hubbard, 1975; Houts &

Galante, 1985). This perseverance has been shown to promote a confirmation bias, that is, a tendency to seek evidence that confirms an impression or hypothesis rather than refute it.

Confirmation Bias

Research suggests that a confirmation bias may be the result of limits intrinsic to human information-processing. For example, Elstein and Bordage (1979) have described information-reasoning as a form of human rationality bounded by the constraints of working memory. Bieri, Orcutt, and Leaman (1963) showed that clinicians working with clinical information process only about two "bits" of this information. Slovic and Lichtenstein (1971) reported that a review of studies on the judgment process revealed that judges employed a limited number of cues (80% of judgment variance was usually accounted for by three or fewer cues), and that increasing the information load often led to decreases in judgmental accuracy.

Perhaps as a result of the limits imposed by working memory, clinicians show a strong tendency to close prematurely on initial impressions. That is, a stable working image of a client is formed somewhere between the first and fourth sessions (Brown, 1970; Cantor & Michel, 1979; Friedlander & Stockman, 1983; Strohmer & Chiodo, 1984). Clinicians then employ confirmatory strategies to test their initial impressions or hypotheses, and are more likely to consider information that is consistent with their hypotheses and to devalue information that is inconsistent with their hypotheses (Elstein & Bordage, 1979).

Research in social psychology dealing with cognitive structures or schemata provides an alternative interpretation for the aforementioned confirmatory strategies. A *schema* is defined as a cognitive structure that represents organized knowledge about a concept, and helps guide people as they select, remember, and make inferences about information in their environment (Fiske & Taylor, 1991). While cognitive structures or schemata help people manage the vast amount of information available to them in the clinical realm, it is precisely the predetermined nature of schema-guided information processing that leads to errors such as confirmatory biases and belief perseverance.

Social psychological research concerning bias among lay and professional testers provides support for the view that hypothesis testers preferentially seek out confirmatory information when testing a hypothesis (Mahoney, 1976; Snyder & Swann, 1978; Nisbett & Ross, 1980; Gelso, Raphael, Black, Rardin, & Skalkos, 1983; Snyder & Thomsen, 1988). In a series of studies, Snyder and Swann (1978) and Snyder and Cantor (1979) reported that clinicians had a propensity towards confirming the hypothesis at hand. Participants adopted strategies that would confirm rather than disprove their hypothesis. For example, Snyder and Swann found that participants who were testing the hypothesis that an individual was an
extrovert asked questions tending to confirm the hypothesis (e.g., questions about incidents of extroversion), even though information disproving the hypothesis might also have been readily available. Furthermore, the participants tended to interact with the interviewee in a way that compelled him or her to behave according to the hypothesis. These hypothesis-confirming actions persisted even when participants were given prior information that their hypotheses were probably not accurate and when they were offered incentives to test the hypotheses accurately.

Snyder (1981) suggested that one reason for the tendency to close prematurely on an initial impression may be that clinicians operate with a justificationist "philosophy of science" that dictates that hypotheses about clients survive according to their ability to accumulate confirmatory evidence. From this perspective, the counsellor is likely to ask questions that are biased in favor of eliciting confirmatory data. As Mahoney (1976) asserted, "the scientist is not a paragon of reason. In fact, he may often be expediently illogical and prejudicially confirmatory" (p. 161). If a bias toward gathering information in favor of confirming an initial hypothesis is widespread among counsellors, the counsellor-as-scientist model proposed by the Pepinsky's breaks down. Rather than constructing a hypothetical model of the client, using careful and objective processes of hypothesis generation and testing, counsellors may simply develop

their impressions and then go about seeking only information that confirms their initial models of the client (Strohmer & Newman, 1983).

Counselling researchers have recognized the implications of Snyder's findings for counselling practice, and a series of studies have attempted to determine whether counsellors pursue a confirmatory information search in testing hypotheses about client problems (Haverkamp, 1993; Hayden, 1987; Strohmer & Chiodo, 1984; Strohmer & Newman, 1983). Overall, these investigators have not found evidence for a confirmatory bias; instead they concluded that clinicians pursued a predominantly neutral, or unbiased, hypothesis testing strategy (Haverkamp, 1993). Haverkamp (1993), however, distinguished between client-identified problems and counsellor-generated hypotheses. While she found no evidence of a confirmatory bias in hypothesis testing for client-identified problems, she found that counsellors who were testing self-generated hypotheses did indeed pursue confirmatory information searches.

In summary, what seems to emerge from the literature is that counsellors tend to be influenced by their early observations and form relatively quick impressions about their clients. These early impressions tend to anchor and serve as the basis for subsequent inferences and judgments (Bishop, Scharf, & Adkins, 1975; Nisbett & Ross, 1980), or become indicators as to the most appropriate strategy to use with each client (Strohmer, Haase, Biggs, & Keller, 1982).

Counsellor clinical judgments about clients seem to be based on initial impressions rather than the careful observation and hypothesis testing characteristic of scientific endeavor. According to Haverkamp (1993), previous research on the link between confirmatory bias and behavioral confirmation heightens a concern that errors on hypothesis testing can translate into effects within the counselling interaction. For example, Darley and Gross (1983) have suggested that counsellor bias may serve to exacerbate the clinician's view the clients' problems. Moreover, social influence researchers (e.g., Strong, Welsh, Corcoran, & Hoyt, 1992) have noted that clients often adopt counsellors' views of the problem. The primary danger of a confirmatory bias is that when counsellors focus on hypothesis-consistent information, they fail to elicit discrepant yet equally probable alternative hypotheses (Haverkamp, 1993). Biased clinicians run the risk not only of generating inaccurate formulations of the clients' problem, but also of initiating inappropriate intervention strategies.

Anchoring Errors in Clinical Judgment

From intake to termination of treatment, practitioners engage in collecting information, formulating hypotheses, and making judgments and decisions about their clients (Witkin, 1982). According to Dumont (1993), the number of judgments and decisions that clinicians make while fulfilling their professional duties are immense. During the course of therapy, for example, a clinician will

assess problem severity, evaluate current functioning, speculate about etiology, and ultimately implement an intervention strategy (Strohmer, Haase, Biggs, & Keller, 1982). Langer and Piper (1987) suggest that it is not possible for a clinician to be continually "on" in a wholly thoughtful or mindful fashion. Instead, clinicians often rely on cost-effective inferential shortcuts to help them sort through the vast number of inputs and outputs. Tversky and Kahneman (1974) propose that people use these shortcut strategies, known as *heuristics*, in tasks requiring judgment under uncertain conditions. Although certain of these decision-making principles simplify the complexity of the judgment task, they also can lead to errors (Nisbett & Ross, 1980; Kahneman, Slovic, & Tversky, 1982; Turk & Salovey, 1988; Ellis, Robbins, Schult, Ladany, & Baker, 1990). One such error that holds particular significance for assessment, diagnosis, and problem formulation is anchoring. Anchoring refers to excessive weighting of initial information derived about a client that subsequently serves as a template against which further information is judged (Nurius & Gibson, 1990).

Anchoring Errors - Literature Review (1952-1980)

Anchoring errors occur when people, who are forming judgments on a consecution of information, place excessive weight on the content of the initial information. Although anchoring, as a heuristic, can simplify the task of making successive judgments, the individual's failure to adjust sufficiently from the initial

information may lead him or her to under- or overestimate the phenomenon. In either case, error is evident when subsequent adjustments are insufficient. As Tversky and Kahneman (1974) note: "different starting points yield different estimates, which are biased toward the initial values" (p. 1128). Although the anchoring effect was not advanced in a clinical context, the effect has been applied to clinical judgment by serving as a model for how clinicians may fail to adjust their initial impressions when presented with additional information about a client (Levin, 1984).

For example, Bieri, Orcutt, and Leaman (1963) demonstrated that participants' estimates of the degree of pathology in identical clinical cases differed significantly depending on the order in which the case was presented. Dailey (1952) conducted a series of studies of clinical-like judgments made by student-participants and found that making an initial judgment based on a modest amount of information led to lower accuracy in later judgments than when no initial judgments had been made. Parker (1958) reported no obvious increase in the richness and diversity of a predictive model after the first interview with the client; counsellors were inclined to predict as much about the client after the first interview as after subsequent interviews. Oskamp (1965) presented case material in a sequential fashion to both students and professionals. After each segment of case material, participants answered questions that concerned the case's behaviors

and attitudes and rated their level of confidence in each judgment. Oskamp found that predictive accuracy reached a peak early in the information-gathering process; beyond this peak accuracy failed to increase further as amount of information increased.

Gauron and Dickinson (1966) and Sandifer, Hordern, and Green (1970) both used case files to investigate the reasoning of psychiatrists and discovered that diagnostic impressions were often formed within the first three minutes. Clavelle and Turner (1980) established that both professionals and paraprofessionals arrived at their final decisions early in the decision-making process. Specifically, 66% of all participants and 80% of the professionals reached their final decision after being presented with only 10 of 30 categories of information.

In a clinical setting, anchoring can be facilitated by prior knowledge associated with a client, for example referral information, or previous diagnoses (that is, labeling). McDermott (1981) found a direct negative relationship between school psychologists' initial reliance upon information received from referral sources and subsequent diagnostic congruence. The idea that school psychologists are inordinately affected by knowledge of the referral problem (which apparently operates to suggest a preliminary or expected diagnosis) has been termed "expectancy effects" by Tidwell (1976). Evidence exists to suggest that even in

in the presence of otherwise "healthy" diagnostic cues, many psychologist are prone to agree mistakenly with referral sources who hypothesize pathology (Hersh, 1971). Termerlin (1968) presented groups of clinicians with a taped interview with a of a client who was either described as "healthy" or "psychotic." While clinicians exposed to the "psychotic" client were able to assign a diagnosis, clinicians in the "healthy" group found no symptomology in the case. To be fair, another interpretation of this effect has been referred to as the hindsight

bias (Fischhoff, 1975). That is, finding out that an outcome has occurred increases its perceived likelihood.

Anchoring Errors - Literature Review (1983-present)

Friedlander and her associates have systematically investigated anchoring errors in clinical judgment. In applying the anchoring model to successive judgments of two psychotherapy cases, Friedlander and Stockman (1983) found that anchoring did occur. They presented 46 clinicians from the fields of psychology, psychiatry, and social work with "salient" information that concerned the correct diagnosis of a case either early or late in the clinical material. The detailed five pages of case interview notes were identical except for a "salient" paragraph in which the actual character and magnitude of the crisis that led to help seeking was inserted at either the first or fourth page of the case file. Two cases were examined. One was a woman suffering from anorexia nervosa, and the other a woman who had a history of suicidal ideation. Friedlander and Stockman questioned whether the presentation of salient, pathognomonic information about a client later in treatment (as opposed to initially) would be sufficiently adjusted for by participants. Clinicians rated the client overall level of functioning and prognosis and then rated their confidence in these judgments.

Friedlander and Stockman reasoned that if anchoring occurs, clinicians' final judgments of level of functioning and prognosis would depend significantly on when judges received the pathognomonic information. That is, clinicians who received the pathognomonic information late in treatment would rate the client as significantly less distressed than clinicians who were presented with the same information earlier on. Consistent with the anchoring hypothesis, the authors found significant differences between groups exposed to the presumably salient information early versus late, but only for the moderately disturbed client (anorexia nervosa). No anchoring occurred in the judgments of the more seriously disturbed client (suicidal). Post hoc tests indicated that judgments were not related to participants' sex, experience level, or professional specialty. The authors concluded that the presence of anchoring effects in one case and not the other was due to differential perceptions of the clients' level of disturbance. That is, the severity of the pathology for the suicidal client overshadowed the potential for biased judgments.

Since Friedlander and Stockman only presented clinician-participants with pathognomonic client information, they queried whether the valence (positive or negative) of client information influenced a judge's susceptibility to the anchoring bias. That is, could it be that clinicians were relatively less sensitive to highly distinctive information that is positive (i.e., hygiognomonic) as opposed to negative (i.e., pathognomonic) when making sequential judgments about a client? The authors suggested that while anchoring under both conditions would attest to the pervasiveness of this inferential bias, anchoring only with salient positive information presented early would indicate that clinicians were more sensitive to hygiognomonic data in formulating judgments. Anchoring errors restricted to the early presentation of salient hygiognomonic information would imply that clinicians disregard maladaptive information in cases where a client is not initially seen as severely disturbed.

In an unpublished research project, Levin (1984) incorporated a valence factor (i.e., positive academic achievement information in one case file and suicidal information in the other) into the Friedlander and Stockman paradigm with a sample of psychology graduate students. No significant effects emerged for valence or anchoring on either dependent variable (i.e., client overall level of functioning and prognosis). Levin speculated that the lack of significant results was attributable to the participants' lack of counselling experience and to the

saliency of the suicidal manipulation (Ellis, Robbins, Schult, Ladany, & Baker, 1990)

An information-processing perspective provides an explanation for the anchoring effects reported by Friedlander and Stockman. According to Levin (1984), the presence or absence of anchoring errors might depend on the degree of distinctiveness, or congruity of the salient information and the diagnostic schemata represented by the initial judgments. Recall that schemata may be described as "generic concepts" or "knowledge structures" that "select and organize incoming information, integrate this information with existing knowledge in memory, and retrieve it at a later point" (Hamilton & Rose, 1980, p. 843). If diagnoses are similar to cognitive schemata, as Arkes and Harkness (1980) point out, then schemata may act as biases when new data that are inconsistent with the preexisting schema are not encoded pragmatically. Theoretically, the greater the inconsistency, the greater the tendency not to encode the succeeding information. Conversely, when the salient information is consistent with the initial schema or diagnosis, judges are more likely to process the information and adequately accommodate their initial judgments. Friedlander and Stockman's (1983) anorexia case may have been perceived as highly distinctive or highly inconsistent with the first impression of the client. As a result, the anorexia information may not have been encoded, and the clinicians failed to adjust their initial judgments of the client.

In the more critical case, however, the suicide data may have been perceived as being highly consistent with the other data about the client. Clinicians examining this case were therefore able to accommodate their impressions more easily and adjust their ratings downward.

In a partial replication of Friedlander and Stockman's research, Friedlander and Philips (1984) attempted to prevent anchoring errors by sensitizing half of their participants to the possibility of anchoring errors. These authors asked 76 undergraduate students to rate the same anorexia nervosa material that produced the anchoring effect in professional participants. Neither the debiased sample (i.e., those sensitized to anchoring errors) nor the replication sample exhibited significant anchoring errors. Since participants in the student sample were found to be significantly less confident in their ratings than the 1983 practitioner sample, Friedlander and Phillips suggested that susceptibility to anchoring may be greatest among experienced, highly confident judges, who may be most disinclined to contemplate revising their early judgments.

An information-processing perspective, and in particular the notion of consistency, is effective in helping conceptualize the results of Friedlander and Philips' (1984) study. For example, according to Cantor and Mischel (1979), people have such a stake in maintaining consistency that they hold on to initial impressions by exaggerating features of that impression, and fail to consider the

importance of new incompatible features. In this way, the potential dissonance provoked by a sizable change in judgment is avoided. Cantor and Mischel's view is consistent with Arkes and Harkness' (1980) contention that once a counsellor has made a diagnosis, he or she may not notice symptoms that are inconsistent with that diagnosis. It also helps explain Friedlander and Philips' suggestion that the experienced, confident judges had a greater involvement in the judgment task and therefore were more invested in maintaining consistency than the less confident, inexperienced judges.

An alternative information-processing explanation proffered by Friedlander and Philips for the differential effects is based on Fischhoff's (1977) description of the "knew-it-all-along" effect, whereby new information is combined so quickly into the first impression, that judges fail to observe that reinterpretation is justified or that the new information had any effect. Friedlander and Philips suggested that the more experienced, confident judge, whose clinical prototypes are highly abstract, may be more prone to integrate new data immediately because they can accommodate or expand the initial clinical impression more easily than the inexperienced, less confident judges whose clinical prototypes may be less elaborate. Less confident judges may be unsure how to integrate the new data, and consequently perceive the new data as warranting adjustments. This view is consistent with the findings of Hirsch and Stone (1983) who reported evidence of

confirmatory hypothesis testing strategies in experienced counsellors rather than in inexperienced counsellors. Relatedly, in a thoughtful article on the liabilities of becoming experienced, Dumont (1991) reflected on the various shortcomings associated with the prototypical, stereotypical "schema-driven" informationprocessing of expert psychotherapists, as compared to the data-based, forward reasoning strategy of the novice clinician.

Given Friedlander and Stockman's (1983) suggestion that the life-threatening nature of the suicidal case had inhibited anchoring because of the possibly severe consequences of misdiagnosis, and Friedlander and Philips' (1984) failure to replicate anchoring errors with the anorexia nervosa case, Pain and Sharpley (1988) reasoned that the issue of exactly what type of case material stimulated anchoring errors remained open to investigation. As a result they presented the Friedlander and Stockman suicidal material, and material on two less life-threatening cases (i.e., anxiety and depression), to counselling psychology graduate students. Each of the three client cases (suicidal tendency, anxiety, depression) consisted of four brief reports, two neutral (N), one good (G), and one bad (B). Pain and Sharpley presented each of the three cases in four different orders, that is GNNB, NGBN, NBGN, or BNNG. Case order (i.e., the temporal order in which anxiety, depression, or suicidal tendency was presented) and valence order (i.e., the temporal order in which G, B, or N was presented) were

randomized for all participants. Thus for each of the three cases the G and B reports were rated (e.g., client overall level of functioning) at four different times by different participants. The results of their study revealed that while the graduate students altered their assessment of "good" material after reading "bad" material, they did not, however, alter their assessment of "bad" material after reading "good" material. Anchoring errors were found on all three case presentations. While the Pain and Sharpley study provided renewed support for an anchoring bias, at least one group of researchers have criticized the study on methodological grounds. That is, Ellis, Robbins, Schult, Ladany, and Baker (1990), suggested that by comparing the ratings of client functioning of only the four G (or B) reports (Times 1-4) rather than testing Time 4 judgments across the valence factor, Pain and Sharpley confounded valence order and time factors. As such, the results of the study were confounded not only by the prior amount of information presented (i.e., each group was exposed to different types and amounts of information) but also by the prior number of ratings. Ellis and his colleagues concluded that, without a complete analysis of the data, potential interpretation and conclusions based on the Pain and Sharpley study were contestable.

Other researchers have also outlined various methodological shortcomings associated with the anchoring research to date. In the introduction to their own

study, Richards and Wierzbicki (1990) suggested that although there appears to be research support for the claim that anchoring errors occur in clinical (and clinicallike) decision-making, studies found in the literature address different aspects of the anchoring bias, and report different results, mainly as a result of employing different methodologies. According to these authors, neither Gauron and Dickinson (1966) nor Clavelle and Turner (1980) presented information to participants in a standardized order, and none of the researchers (i.e., Gauron & Dickinson, 1966; Clavelle & Turner, 1980; Friedlander & Stockman, 1983; Friedlander & Philips, 1984) controlled for level of severity of pathology presented in the different categories of information or segments of the case histories. Other methodological concerns that Richards and Wierzbicki presented included the possibility of limited statistical power due to small cell sizes (e.g., Gauron & Dickinson, 1966; Friedlander & Stockman, 1983; Friedlander & Philips, 1984), and participants being required to process amounts of information beyond their information-processing capacities (e.g., Dailey, 1952; Gauron & Dickinson, 1966). The authors concluded that methodological concerns seriously limited the extent to which conclusions concerning anchoring errors could be drawn.

In their own study, Richards and Wierzbicki presented information to an undergraduate sample of student-participants in a standardized order, controlled the level of severity of the pathology in each segment of case material, employed

four cases of each with a different clinical disorder (depression, anxiety, antisocial behavior, alcohol abuse), examined sequential judgments within cases, used large cell sizes, and required participants to make a manageable number of decisions. These researchers found that initial pathology ratings significantly predicted later pathology ratings regardless of case material. The anchoring effects did, however, vary across the different case materials. That is, the effects were strongest for the anxiety and antisocial behavior cases, moderate for the alcohol case, and weakest for the depression case. The authors suggested that case materials containing participant matter more familiar to the students (i.e., depression) may have required less "judgment under uncertainty" than material that is more foreign to students (i.e., antisocial behavior and anxiety).

Recently, Ellis, Robbins, Schult, Ladany, and Banker (1990) refined the research dealing with anchoring errors in clinical judgment. These authors attempted to replicate and extend both Friedlander and Stockman's (1983) and Friedlander and Phillips' (1984) research. Ellis et al. noted that the gender composition of the practitioner sample (35% women) differed from the student samples (79% and 65% women, respectively) and suggested that gender could have mediated the occurrence of anchoring errors. These authors adhered to Friedlander and Stockman's procedure and presented the same case materials and manipulations to 103 undergraduate students. Although Ellis et al. minimized Type

II error (i.e., conducted the experiment with more than an 80% probability of detecting an anchoring effect of .10 or larger), anchoring errors were not found for either case (i.e., suicidal or anorexic case materials).

Given their inability to replicate Friedlander and Stockman's (1983) findings concerning anchoring errors, Ellis et al. conducted a second study to test rival hypotheses: adjustment hypothesis and adjustment mitigation hypothesis. The adjustment hypothesis was "adduced" from early research and theory on anchoring (e.g., Bieri et al., 1963; Campbell & Hunt, & Lewis, 1957) which, according to the authors, suggested that in a succession of judgments, raters respond and adjust their judgments to be consistent with the more recent manipulation - a view that coincides with the Pepinsky and Pepinsky (1954) model described earlier. According to Ellis and his coworkers, adjustment occurs when practitioners appropriately adjust their clinical judgments after being exposed to new information. To illustrate, Ellis et al. suggested that two groups of practitioners, provided the same information beforehand and subsequently exposed to disparate salient information, would have significantly diverse judgments. Conversely, two groups with significantly disparate initial judgments but exposed eventually to identical information would have similar final judgments.

According to Ellis et al., anchoring and adjustment are not necessarily incompatible. In most clinical instances, the adjustment hypothesis is operative, and

initial anchoring effects dissipate in a succession of judgments. However, when a clinician is presented with two sets of contrasting information (for example, anorexia and psychological health), although an anchoring effect may be evoked initially, it is then lessened or mitigated by an adjustment effect. That is, while the initial salient information may serve to anchor clinical judgments at first, new incongruous information serves to generate new judgments partially adjusted towards the new anchor. Since in this later instance, the anchoring heuristic is incorporated into the adjustment hypothesis, the Ellis team termed this effect adjustment mitigation. While acknowledging no theory or empirical evidence upon which to base their formulation, they suggested that the adjustment mitigation hypothesis was grounded on the assumption that neutral information would have a negligible effect on subsequent judgments, and the premise that when two sets of salient information are presented at different times in a succession of judgments, the salient information presented later is less influential than the salient information presented earlier (Ellis et al., 1990).

To test their newly formed hypotheses, Ellis et al. (1990) used the Friedlander and Stockman's (1983) anorexia case (i.e., the only case found to yield anchoring effects) and introduced "psychologically healthy" information. Practitioner-participants were either exposed to the anorexic information early (AE); anorexic information late (AL); healthy information early (HE); healthy

information late (HL); anorexic information early and healthy information late (AEHL); or healthy information early and anorexic information late (HEAL). Participants were asked to read case material in which information considered "early" was revealed on the first page and information labeled as "late" was revealed on the fifth page. No evidence to support Tversky and Kahneman's (1974) anchoring effect was found. In fact, Ellis et al. found evidence disconfirming the anchoring hypothesis in clinical judgment, and instead reported one significant adjustment effect and one marginally significant adjustment effect. Contrary to anchoring effects, participants exposed to healthy information late (HL) rated the client as more healthy than participants who were exposed to anorexic information late (AL) (i.e., HL more healthy than AL). That is. information received late was assimilated and judgments were modified accordingly. Similarly, participants exposed to healthy information early (HE), rated the client as more healthy than participants who were exposed to healthy information early and anorexic information late (HEAL) (i.e., HE more healthy than HEAL). The anorexic information that appeared late in the case material resulted in an adjustment (towards a new anchor) in the participants' evaluation. While much of Ellis et al.'s results suggested that counsellors did adjust their clinical judgments appropriately in response to one set of salient client information, when two sets of contrasting salient information were presented, the counsellor's

judgments were more often consistent with the adjustment mitigation hypothesis. The adjustment effect of the second set of salient information appeared to be mitigated by an anchoring bias toward the first set. The Ellis team concluded that Friedlander and Stockman's anchoring effect was most likely attributable to Type I error or sampling vicissitudes and suggested that their adjustment mitigation hypothesis was workable and parsimonious.

In summary, recent research on anchoring errors in clinical judgment has asked clinicians or student raters to read case files in which the order of presentation of either pathognomonic, or hygiognomonic, or neutral material has been manipulated. Participants are then asked, after having read the case materials, to rate the "clients" perceived level of functioning and establish a prognosis. While some researchers have reported anchoring effects, others have not. One group of researchers has proposed two new, rival hypotheses termed adjustment and adjustment mitigation. The current study further examines the nature of these new hypotheses and attempts to determine exactly what type of case material stimulates anchoring errors. A second focus is the investigation of the relationship between the fundamental error attribution and anchoring errors -- a relationship that has been overlooked in the social cognitive clinical literature to date. A third objective of the present project is the appraisal of which sets of client material are extracted

from a case history, given attentive reading, and interpreted or subjected to further elaboration.

Hypotheses

The following section describes the hypotheses upon which this study's investigation of the fundamental attribution error, anchoring, adjustment and adjustment mitigation are based.

The relationship between the fundamental attribution error and anchoring

Based on attribution theory and the fundamental attribution error:

<u>Hypothesis 1</u>: Clinicians will posit a greater number of dispositional inferences than they will contextual inferences.

<u>Hypothesis 2</u>: Clinicians will posit a greater number confirmatory dispositional inferences than they will confirmatory contextual inferences. The tendency to confirm previously generated dispositional inferences may be construed as an inclination to anchor on this type of information.

Relationship between order of the presentation of client information, anchoring, adjustment and adjustment mitigation

<u>Anchoring</u>. Anchoring errors occur when judgments are insufficiently adjusted from an initial value. In the current study, if anchoring errors occur, clinicians exposed to salient information early in a casefile should arrive at different judgments relative to those exposed to the salient information late in a casefile. That is, despite having been exposed to identical client information clinicianparticipants exposed to healthy information early or "HE" should have more favorable ratings of client overall level of functioning than those exposed to healthy information late or "HL." Similarly, participants exposed to ailing information early ("AE") should have less favorable ratings of client overall level of functioning than those exposed to ailing information late ("AL").

<u>Hypothesis 3A</u>: Clinicians will generate more favorable ratings of client functioning when healthy information about the client is presented to them early in the case material (i.e., "HE") as compared to when healthy information is presented to them late in the casefile (i.e., "HL"), that is, HE > HL (where the ">" sign indicates more favorable ratings of client level of functioning).

<u>Hypothesis 3B</u>: Clinicians will generate less favorable ratings of client functioning when ailing information is presented to them early in the case material (i.e., "AE") as compared to when ailing information is presented to them late in the casefile (i.e., "AL"), that is, AE < AL (where the "<" sign represents less favorable ratings of client level of functioning).

Alternatively, if initial estimates of a phenomenon bias subsequent estimates towards the initial value, groups of clinicians with different starting

points and similar end points should have significantly different final judgments.

<u>Hypothesis 4A</u>: Clinicians exposed to ailing client information late (i.e., "AL") will posit less favorable ratings of client level of functioning as compared to those who are exposed to healthy information early and ailing client information late in the casefile (i.e., "HEAL"), that is, AL < HEAL.

<u>Hypothesis 4B</u>: Clinicians exposed to healthy client information late (i.e., "HL") will posit more favorable ratings of client level of functioning as compared to those who are exposed to ailing client information early and healthy client information late (i.e., "AEHL"), that is, HL > AEHL.

Moreover, if anchoring errors are such that final judgments are biased towards the initial information, then clinicians exposed to the identical information, albeit in different orders, should also arrive at different final judgments. For example, if initial information is indeed overvalued then participants exposed to client information in the healthy client information early and ailing client information late presentation should generate more positive ratings of the clients overall level of functioning as compared to participants exposed to client information in the order of ailing client information early in the casefile and healthy client information late in the casefile (i.e., HEAL > AEHL).

<u>Hypothesis 4C</u>: Clinicians exposed to healthy information early and ailing client information late (i.e., "HEAL"), will posit more favorable ratings of client overall level of functioning as compared to those who are exposed to the ailing client information early and healthy client information late in the casefile (i.e., "AEHL"), that is, HEAL > AEHL.

Adjustment. In the case of adjustment, two groups of clinicians presented with the same information early (that is, they should generate similar starting judgments), and different information later should have significantly different final judgments. In this scenario, clinicians should incorporate the new, ensuing information and adjust their final judgments to accommodate the later information.

In keeping with the *adjustment hypothesis*, clinicians who are exposed to identical information, albeit in differing orders, and who appropriately adjust their judgments, should arrive at similar final judgments.

<u>Hypothesis 4D</u>: Clinicians exposed to healthy information early and ailing information late (i.e., "HEAL"), will posit comparable ratings of client level of functioning as compared to clinicians exposed to ailing client information early and healthy client information late (i.e., "AEHL"), that is HEAL \cong AEHL.

Also in keeping with the adjustment hypothesis, groups of clinicians who appropriately adjust their judgments when exposed to client information with

different starting points and similar end points should have equivalent final judgments.

<u>Hypothesis 4E</u>: Clinicians exposed to ailing information late (i.e., "AL"), will posit similar ratings of client level of functioning as compared to those exposed to healthy information early and ailing client information late (i.e., "HEAL"), that is, $AL \cong HEAL$.

Also in keeping with the adjustment hypothesis, groups of clinicians who appropriately adjust their judgments when exposed to client information with different starting points and similar end points should have equivalent final judgments.

<u>Hypothesis 4F</u>: Clinicians exposed to healthy information late (i.e., "HL") will arrive at similar judgments of client overall level of functioning as compared to those exposed to ailing client information early and healthy client information late (i.e., "AEHL"), that is, $HL \cong AEHL$.

Finally, adjustment in the current study would also be indicated by differing clinician ratings of the client's overall level of functioning, depending on whether the client was described in discrepant terms, either early or late in the casefile. For example, clinicians exposed to identical information early and incompatible information late, and who appropriately adjust their judgments, ought to arrive at discrepant final judgments.

<u>Hypothesis 4G</u>: Clinicians exposed to healthy information late (i.e., "HL") will posit more favorable ratings of client overall level of functioning as compared to those exposed to ailing client information late (i.e., "AL"), that is, HL > AL.

Adjustment Mitigation. Ellis, Robbins, Schult, Ladany, and Baker (1990), suggest that anchoring and adjustment effects are not mutually exclusive. That is, in most instances the adjustment hypothesis is operative and initial anchoring effects diffuse in a succession of judgments. However, when the *final* clinical judgments of clinicians presented with conflicting client information are tempered by the nature of the initial client material, then adjustment mitigation has occurred. According to Ellis et al., when initial salient information serves to anchor clinical judgments, the degree of adjustment brought about by new contrasting salient information can be lessened by the earlier anchoring effect. Subsequent judgments that are only partially adjusted. The authors base their statement on the assumption that whereas the presentation of neutral information would have a trivial influence on succeeding judgments, the presentation of two sets of dissimilar information at different times in a series of judgments would result in the information presented later being less influential than the information presented initially. For example, while it would be reasonable to expect that the final judgments, concerning the client's overall level of functioning, of clinicians exposed to equivalent sets of client information would be similar, when adjustment mitigation is operative, the

ensuing judgments are tempered by the content (e.g., valence) of the preceding client data. In this instance, the adjustment effects initiated by the subsequent client data are mitigated by an anchoring bias towards the primary client data.

In the current study, in event that adjustment mitigation is operative, the ratings of client overall level of functioning made by clinician-participants exposed to healthy client information early and ailing late (i.e., "HEnAL") will be less favorable than those exposed to healthy early, that is, "HE," *and* more favorable than those exposed to ailing late, that is, "AL" (i.e., HE > HEAL > AL). Similarly, the ratings of client overall level of functioning made by clinician-participant exposed to ailing information early and healthy late, that is, "AEHL," will be more favorable than those exposed to "AE", *and* less favorable than those exposed to "HL" (i.e., AE < AEHL < HL).

<u>Hypothesis 5A</u>: The ratings of client overall level of functioning made by clinicians exposed to the entire "HEAL" casefile will not only be less favorable than that of clinicians exposed to "HE" (i.e., HE > HEAL), but will also be healthier than that of clinicians exposed to "AL." That is, { HE > HEAL > AL}, where (HE > HEAL) represents adjustment and (HEAL > nAL) represents anchoring.

<u>Hypothesis 5B</u>: The ratings of client overall level of functioning made by clinicians exposed to "AEHL" will not only be more favorable than that of

Table 1

Summary of Research Hypotheses for Effects of Order of Presentation of Client Information on Ratings of Casefile Client Pathology

Anchoring	Adjustment	Adjustment Mitigation
HE > HL	HEAL ≅ AEHL	
AE < AL	AL ≅ HEAL	HE > HEAL > AL
HE ≅ HEAL	HL ≅ AEHL	AE < AEHL < HL
$AE \cong AEHL$	HL > AL	
AL < HEAL	HE > HEAL	
HL > AEHL	AE < AEHL	
HEAL > AEHL		

Note: The ">" symbol refers to more favorable ratings of the client's perceived level of overall functioning, the "<" refers to less favorable ratings of the client's perceived level of overall functioning; and the " \cong " refers to comparable ratings of the client's perceived level of overall functioning.

clinicians exposed to "AE" (i.e., AE < AEHL), but will also be less favorable than that of clinicians exposed to "HL." That is, $\{AE < AEHL < HL\}$, where (AE < AEHL) represents adjustment and (AEHL < HL) represents anchoring. See Table 1 for a summary of these hypotheses. In addition to the examination of the preceding hypotheses, all of which constitute the "traditional" approach to the investigation of the fundamental attribution error, anchoring, adjustment and adjustment mitigation, viable conclusions based on the data collected during the course of this study will be enrichened by the examination of the actual clinical inferences that clinician-participants are entertaining as they read through the case material. Data collected through this, the "think-aloud approach," constitutes the exploratory component to the study and will be expounded upon in the following Results and Discussion chapters.

CHAPTER III: METHOD

This chapter describes the methodology employed in the study including a description of the participants, the design, the measures, the casefile, the "think-aloud" approach, the coding of the data, the procedure, and the analyses.

Participants

An invitation to participate in a study on "factors influencing clinical judgment" was sent to 100 randomly-selected individuals registered as practicing counsellors with the *Ordre professionnelle des conseillers et conseillères d'orientation du Québec* (Appendix A). In order to reduce any potential language or gender bias it was decided that only anglophone female counsellors would be recruited. In all, 40 participants were recruited for the study in the following way: 16 responded to the letter and volunteered to participate in the study; the primary investigator made 37 follow-up calls to recipients of the letter and in this way occasioned an additional 18 participants; six persons were referred by other participants. One francophone volunteer chose not to participate, and seven letters were returned to sender as a result of an address change. Each of the 40 participants received a stipend of \$45.00 for participating in the study.

Table 2 summarizes the demographic characteristics of the sample. Seventy-five percent of the counsellors were over 39 years of age; 95% held a

terminal Master's degree; 85% were employed in direct client service delivery; 47% had over 10 years experience; and 62.5 % described themselves as eclectic.

<u>Design</u>

Participants were randomly assigned to one of four groups. The groups differed as to the order in which client information in a casefile was presented to participants. That is, depending on which of the four groups a given participant was in, that individual was presented with an *introductory segment*, a *neutral segment*, and a *closing segment*, in addition to a *pathognomonic segment*, or a *hygiognomonic segment*, or both. *Temporal order of client information* was thus the independent variable in this study.

Two renditions of a casefile were used in this study. The first had two versions, one that described a hypothetical client in hygiognomonic terms late in the casefile, and the other that described the same client in pathognomonic terms late in the casefile. The second casefile presented *both* sets of client information together; that is, the stimulus material in one version of the second casefile was hygiognomonic in nature in the beginning of the casefile, and pathognomonic in nature towards the end. The alternate version of the second casefile included duplicate client information except that the sequence of the hygiognomonic and pathognomonic material was inverted; that is, pathognomonic client information was presented in the beginning of the casefile and the hygiognomonic information

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Age	27-32	17.5%
	33-38	32.5%
	39-44	7.5 %
	over 45	42.5 %
Highest professional Degree	M.A. or M.Ed.	95.0%
	Ph.D. or Ed.D.	5.0%
Length of full-time professional work		
	Less than 1 year	7.5%
	1 to 4 years	30.0%
	5 to 9 years	15.0%
	10 to 14 years	30.0%
	Over 15 years	17.5%
Primary professional role	Direct client service	85.0%
	Academic	5.0%
	Administration	2.5%
	Other	7.5%
Time spent weekly in direct client contact		
	Less than 5 hours	10.0 %
	5 to 14 hours	15.0%
	15-24 hours	30.0%
	25-34 hours	27.5%
	over 35 hours	17.5 %
Theoretical Orientation	Psychodynamic	15.0%
	Eclectic	62.5%
	Cognitive Behavioral	12.5%
	Existential/Humanist	2.5%
	Feminist	2.5%
	Psychoanalytic	2.5%

Table 2

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Demographic Characteristics of Clinician-Participant Sample

towards the end. All other information about the client was identical in the four conditions and was divided into three segments. An *introductory segment* that described the age, ethnicity, living condition, and presenting problem of the client. A neutral segment that depicted family history, and a third, closing segment that described the client's social, leisure, medical, and religious history. Insofar as possible, the casefile material describing the family history was valence-free (i.e., neither hygiognomonic nor pathognomonic), and is henceforth referred to as neutral client information (i.e., "n"). Thus in abbreviated form, the casefile version presenting neutral client information followed by hygiognomonic client information late is abbreviated as neutral early and hygiognomonic late "nHL." Similarly, the casefile version presenting neutral client information followed by pathognomonic client information late is abbreviated as neutral early and pathognomonic late "nAL." Following the same code, the casefile version depicting hygiognomonic client information early and pathognomonic client data late becomes hygiognomonic client information early, neutral in the middle, and pathognomonic late "HEnAL." Finally, pathognomonic client information early and hygiognomonic client information late becomes pathognomonic early, neutral in the middle and hygiognomonic late "AEnHL."

10 participants were presented with hygiognomonic client information late in the casefile (i.e., nHL), and 10 were presented with pathognomonic client

information late in the casefile (i.e., nAL). Twenty participants were exposed to *both* types of salient information; that is, 10 participants were presented with the hygiognomonic information early *and* pathognomonic information late (i.e., HEnAL), and 10 participants were presented with the pathognomonic information early *and* hygiognomonic late (i.e., AEnHL).

As a result of difficulties associated with recruiting a sufficient number of participants for the study, data for two additional groups were compiled from the existing groups. Data relative to the presentation of hygiognomonic client information early in the casefile (i.e., HEn) were culled from the HEnAL group by soliciting ratings from participants after they read the neutral information. Similarly, data concerning the presentation of pathognomonic client information early in the casefile (i.e., AEn) were culled from the AEnHL group, by soliciting ratings from participants after they read the neutral information

Two classifications of dependent variables were utilized in this study. The first dependent variable was the casefile client's perceived level of pathology. That is, the participant's evaluation of the casefile client's level of functioning. This variable served as a dependent variable because it reflects critical judgments for making appropriate treatment plans (Friedlander & Stockman, 1983).

The second dependent variable contemplated in this study was the category of inference generated by the participants. That is, all the inferences generated by participants were coded according to their attributional category (e.g., dispositional or contextual), and inferential process, that is whether they were posited for the first time (e.g., initial), confirmed (e.g., confirmatory), or disconfirmed (e.g., disconfirmatory). Each participant's every utterance was coded according to 10 *types* of judgments, 6 of which were inferences (see Table 4). Additionally, the *kind* of inference generated by the participants was also examined (e.g., family history, coping strategies, etc.). That is, each participant's every utterance was coded according to one of 20 kinds (see Table 5). The independent and dependent variables are listed in Table 3, Table 4, and Table 5. The dependent variables are described in the section entitled *Application of Criteria*.

<u>Materials</u>

In addition to a Personal Data Form questionnaire which compiled demographic data from participants, the materials used in this study included the *Global Assessment Scale* (Endicott, Spitzer, Fleiss, & Cohen, 1976), the hypothetical casefiles, and the transcribed participant-generated "think-aloud" protocols. Table 3

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Independent Variable

Temporal Order of Presentation of Client Information

1) Healthy Late	(nHL)
2) Ailing Late	(nAL)
3) Healthy Early Ailing Late	(HEnAL)
4) Ailing Early Healthy Late	(AEnHL)
5) Healthy Early	(HEn)*
6) Ailing Early	(AEn)**

* Based on data collected from the HEnAL group.

** Based on data collected from the AEnHL group.
Table 4

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Dependent Variable - Type of Inference

- 1) No-response
- 2) Non-inference
- 3) Paraphrase
- 4) Information-request
- 5) Initial dispositional
- 6) Initial contextual
- 7) Confirmatory dispositional
- 8) Confirmatory contextual
- 9) Disconfirmatory dispositional
- 10) Disconfirmatory contextual

Table 5

Dependent Variable - Kind of Inference

- 1) Living Arrangement
- 2) Presenting Problem
- 3) Coping Strategies / Insight
- 4) Medical / Biological
- 5) Psychological
- 6) Affect
- 7) Ethnicity
- 8) Values
- 9) Religion
- 10) Family
- 11) Educational
- 12) Vocational
- 13) Sport
- 14) Leisure
- 15) Social relationship
- 16) Romantic relationship
- 17) Sexual relationship
- 18) Financial
- 19) Personality Traits
- 20) Interests

I. Personal Data Form

The Personal Data Form is a paper-and-pencil questionnaire adapted from Goodin Waxman (1991) and Ellis, Robbins, Schult, Ladany, and Baker (1990) (See Appendix C). In this questionnaire, participants provided autobiographical information such as age, academic degree(s), clinical experience (including internship), as well as the approximate amount of professional time (hours) spent weekly in direct client contact of any nature. The questionnaire also gave participants the opportunity to "self-report" their theoretical approach.

II. The Global Assessment Scale (GAS)

With the *Global Assessment Scale* (Appendix D), participants rated the casefile client's level of functioning on a hypothetical continuum (1-100) of mental illness/health, without regard to the fact that the client was in treatment (Levin, 1984). High ratings on the GAS reflect fewer symptomatic behaviors and less of a need for help (Friedlander & Stockman, 1983). The scale provided behavioral anchors at 10-point intervals. Interjudge reliability ratings for the GAS has been determined with a variety of client populations. For example, Endicott, Spitzer, Fleiss, and Cohen (1976) established intraclass correlation coefficients for the following: newly administered psychiatric inpatients, .76; case records of state psychiatric inpatients, .69; aftercare clinic patients of a state hospital, .91; parents of children who are at high risk for schizophrenia, .61; and case vignettes

representing a maximum range of heterogeneous patients, .85. These authors report that GAS ratings correlate "quite well with corresponding measures of overall severity of illness and changes of severity," (Endicott, et al., 1976, p. 769), and that concurrent validity has been achieved with a variety of independent measures of symptomatology (Endicott, et al., 1976).

Clinician-participants were asked to rate the client with respect to a typical population since setting can influence clinical judgment (Bieri, Orcutt, & Leaman, 1963). Given the familiarity of most clinicians with a private practice, a private practice setting was used.

III. <u>Casefile</u>

The casefile used in this study (Appendix E) is based on the Ellis, Robbins, Schult, Ladany, and Baker's (1990) adaptation of the Friedlander and Stockman (1983) anorexic case. That is, the case retained the pathognomonic features (i.e., anorexia) shown to have promoted anchoring errors in the past (Friedlander & Stockman, 1983), and incorporated the hygiognomonic features as described by Ellis and his colleagues. For the purposes of this study, however, the case material was redacted to reflect an approximately equal number of instances of dispositional and contextual client information. Dispositional client information refers to historically remote events and conditions, and reflect the inner state or personality characteristics of the client (Goodin Waxman, 1991). Contextual client information encompasses recent events and circumstances that may serve to maintain preexisting personality characteristics or dispositions, and/or may precipitate an immediate problem (Dumont, manuscript submitted for publication; Goodin Waxman, 1991).

The casefile describes a female client, Joan, who is engaged in counseling in order to explore a self-reported difficulty maintaining successful romantic relationships with men. The 32-year-old client is presented as a prosperous architect who has recently met a man of whom she has become quite fond. Joan expresses existential concerns about growing old alone and does not want to jeopardize her current relationship. The client's childhood is marked by an alcoholic mother and a brother's tragic death. She has suffered from anorexia nervosa in the past and is presently losing weight.

The client is presented as capable of insight and behavior change. Both historical and current behaviors are included in such a way as not to slant the usefulness of the information toward any specific theoretical orientation. Consistent with Levin's (1984) recommendation, only factual client data are included, and direct client quotes are used to enrich the material. No information concerning prior treatment or about therapist characteristics, theoretical orientation, or interventions is included.

The hygiognomonic information contains signs of high achievement and a willingness to confront psychological difficulties. The hygiognomonic information is based on the casefile developed for the Ellis et al. (1990) study. The client is presented as self-reliant, optimistic, and conscientious. Joan is described as a "survivor" who has had previous successful counseling. The casefile indicates that Joan has a good support network, is successful vocationally, maintains a regular exercise program, and rarely drinks alcohol. A panel of expert mental health professionals, in the Ellis et al. study, validated the salient healthy information as realistic. For the purposes of this investigation six professional counsellors, completely removed from the study, were asked to verify that the presentation did indeed reflect hygiognomonic client information. The casefile validation procedure is described below under *Casefile Validation*.

The four paragraphs that embodied healthy client information were the following:

Joan describes herself as "a survivor" (as distinguished from a victim). "Having been raised in an alcoholic family, I've been through a lot of emotionally trying times." As a result, "I am a stronger person who is able to take things in stride."

When Joan left home to start university, her mother sought treatment for her drinking problem, and her parents tried some couple counseling. Joan remembers deciding that she too "could use a little help." She entered brief counseling to begin exploring her feelings about the brother she had lost (through death in an accident), and became involved with ALANON to help her with her feelings about her mother.

In university, Joan worked at two jobs to put herself through. During this time, she began channeling her drawing and math skills into architecture. She became quite proficient in her major, and eventually graduated with honours. Nearing graduation, Joan was actively recruited by a prestigious architecture firm (her current employer). She is happy with her job and has risen "through the ranks very quickly."

Joan goes on to say that "except for when it comes to my relationship with men, basically I'm an optimist. I have learned to focus on the positive." She wants to continue "growing as a person" and trying to become "the best person I can be."

The pathognomonic information consists of a description of Joan's

family's reaction to the death of a sibling, suggests that Joan has some difficulty

communicating with her present boyfriend, describes a history of anorexic

behavior, and hints at the possibility that Joan has relapsed into anorexia at the

present time.

The four paragraphs that manifest pathological client information are

the following:

The time around Alec's death was a difficult period for everyone. Her father withdrew, "Dad was no help, he just ignored the whole thing," her mother's drinking got worse, and Joan remembers getting depressed. The first year after the death was the worst period. Joan suddenly started getting very thin, had trouble eating, and eventually was hospitalized for two months. They had to force-feed her. "I suppose I must have gotten down to 85 lbs. or so. They told me I was anorexic and that it was all in my head."

Joan has been dating the same man, Jim, for six months. In recent weeks, she has "caught" herself thinking that they are going to "break up." She is worried about what these thoughts might mean.

Although she hasn't told him, she has grown very close to Jim and "doesn't know what I would do without him." Asked why Jim seems like the only man, Joan replies, "being overweight, I don't think I've ever really been attractive to guys."

Actually, Joan has purposely lost 22 lbs. over the last few months to make herself more attractive to Jim. "I still have a way to go yet before I'm sure that he'll like what he sees." The last time she lost so much weight was 17 years ago, after the death of her older brother.

<u>Casefile Validation</u>. Six professional counsellors, with at least a Master's

degree and five years experience, were asked to validate the case material. Each

professional counsellor commented on the representativeness of the material, and the saliency of the manipulated data (i.e., healthy or ailing client information).

All six clinicians read the casefile (without the manipulated paragraphs) and indicated ratings corresponding to the client's overall level of functioning, as measured by the Global Assessment Scale. Next, all six the clinicians rated, on a 7point scale (from "not at all typical" to "highly typical") how typical or similar the client appeared relative to a private practice population. Finally, three of the clinicians were asked to read the hygiognomonic client information manipulation, and three read the pathognomonic client information manipulation. The clinicians then rated the casefile in terms of to the client's overall level of functioning.

Based on the review of these clinicians, one change to the casefile was made. In the Ellis et al. (1990) casefile, the family was said to have suffered a "plane crash" in which the eldest son was killed. Since all family members emerged from this accident relatively "unscathed," it was believed that it was more realistic for survivors to emerge from a car crash rather then a plane crash. Thus, the type of accident suffered by the family in the casefile used in this study was changed to a car accident. Table 6 shows the ratings of these clinicians relative to the realism of the casefile and the changes in GAS ratings following the reading of neutral and

Table 6

	Realism*	Global Assessment Scale ratings**		
	How Typical	Neutral	Ailing	Healthy
Rater 1	2	61	55	
Rater 2	2	75	60	
Rater 3	1	70	61	
Rater 4	2	70		80
Rater 5	2	75		80
Rater 6	2	85		90

Casefile Validation Ratings Relative to Realism and Adjustment

- * Based on 7-point scale (from "7" = "not at all typical" to "1" = "highly typical") of how typical or similar the client appeared relative to a private practice population.
- ** Raters rated the neutral information first, and then either the pathological or the healthy client information. Higher ratings reflect fewer symptomatic behaviors and less of a need for help.

ailing information and neutral and healthy client information. Overall, the ratings reflect sufficient realism, and the adjustment in the ratings of the client's overall level of functioning, based on the valence of the material, provide confirmation of the saliency of the manipulations.

IV. Think-Aloud Protocols

In addition to evaluating the casefile client's level of functioning with the *Global Assessment Scale*, participants were asked to "think-aloud" as they read through the case material. In this way, the actual clinical inferences that clinician-subjects were entertaining as they read through the case material were coded according to a number of predetermined criteria. See section entitled *Application of Criteria*.

The rationale for using the think-aloud methodology is derived from Newell and Simon's (1972) information-processing theory and Ericsson and Simon's (1984) approach to protocol analysis.

Information-processing theory suggests that the human mind, when performing a problem-solving task, can be regarded as an information processing system (Newell & Simon, 1972). Information for the problem-solving task is thought to be stored in several types of memory, each with a different capacity. These forms of memory include a sensory storage area of very temporary duration, a short-term memory of circumscribed capacity and intermediate duration, and a long-term memory of unlimited capacity and relatively everlasting duration (Grobe, Drew, & Fonteyn, 1991).

Ericsson and Simon (1984) posit that information in short-term memory is able to be verbalized. As such, information provided by participants instructed to

"think aloud" unerringly emulates their course of thinking. According to Ericsson and Simon, participant verbal reports performing problem-solving tasks disclose the sequence of information that is attended to without tampering with the individual's cognitive processes (Grobe, Drew, & Fonteyn, 1991). The "thinkaloud" methodology has figured prominently in research programs examining clinical inferential processes (Goodin Waxman, 1990; Goodin Waxman, Dumont, & Rapagna, 1991; Grobe, Drew, & Fonteyn, 1991; Rosen, 1993).

Application of Criteria

For the purposes of this study, all participant think-aloud responses were audiotaped and transcribed. All data extracted from the case history by the clinician-participants in the "HEnAL" group and the "AEnHL" group were coded according to the following *types*:

<u>Non-Inference</u>. A non-inference represented (i) any statement that was unclassifiable (e.g., "I'm not surprised" or "that's good"), (ii) any irrelevant or non-significant comment (such as "I have to read on" or "Ha!"), (iii) any selfdisclosure on the part of the participant, (iv) any statement or application of psychological theory (e.g., "well that's a depiction of Adler's theory of the middle child"), (v) any reference to what the participant would have liked to say or do in interviewing the client (e.g., What I would say to that is ...", or "I have to check that out later"). <u>Quote</u>: The "quote" category represented a participant verbalization that repeated the client information verbatim from the casefile, using the exact words given in the text.

<u>Paraphrase</u>: The "paraphrase" category represented a participant verbalization that repeated the client information using the participant's own words, utilizing synonyms and other semantic forms which did not change or distort the meaning of the information given in the text.

<u>Inference</u>: The "inference" category represented a participant verbalization that not only transformed the text of the case history but also went beyond what was explicitly contained in that text or was necessarily implied by it. All inferences was further categorized as "initial," "confirmatory", or "disconfirmatory."

Initial Inference: An "initial inference" was an inference that was stated for the first time.

<u>Confirmatory Inference</u>: A "confirmatory inference" was an inference that (1) was previously posited and was then posited for the second and any subsequent time throughout the text or (2) made a direct link to an initial inference and provided support for that initial inference. Not all initial inferences were necessarily confirmed. <u>Disconfirmatory Inferences</u>: A "disconfirmatory inference" was an inference that (1) was previously posited and was then now retracted, withdrawn, or falsified or (2) was stated in the negative form.

All inferences were further coded as either dispositional or contextual based on the criteria set forth by Ross (1977).

Dispositional Inference: A "dispositional inference" is a specific type of participant verbalization that goes beyond the information given in the text. This verbalization explains behavior primarily by reference to long-standing intrapsychic dynamics or personality traits. From the perspective of a dispositional inference, the problem is described as emanating predominantly from within the client and is primarily of a historical nature. It is considered primarily a function of a personality characteristic or trait. An example of an inference coded as dispositional would be: "That makes me think of someone who is trying to repair his relationship with his mother." Dispositional inferences were further classified as initial, confirmatory, or disconfirmatory.

<u>Contextual Inference</u>: A "contextual inference" is a specific verbalization that goes beyond the literal information given in the text. This verbalization explains behavior primarily by reference to contemporary events and conditions. From the perspective of a contextual inference, the problem is described as emanating predominantly from the external environment of the client. It is considered primarily a function of a situation imposed on the client from without. An example of an inference coded as contextual would be: "That must be a stressful event in his life." Contextual inferences were further classified as initial, confirmatory, or disconfirmatory.

All data extracted from the clinician-participants' protocols in the "HEnAL" group and the "AEnHL" group were also coded according to the following *kinds* of inferences.

Living Arrangement: The "living arrangement" category represented any statement referring to where or how the client was thought to be living. For example, "the client must be living alone in an apartment," or "my guess is that she is living with a roommate."

<u>Presenting Problem</u>: The "presenting problem" category represented any statement referring to the client's stated presenting problem.

<u>Coping Strategies</u>: The "coping strategies" category represented any statement referring to the client's strategies for addressing problems (e.g., "she is avoiding that," or "she's in denial," or "it seems like she tries to please others.")

<u>Medical</u>: The "medical" category represented any statement referring to the client's medical/biological status.

<u>Psychological</u>: The "psychological" category represented any statement referring to the client's psychological state (e.g., "she has identity problems," "she has boundary issues," "she is self-conscious.")

<u>Affect</u>: The "affect" category represented any statement referring to the client's feelings (e.g., "she must be sad", or "she is very angry").

<u>Ethnicity</u>: The "ethnicity" category represented any statement referring to the client's cultural background.

<u>Values</u>: The "values" category represented any statement referring to the client's value system (e.g., she really wants to get married and have children.")

<u>Religion</u>: The "religion" category represented any statement referring to the client's religion.

<u>Family</u>: The "family" category represented any statement referring to the client's family history.

<u>Educational</u>: The "educational" category represented any statement referring to the client's educational history or status.

<u>Vocational</u>: The "vocational" category represented any statement referring to the client's vocational history or status.

Sport: The "sport" category represented any statement referring to the client's athletic activities.

Leisure: The "leisure" category represented any statement referring to the client's use of leisure time.

<u>Social Relationship</u>: The "social relationship" category represented any statement referring to the client's same-gender or other-gender social non-romantic relationships.

<u>Romantic Relationship</u>: The "romantic relationship" category represented any statement referring to the client's same-gender or other-gender romantic relationships.

<u>Sexual Relationship</u>: The "sexual relationship" category represented any statement referring to the client's same-gender or other-gender sexual relationships.

<u>Financial</u>: The "financial" category represented any statement referring to the client's current or past financial situation.

<u>Personality Traits</u>: The "personality traits" category represented any statement referring to the client's personality traits or characteristics (e.g., "she is a perfectionist," "she's intelligent," "she's determined.")

<u>Interests</u>: The "interests" category represented any statement referring to the client's interests (e.g., "she likes museums and cultural expositions").

Procedure

Counseling professionals were invited to participate in the study. All participants were treated in accordance with the "Ethical Principles of Psychologists" (American Psychological Association, 1992). Prior to beginning the study, all participants were asked to complete a Statement of Informed Consent (Appendix B). This statement informed them of their right to terminate their participation in the study at any time, and assured them of the anonymity and confidentiality of their responses.

All clinician-participants were presented with a series of practice tasks in order to familiarize them with the think-aloud procedure. Ericsson and Simon (1984) suggest that a practice, warm-up procedure assists participants in learning how to verbalize self-generated thoughts while performing a task (See Appendix F). Consistent with Goodin Waxman's (1991) procedure, the investigator freely interrupted participants in order to explain, clarify, and monitor participants' processing during the practice tasks.

Following the practice task, participants were presented with the casefile in written form, and asked to think aloud as they proceeded through the material. As recommended by Ericsson and Simon (1984), a list of brief reminders-toverbalize (e.g., keep talking) were kept at hand in order to ensure that clinicianparticipants continued thinking aloud and persisted in encoding their non-verbal

thoughts into verbal form (Appendix G). However, a concerted effort was made to keep this probing to a minimum in order to avoid the possibility that participants would generate more detailed responses by retrieving information from their longterm memory (Ericsson & Simon, 1984). According to Corcoran, Narayan, and Moreland (1988), accessing data from long-term memory may infringe on the here-and-now thought processes of the think-aloud methodology.

At various time while reading the casefile, clinician-participants were asked to provide an estimate of the client's overall level of functioning using the Global Assessment Scale or GAS. Depending on the group to which the clinicianparticipants were assigned, these estimates were solicited either twice or three times during the course of the session (see Table 7). More specifically, participants assigned to the groups with neutral client information early in the casefile and either the healthy or the ailing client information late in the casefile (i.e., "nHL" or "nAL") were asked for GAS ratings after reading the neutral material (i.e., Time 1) and a final time after reading the material presented late (i.e., Time 2). Those participants presented with healthy client information at the beginning of the casefile, followed by neutral client information, and then by ailing client information late in the casefile (i.e., "HEnAL") or ailing client information early, followed by neutral client information, followed by healthy client information late in the casefile (i.e., "AEnHL") were asked for ratings after each of the three

Table 7

n	HL nAL	. HEnA	L AEnHL	
,	n n	HE	AE	
Ti	me 1 Time	1 Time	1 Time 1	
]	HIL AL	, n	n	
Ti	me 2 Time	2 Time:	2 Time 2	
		AL	HL	
		Time	3 Time 3	

Relationship between Order of Presentation of Material and Time at which GAS Ratings were Collected

segments. That is, ratings were solicited after each presentation of hygiognomonic information, pathognomonic client information, and the neutral client information. To minimize possible transparency effects, the investigator appeared to ask the participants for their ratings at random points during the analysis of the casefile. These points, however, were predetermined, as described, for each group (see Appendix H for sample answer sheet).

Consistent with the study's intent to investigate "factors influencing clinical judgment," after completing the final set of ratings, clinician-participants were

asked to describe, as succinctly and concisely as possible, what they perceived the client's presenting problem to be, and what information in the casefile led them to their conclusion. At the time of each rating, clinician-participants were also asked to indicate how often they would arrange to see the client in therapy, estimate the total length of treatment they would recommend, and provide a prognosis for the client (Appendix H).

In order to compensate for the possible limits imposed by working memory (c.f., Arkes, 1981), clinician-participants were encouraged to refer to the case material while they proceeded through the study. Also, in the hope of maximizing their motivation to participate in the study, clinician-participants were offered the opportunity to compare their own responses with the results of the study.

Data Coding

All 40 audiotaped think-aloud sessions were transcribed. The transcription process was completed, during a one-month period, by the primary investigator and a research assistant hired solely to transcribe the taped think-aloud interviews. Raters

Two additional research assistants or "raters" were hired to segment and code the transcribed protocols. Neither had any prior experience with think-aloud methodology or casefile segmentation and coding procedures. The research assistants were trained in the segmenting and coding of the protocols through

individual meetings with the primary investigator. The training of the research assistants and the coding of the protocols took place over the course of 24 weeks.

Over the course of a 24-week period, the principal research assistant spent a total of 160 hours independently segmenting and coding the 20 casefiles used in this study, and an additional 74 hours re-coding the transcribed protocols with the primary investigator. Over the same time period the secondary research assistant spent a total of 24 hours with the primary investigator reviewing and doublecoding selected casefiles that were subsequently used to establish the inter-rater reliability of the coding process.

Training in the Segmenting and Coding Process

One-to-one meetings were scheduled to train the two raters in the segmenting of the transcribed protocols, and then in the coding of the inferential and judgmental categories.

The segmentation of the transcribed protocols required that all participant verbalizations be divided into the smallest number of words containing either an inference or a meaningful non-inference. While in most cases a segment was a complete sentence that communicated a complete thought, in some cases a segment was as short as one word. The training in the segmentation process was carried out on the 10 casefiles from the "nHL" group. Since these casefiles were

not used in the final data analysis, training raters on these casefiles did not contaminate ensuing data collection. Overall, segmenting the participant-generated protocols averaged 2 hours with the shortest taking 45 minutes and the longest 4 hours. The time it took to segment a protocol was related to its length. Furthermore, segmenting time decreased as rater experience in segmenting increased.

After the segmentation training was completed, training in the coding process was initiated. The training in the coding process occurred on the same 10 casefiles from the "nHL" group that were used for the segmenting process. Relative to coding, raters were first trained in the coding of the *type* of inferences, that is, whether the inferences generated by participants were dispositional, contextual, and initial, confirmatory, or disconfirmatory. Next, raters were trained in the coding of the *kind* of inference, that is, whether the inferences generated by participants related to the client's family history, a particular coping strategy, or a personality characteristic.

Individual meetings with each rater were scheduled after the raters had coded selected casefiles from the "nHL" group in their entirety. These meetings were held to review the items on which disagreements between the raters and the primary investigator occurred. In these meetings, the problematic items were

restudied with subsequent refinement and redefinition of the item and/or the items method of application.

As with segmenting, the time it took to code a casefile was related to the length of the casefile and the number of previously coded casefiles. That is to say, coding time decreased as experience in coding accrued. Overall, the coding of a transcribed protocol averaged 4 hours with the shortest taking 1 hour and the longest protocol taking 6 hours.

Reliability of Coding System

After the training period was complete, but before proceeding with the segmenting and the coding of the casefiles to be used as data in this study, a check on the reliability of the coding system was made on two protocols, selected randomly, by a person completely removed from the rating process. The double-coded ratings (i.e., the ratings made by the primary investigator and principal research assistant together) were compared item by item on this protocol with the ratings generated by the secondary rater, and a measure of reliability computed. Items or clinician-participant utterances on which disagreements occurred were restudied and, if necessary, a refinement or redefinition of the category and/or its method of application was attempted. Raters then coded a second protocol using the revised coding system, and a measure of reliability was computed. Once again, clinician-participant utterances on which disagreements between raters occurred

were restudied. Finally, raters recoded the second protocol using the revised coding system, and a measure of reliability was once again computed.

With reference to the data collected for the study itself, participant thinkaloud responses for the "HEnAL" group and the "AEnHL" group were segmented and coded.

The principal research assistant segmented and coded the 10 casefiles in the "HEnAL' group, and the 10 casefiles in the "AEnHL" group. Each of the 20 casefiles coded by the principal research assistant were then re-coded by the primary investigator and the said research assistant conjointly.

Plan of Data Analysis

I. Percent Agreement

To establish the interrater reliability of the coding system developed for this study, the percent agreement between the double-coded ratings (i.e., the ratings made by the primary investigator and principal rater together) were compared item by item on two protocols that had been coded by the secondary research assistant.

Interrater reliability was determined through a cross-tabulation. The crosstabulation showed the relationship between each of the two raters' ratings on each of the clinician-participant utterances (i.e., the percent agreement). The crosstabulation procedure helped identify those items or clinician-participant utterances on which disagreements between raters occurred, and that, as a result, needed to

be restudied. In this way, the cross-tabulation procedure assisted in refining or redefining classification categories.

II. <u>t-test</u>

The reader will recall that data for the "HEn" group and the "AEn" group were culled from the "HEnAL" and "AEnHL" groups respectively. More specifically, by soliciting ratings from participants in the "HEnAL" group after they read the hygiognomonic and neutral client information (i.e., "HEn"), data for the "HEn" presentation was collected. Similarly, data for the "AEn" group were culled from the "AEnHL" group by soliciting ratings from participants after they read the pathognomonic and neutral client information (i.e., "AEn").

In order to investigate the effect of the order of client information on clinical judgments, a <u>t</u>-test was performed on the dependent variable Global Assessment Scale (GAS) score obtained before and after the presentation of the ailing information in the "HEnAL" group (i.e., rating at time 2 and time 3 as indicated in Table 7). Similarly, a <u>t</u>-test was performed on the dependent variable Global Assessment Scale (GAS) score obtained before and after the presentation of the healthy information in the "AEnHL" group (i.e., rating at time 2 and time 3 as indicated Table 7).

III. <u>ANOVA</u>

In the current study, a number of different, unmatched clinicianparticipants, were randomly assigned to one of four groups. The groups differed by virtue of the order in which salient client information was presented to the participants. The purpose of this study was to evaluate the differences among the means of the groups on two classifications of dependent variables: Global Assessment Scale Score in Part I, and category of inference in Part II. The between-subjects, one-way analysis of variance is the statistical procedure of choice to evaluate differences among means of three or more groups to which subjects have been randomly assigned.

Part I of the current study, sought to investigate how the order of presentation of salient client information influenced a clinician's inferential processes implicating adjustment, anchoring, and adjustment mitigation. To that end, a series of one-way ANOVAs were performed on the dependent variable final Global Assessment Scale (GAS) score. The independent variable was group (i.e., nHL, nAL, HEnAL, AEnHL). The statistical goal of these ANOVAs was to test whether the final clinician-participant rating of Global Assessment Scale (GAS) varied as a function of the order of presentation of salient client information.

Part II of the current research study, explored how the order in which client information was presented to the clinician-participants affected the way in

which the client material was interpreted or subjected to further elaboration. More specifically, Part II sought to examine the impact that the presentation of contrasting sets of client information, in different orders, had on the category of inferences generated by the clinician-participants. Using the two groups of clinician-participants that were presented with identical sets of contrasting client information, albeit in different order (i.e., the "HEnAL" and "AEnHL" groups), a series of one-way ANOVAs were carried out to systematically investigate the relationship between the order of presentation of the client information and the category of inference generated, that is, the kind, the type, and the kind for each type of inference generated by the clinician-participants. Moreover, since all clinician-participants were presented with the same five segments of client information (i.e., introductory, healthy, ailing, neutral, and closing), an additional series of ANOVAs were performed to investigate whether the type, kind, and kind for each type of inferences generated by the clinician-participants for each segment of client information varied as a function of the group they were in. That is, a series of ANOVAs were performed to investigate whether the order in which client information was presented to participants impacted on the type of inference generated for each segment, the kind of inference generated for each segment, and the kind for each type of inference generated for each segment. These ANOVA's, all eight of which were exploratory in nature, are described below.

To investigate the relationship between order of presentation of client information and the *number* of inferences generated, a one-way ANOVA was performed on the dependent variable *number of inferences*. The independent variable was order of presentation of client information or group (i.e., "HEnAL" and "AEnHL"). The statistical goal of this ANOVA was to test whether the number of inferences that clinician-participants generated while reading the casefile, varied as a function of the group in which they were in.

A second one-way ANOVA was carried out to investigate the relationship between the order of presentation of client information and the *number of inferences generated for each segment* of client information (i.e., introductory, healthy, ailing, neutral, and closing). The independent variable was group (i.e., "HEnAL" and "AEnHL"). The statistical goal of this ANOVA was to test whether the *number of inferences generated for each segment* of client information varied as a function of the group in which the clinician-participants were in.

Third, to investigate the relationship between order of presentation of client information and the *type* of inference generated, a series of one-way ANOVAs were performed on the dependent variables: 1) number of non-inferences, 2) number of no-response, 3) number of paraphrases, 4) number of information requests, 5) number of initial contextual, 6) number of confirmatory contextual inferences, 7) number of disconfirmatory contextual inferences, 8) number of initial

dispositional inferences, 9) number of confirmatory dispositional inferences, 10) number of disconfirmatory dispositional inferences. The independent variable was group (i.e., "HEnAL" and "AEnHL"). The statistical goal of these ANOVAs was to test whether the *type* of inferences that clinician-participants generated while reading the casefile, varied as a function of the group in which they were in.

A fourth series of one-way ANOVAs was carried out to investigate the relationship between the order of presentation of client information and the *type of inference generated for each segment* of client information (i.e., introductory, healthy, ailing, neutral, and closing). The independent variable was group (i.e., "HEnAL" and "AEnHL"). The statistical goal of these ANOVAs was to test whether the *type of inference generated for each segment* of client information varied as a function of the group in which the clinician-participants were in.

A fifth series of one-way ANOVAs were carried out to investigate the relationship between order of presentation and the *kind* of inference generated. More specifically, the dependent variables were 1) Living Arrangement, 2) Presenting Problem, 3) Coping Strategies, 4) Medical, 5) Psychological, 6) Affect, 7) Ethnicity, 8) Values, 9) Religion, 10) Family, 11) Educational, 12 Vocational, 13) Sport, 14) Leisure, 15) Social relationship, 16) Romantic relationship, 17) Sexual relationship, 18) Financial, 19) Personality Traits, 20) Interests. The independent variable was group (i.e., "HEnAL" and "AEnHL"). The statistical

goal of these ANOVAs was to test whether the *kind* of inference that clinicianparticipants generated while reading the casefile, varied as a function of the group in which they were in.

A sixth series of one-way ANOVAs was carried out to investigate the relationship between the order of presentation of client information and the *kind of inference generated for each segment* of client information (i.e., introductory, healthy, ailing, neutral, and closing). The independent variable was group (i.e., "HEnAL" and "AEnHL"). The statistical goal of these ANOVAs was to test whether the *kind of inference generated for each segment* of client information varied as a function of the group in which the clinician-participants were in.

A seventh series of one-way ANOVAs were carried out to investigate the relationship between order of presentation of client information, and the *kind of inference generated for each type*. The dependent variables were combinations of the previously listed *types and kinds* of inferences. The independent variable was group (i.e., "HEnAL" and "AEnHL"). The statistical goal of these ANOVAs was to test whether the *kind for each type* of inference that clinician-participant generated while reading the casefile, varied as a function of the group in which they were in.

An eighth, and final series of one-way ANOVAs was carried out to investigate the relationship between the order of presentation of client information

and the *kind for each type of inference generated for each segment* of client information (i.e., introductory, healthy, ailing, neutral, and closing). The independent variable was group (i.e., "HEnAL" and "AEnHL"). The statistical goal of these ANOVAs was to test whether the *kind for each type of inference generated for each segment* of client information varied as a function of the group in which the clinician-participants were in.

Caveat emptor

The philosopher of science Hans Reichenbach differentiated two kinds of knowledge: knowledge derived in the *context of discovery* and knowledge derived in the *context of justification* (Borgen, 1992). The rationale for Part I of the current study was based on the clinical literature bearing on anchoring, adjustment, and adjustment mitigation, and as such, a number of hypotheses were established *a priori* to test and/or provide empirical support for the concepts that the hypotheses operationalized. Part I of the current study was "justificationist." Part II of the current study, on the other hand, embraced the context of discovery, and adopted an attitude of "let us see what turns out" (Dar, Serlin, & Omer, 1994, p. 75). The goal of Part II was description and discovery rather than testing and verification.

The nature of the subject matter of the current study, in combination with the blending of justificationist-based and discovery-based research goals potentiated concerns relative to statistical conclusion validity. For example, the use

of a small sample size in Part I, albeit necessary for the exhaustive application of the "think-aloud" methodology in Part II, raised concerns relative to parameters of statistical inference such as sampling error, power, alpha level, and Type I error. Similarly, the large number of analyses carried out in Part II, also threatened statistical conclusion validity. In keeping with these methodological issues, the results of the ANOVAs were interpreted with caution (See Appendix I for a discussion of how analyses could be performed using MANOVA procedures). The approach taken in this study was that when *statistical* significance was obtained, the *scientific* significance of the result was probed. The Discussion chapter provides a more detailed review of the statistical limitations of this study.

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CHAPTER IV: RESULTS

This chapter describes the results obtained in this study and is divided into six sections. The first section provides some general comments about the clinicianparticipant interview. The second section provides a report on the reliability of the coding scheme employed in the study. The third section describes in general terms the relationship between the fundamental attribution error and anchoring. The fourth section summarizes the effect that the presentation of sets of contrasting information (i.e., distinctive hygiognomonic versus distinctive pathognomonic client data) in different order had on the clinician-participant's ratings of the casefile client's overall level of functioning. The fifth section, synopsizes the effect of presenting sets of contrasting information (i.e., distinctive hygiognomonic versus distinctive pathognomonic client data) in different order on the type of clinician-participant utterances and inferences. The sixth section, presents the effect of presenting sets of contrasting information (i.e., distinctive hygiognomonic versus distinctive pathognomonic client data) in different order on the kind and kind for each type of clinician-participant utterances and inferences.

General Observations of Interviews

There seemed to be a highly satisfactory degree of co-operation on the part of the clinician-participants who read the casefiles, engaged in the "think-aloud" process while reading, and generated ratings relative to the client's overall level of

functioning. There was very little variability in the duration of the interviews. The longest interview which took 150 minutes, was with a very verbal participant exposed to the "AEnHL" casefile. On the other hand, the shortest interview lasted 15 minutes and was with a participant exposed to the "HEnAL" casefile. Otherwise all interviews averaged 90 minutes.

Reliability of Coding Scheme

A preliminary check on the reliability of the coding scheme was made on one entire casefile (Casefile # 401, See Table 8). Independent codings of each of the 293 coded utterances of the casefile by two research assistants were compared item by item. Items on which disagreements between raters frequently occurred were restudied with subsequent refinement and redefinition of the statement of the item and/or its method of application. Using the revised coding system, the raters then independently scored a second protocol (Casefile # 404) in its entirety. Independent codings of each of the 248 coded utterances of the second protocol were again compared item by item. Items on which disagreements between raters frequently occurred were once again restudied with subsequent refinement and redefinition of the statement of the item and/or its method of application. Using the revised coding system, the raters then independently scored the second protocol a second time in its entirety (Casefile # 404R).

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Percent Agreement Between Raters on Category of Inference Coded

Casefile 401	First set of ratings	66.55
Casefile 404	First set of ratings	72.98
Casefile 404R	Revised, second set of ratings	87.50

A high degree of consistency was found to exist between the raters' observations. The level of agreement between raters are summarized in Table 8. It is noteworthy that the agreement level between the two raters on the sets of utterances increased with each application of the revised criteria.

Over-all, these data show a high degree of reliability of objective criteria developed for the coding of specific categories of participant utterances. For the purpose of analyses, the conjoint ratings obtained of the primary investigator and the principal research assistant on each of the ten casefiles in the "HEnAL' group, and each of the ten casefiles in the "AEnHL" group were used. Relationship Between The Fundamental Attribution Error and Anchoring

In light of the types of inferences generated by the clinician-participants, the following results were obtained relative to the Fundamental Attribution Error. Based on attribution theory and the fundamental attribution error, it was expected in <u>Hypothesis 1</u> that clinicians would posit a greater number of dispositional inferences than they would contextual inferences. This hypothesis was supported. Clinician-participants did indeed generate significantly more dispositional inferences (M = 59.20) than they did contextual inferences (M = 21.75), <u>t</u> (19) = -7.17, <u>p</u> = 0.0001 (See Table 9 and 11).

In probing the relationship between the Fundamental Attribution Error and anchoring the question that was asked was: Is there a relationship between the type of inference generated (i.e., contextual or dispositional) and anchoring? That is, do clinicians show a tendency to anchor more on inferences that are of a contextual nature or do they show a predilection for inferences that are dispositional in nature? Given the leaning that clinicians have for selecting dispositional data, and the higher levels of inferentiality implicit in such data as distinguished from empirically observable contextual data, it was expected in <u>Hypothesis 2</u> that anchoring errors, that is, a greater number of confirmatory inferences, would be associated with previously generated dispositional inferences than with previously
Table 9

Table of Means and Standard Deviations for the Number of Contextual and Dispositional Inferences Overall

	Total	M	<u>SD</u>
Contextual	435	21.75	11.76
Dispositional	1184	59.20	25.72

Table 10

Table of Means and Standard Deviations for the Number of Confirmatory Contextual and Confirmatory Dispositional Inferences Overall

	Total	<u>M</u>	SD	
Confirmatory Contextual	110	5.50	4.65	
Confirmatory Dispositional	516	25.80	16.34	

Table 11

t-test for Total Number of Contextual and Dispositional Inferences

Overall and Total Number of Confirmatory Contextual and Confirmatory

Dispositional

					-		
	Ν	df	t	Prob			
Contextual vs Dispositional							
	20	19	-7.17	.0001			
Confirmatory Contextual vs Confirmatory Dispositional							
	20	19	-6.30	.0001			

generated contextual inferences. This hypothesis was supported. Clinicianparticipants did indeed confirm significantly more dispositional inferences $(\underline{M} = 25.80)$ than they did contextual inferences $(\underline{M} = 5.50)$, $\underline{t} (19) = -6.30$, $\underline{p} = 0.0001$ (See Table 10 and 11).

<u>Relationship between order of the presentation of client information and</u> participant's ratings of the casefile client's overall level of functioning

This section summarizes the results relative to the effect that the presentation of sets of contrasting information (i.e., distinctive hygiognomonic versus distinctive pathognomonic client data) had on the clinician-participant's ratings of the casefile client's overall level of functioning. Specifically, the relationship between anchoring, adjustment, and adjustment mitigation effects and order of client information is reviewed.

Anchoring

With regard to anchoring errors, the question that was asked was: Is there a relationship between the order of presentation of client information and anchoring, that is, do clinicians show a tendency to anchor on information that is presented early, regardless of whether it is healthy or pathological? Based on the results of Ellis, Robbins, Schult, Ladany, and Baker (1990), it was expected in <u>Hypothesis</u> <u>3A</u> that anchoring errors, as measured by higher ratings of client functioning, would be more likely when healthy information was presented early in the case

Table 12

Table of Means and Standard Deviations for the Dependent Variable Global Assessment Scale (GAS)

		Group 1 nHL	Group 2 nAL	Group 3 HEnAL	Group 4 AEnHL
Number of Participants		10	10	10	10
GAS at Time 1	<u>M</u>	60.00	63.40	70.10	57.70
	<u>SD</u>	8.58	6.95	6.71	5.01
GAS at Time 2	<u>M</u>	73.60	59.30	68.50	61.40
	<u>SD</u>	5.81	10.22	5.36	5.19
GAS at Time 3	<u>M</u>			71.40	69.20
	<u>SD</u>			9.78	8.16

material (i.e., "HEn") as compared to when healthy information was presented late (i.e., "nHL"), that is, HEn > nHL (where the ">" sign indicates more favorable ratings of client level of functioning). No significant difference was found in the global assessment scale ratings (GAS) of participants exposed to the "HEn" material ($\underline{M} = 68.5$) as compared to those exposed to the "nHL" material ($\underline{M} = 73.6$), $\underline{F}(1,18) = 4.15$, $\underline{p} = 0.056$ (Table 13 and Figure 1). Table 12 presents a summary of the means for the dependent variable GAS rating at Time 2 for each of the "nHL" and "nAL" groups, and GAS rating at Time 2 and Time 3 for each of the "HEnAL" and "AEnHL" groups.

Table 13

Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variable Global Assessment Scale (GAS)

						_
	df	SS	ms	F Ratio	F P ro b	
HEn vs nHL						
Order	1	130.05	130.05	4.15	0.056	
Error	18	562.90	31.27			
AEn vs nAL						
Order	1	22.05	22.05	0.33	0.570	
Error	18	1182.50	65.69			

* For group "HEn" and "AEn," the dependent variable is GAS at rating time 2. For Group "nHL" and "nAL," the dependent variable is GAS at rating time 2.

<u>Hypothesis 3B</u>. It was expected that anchoring errors, as evidenced by less favorable ratings of client functioning would be more likely when ailing information was presented early in the case material (i.e., "AEn") as compared to when ailing information was presented late in the casefile (i.e., "nAL"), that is, AEn < nAL (where the "<" sign represents less favorable ratings of client level of functioning). No significant difference was found in the GAS ratings of participants exposed to the "AEn" material ($\underline{M} = 61.4$) as compared to those of participants exposed to the "nAL" material ($\underline{M} = 59.3$), $\underline{F}(1,18) = 0.33$, $\underline{p} = 0.570$ (Table 13 and Figure 1).



Figure 1: Global Assessment Scale (GAS) Ratings at Time 1 and Time 2 for Participants in Groups "nHL," "nAL," "HEnAL," and "AEnHL"

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In summary, the presentation of identical sets of client information in different orders had little impact on clinician-participant ratings of the client's overall level of functioning (GAS). What happens when contrasting sets of client information are presented in the same casefile? That is, will the GAS scores of clinicians presented with discrepant information in various segments of a casefile be affected by the valence and order of the client material?

In keeping with the *anchoring hypothesis* which states that initial estimates of a phenomenon bias subsequent estimates towards the initial value, groups of clinicians with different starting points and similar end points should have significantly different final judgments.

<u>Hypothesis 4A</u>. It was expected that groups of clinicians exposed to neutral information early and ailing late (i.e., "nAL") would arrive at less favorable ratings of level client functioning as compared to those who were exposed to healthy information early and ailing late (i.e., "HEnAL"), that is, nAL < HEnAL. As expected, final participant ratings of the client's overall level of functioning were less severe when the participants were initially been exposed to healthy client material, "HEnAL" ($\underline{M} = 71.4$), as compared to when they were exposed to neutral information early and ailing late, "nAL" ($\underline{M} = 59.3$) and $\underline{F}(1,18) = 7.31$, $\underline{p} = 0.014$ (See Table 14 and Figure 2).

Table 14

Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variable Global Assessment Scale (GAS)*

	df	SS	ms	F Ratio	F Prob
nAL vs HEnAl	Ĺ				
Order	1	732.05	732.05	7.31	0.014
Error	18	1800.00	100.02		
nHL vs AEnHl	Ĺ				
Order	1	96.80	96.80	1.92	0.182
Error	18	904.00	50.22		
HEnAL vs AEr	nHL				
Order	1	24.20	24.20	0.29	0.592
Error	18	1460.00	81.11		
nHL vs HEnAI					
Order	1	24.20	24.20	0.37	0.548
Error	18	1164.80	64.71		
nAL vs AEnHL					
Order	1	490.05	490.05	5.72	0.028
Error	18	1539.70	85.53		
nHL vs nAL					
Order	1	1022.45	1022.45	14.78	0.001
Error	1 8	1244.50	69.13		

* For group "nHL" and "nAL," the dependent variable is GAS at rating time 2. For Group "HEnAL" and "AEnHL," the dependent variable is GAS at time 3.



Figure 2: Global Assessment Scale (GAS) ratings for Participants in Groups "nHL," "nAL," "HEnAL" and "AEnHL"

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<u>Hypothesis 4B</u>. It was expected that clinicians exposed to neutral early and healthy late (i.e., "nHL") would arrive at higher ratings of level client functioning as compared to those who were exposed to ailing early and healthy late (i.e., "AEnHL"), that is , nHL > AEnHL. While final GAS ratings of participants in the "nHL" group ($\underline{M} = 73.6$) were slightly stronger than those in the "AEnHL" group ($\underline{M} = 69.2$), the difference was not significant, F(1,18) = 1.92, p = 0.182 (See Table 14 and Figure 2).

If anchoring errors are operative, that is, if initial estimates of a phenomenon bias subsequent estimates, then in <u>Hypothesis 4C</u> it was expected that clinicians exposed to healthy information early and ailing late (i.e., "HEnAL"), would arrive at higher ratings of level client functioning as compared to those who were exposed to ailing early and healthy late (i.e., "AEnHL"), that is, HEnAL > AEnHL. While the clinicians in HEnAL ($\underline{M} = 71.4$) did have more favorable ratings than those in AEnHL ($\underline{M} = 69.2$), the difference was not significant, $\underline{F}(1,18) = 0.29$, $\underline{p} = 0.592$ (See Table 14 and Figure 2).

<u>Adjustment</u>

In keeping with the *adjustment hypothesis*, clinicians who are exposed to identical information, albeit in differing orders, and who appropriately adjust their judgments, should arrive at similar final judgments. In the event that clinicians do adjust their judgments, then in <u>Hypothesis 4D</u> it was expected that clinicians

exposed to healthy information early and ailing information late (i.e., "HEnAL"), would assign comparable ratings of level of client functioning as compared to clinicians exposed to ailing early and healthy late (i.e., "AEnHL"), that is HEnAL \cong AEnHL. This was the case. There was no significant difference in the GAS ratings for clinicians in the "HEnAL" group ($\underline{M} = 71.4$) as compared to those in the "AEnHL" group ($\underline{M} = 69.2$), $\underline{F}(1,18) = 0.29$, $\underline{p} = 0.592$ (See Table 14 and Figure 2).

Also in keeping with the adjustment hypothesis, groups of clinicians who appropriately adjust their judgments when exposed to client information with different starting points and similar end points should have equivalent final judgments. As such, in <u>Hypothesis 4E</u> it was expected that clinicians exposed to neutral information early and ailing late (i.e., "nAL"), would arrive at similar ratings of level client functioning as compared to those exposed to healthy information early and ailing late (i.e., "HEnAL"), that is, nAL \cong HEnAL. They did not. Clinician rating of level client functioning appeared to be tempered by the earlier presented healthy information, that is, nAL ($\underline{M} = 59.3$) and HEnAL ($\underline{M} = 71.4$), $\underline{F}(1,18) = 7.31$, $\underline{p} = 0.014$ (See Table 14 and Figure 2). Consistent with hypothesis 4A, this finding could be taken as evidence of anchoring on the healthy information. Moreover, GAS ratings taken following the presentation of the "HEn" information ($\underline{M} = 68.5$) and after the presentation of the ailing information in the "HEnAL" group ($\underline{M} = 71.4$) showed failure to accommodate the subsequently presented ailing information, $\underline{t}(9) = -0.99$, $\underline{p} = 0.348$ (See Table 15 and Figure 2). That is, rather than temper their ratings of health after reading the ailing information, participants in the "HEnAL" group actually increased their ratings of the client's perceived level of functioning after reading the ailing information. Additional evidence for an apparent tendency on the part of participants to anchor on healthy information is suggested by the fact that the ailing information presented late appeared to have little impact on participant ratings of the client pathology. That is, there was no significant difference between the final ratings of level of client functioning of participants in the "HEnAL" group ($\underline{M} = 71.4$) and those in the "nHL" group, ($\underline{M} = 73.6$), $\underline{F}(1,18) = 0.37$, $\underline{p} = 0.548$ (See Table 14 and Figure 2). When healthy and ailing client information are presented together, the earlier presented healthy information.

Still more evidence supporting the impact of the healthy information comes from a comparison of ratings between the final ratings of level of client functioning for participants in the "AEnHL" group ($\underline{M} = 69.2$) and those in the "nAL" group ($\underline{M} = 59.3$). The presentation of healthy information presented late dramatically increased the participants evaluation of the client's level of functioning,

Table 15

t-test for the Effects of Order of Presentation of Client Information and Dependent Variable Global Assessment Scale (GAS)*

والمتي ويريد الانبي المتعادي بالانتجاب بيريسي والمتحاف والتقاد الأعدادي والمتعا				
	Ν	df	t	Prob
HEn vs HEnAL	10	9	-0.99	0.348
AEn vs AEnHL	10	9	-3.84	0.004

* For group "HEn" and "AEn," the dependent variable is GAS at rating time 2. For Group "HEnAL" and "AEnHL," the dependent variable is GAS at time 3.

<u>F(1,18) = 5.72, p = 0.028 (See Table 14 and Figure 2)</u>. Participants in the "AEnHL" group appropriately adjusted, in a favorable direction, their ratings of the client's level of functioning based on the subsequently presented healthy information.

Also in keeping with the adjustment hypothesis, groups of clinicians who appropriately adjust their judgments when exposed to client information with different starting points and similar end points should have equivalent final judgments. As such, in <u>Hypothesis 4F</u> it was expected that clinicians exposed to neutral information early and healthy late (i.e., "nHL") would arrive at similar ratings of level client functioning as compared to those exposed to ailing early and healthy late (i.e., "AEnHL"), that is, nHL \cong AEnHL. While the final ratings of client level of functioning for participants in the "nHL" group were slightly stronger ($\underline{M} = 73.6$) than those of participants in the "AEnHL" group ($\underline{M} = 69.2$), the difference was not significant, $\underline{F}(1,18) = 1.92$, $\underline{p} = 0.182$ (See Table 14 and Figure 2).

Relative to the adjustment hypothesis, clinicians exposed to identical information early and incompatible information late, and who appropriately adjust their judgments, ought to arrive at discrepant final judgments. Thus, in <u>Hypothesis 4G</u> it was expected that clinicians exposed to neutral client information early and healthy late (i.e., "nHL") would assign more favorable ratings of level client functioning as compared to those exposed to neutral client information early and ailing late (i.e., "nAL"), that is, nHL > nAL. Indeed, the final ratings of level of client functioning of participants in the "nHL" group (M = 73.6) were stronger than those in the "nAL" group (M = 59.3) and the difference was significant, F(1,18) = 14.78, p = 0.001 (See Table 14 and Figure 2).

Adjustment Mitigation

When contrasting sets of client information are presented in the same casefile, is there a relationship between the order of presentation of the hygiognomonic and pathognomonic client information and adjustment mitigation? Specifically, will the clinician's final rating of level client functioning be tempered by the initial set of client data? In the event that clinicians do not commit anchoring or adjustment mitigation errors, then clinicians exposed to healthy information early and ailing information late (i.e., "HEnAL"), should assign comparable ratings of level of client functioning as compared to clinicians exposed to ailing early and healthy late (i.e., "AEnHL"), that is HEnAL \cong AEnHL. This was the case. There was no significant difference in the final ratings of level client functioning for clinicians in the "HEnAL" group (M = 71.4) as compared to those in the "AEnHL" group (M = 69.2), F(1,18) = 0.29, p = 0.592 (See Table 14 and Figure 2).

In the event that adjustment mitigation is operative, clinicians' ensuing ratings will be tempered by the preceding client data. For example, as in the case of adjustment, clinicians exposed to healthy client information early and neutral information late (i.e., "HEn") should arrive at higher ratings of level client functioning than clinicians exposed to healthy client information early and ailing information late (i.e., "HEnAL"), that is HEn > HEnAL. In the case that adjustment mitigation was operative, it was expected in <u>Hypothesis 5A</u> that the level of client functioning ratings of clinicians exposed to the entire "HEnAL" casefile would not only be less favorable than that of clinicians exposed to "HEn" (i.e., HEn > HEnAL), but also healthier than that of clinicians exposed to "nAL." That is, HEn > HEnAL > nAL, where (HEn > HEnAL) represents adjustment and (HEnAL > nAL) represents anchoring. It was expected that the adjustment effect of the second set of client information in the HEnAL presentation (i.e., nAL) would be mitigated by an anchoring bias towards the first set (HEn). This hypothesis was not supported. In fact, participants in the "HEnAL" group rated the client's overall level of functioning as slightly more favorable ($\underline{M} = 71.4$) than participants exposed to "HEn" ($\underline{M} = 68.5$). This difference, however was not significant, <u>t</u> (9) = -0.99, <u>p</u> = 0.348 (See Table 15 and Figure 2).

In the case of adjustment, clinicians exposed to ailing information early and healthy late (i.e., "AEnHL") should assign higher ratings of level client functioning relative to clinicians exposed to ailing information early and neutral late (i.e., "AEn"), (i.e., AEn < AEnHL). Should adjustment mitigation be operative, however, the final GAS ratings of clinicians in the "AEnHL" group would be less favorable than those of clinicians in the "nHL" group (AEnHL < nHL). Therefore, in <u>Hypothesis 5B</u> it was expected that the level of client functioning ratings for clinicians in the "AEnHL" group would not only be more favorable than that of clinicians in the "AEnHL" group (i.e., AEn < AEnHL), but would also be less favorable than that of clinicians in the "nHL" group. That is, AEn < AEnHL < nHL, where (AEn < AEnHL) represents adjustment and (AEnHL < nHL) represents anchoring. The adjustment effect of the second set of client information in the AEnHL presentation (i.e., the healthy client information presented later) would be mitigated by the anchoring bias towards the first set (the ailing client information presented early). The initial ailing client data would moderate ensuing judgments concerning psychological health, and subsequent healthy client data will tone down final judgments relative to the client's overall level of functioning. Hypothesis 5B was partially supported. While, participant ratings of the client's overall level of functioning for participants reading the entire AEnHL casefile were significantly more favorable ($\underline{M} = 69.2$) than those exposed to the AEn material ($\underline{M} = 61.4$), \underline{t} (9) = -3.84, $\underline{p} = 0.004$ (See Table 15 and Figure 2), and while the overall level of functioning ratings made by participants exposed to AEnHL were also less favorable than those exposed to nHL ($\underline{M} = 73.6$), this later difference was not significant, $\underline{F}(1,18) = 1.93$, $\underline{p} < 0.182$ (Table 14 and Figure 2).

Relationship between order of the presentation of client information and the type of inference generated by clinician-participants

This section, synopsizes the effect of presenting sets of contrasting information (i.e., distinctive hygiognomonic versus distinctive pathognomonic client data) on the *type* of utterances and inferences generated by clinician-participant in each of the "HEnAL" group and the "AEnHL" group.

The questions related to the *type of inference* generated by clinicianparticipants (i.e., dispositional or contextual, confirmatory or disconfirmatory) inferences were as follows:

- 1. Does the relative frequency of inferences vary as a function of the order of presentation of client information (i.e., group)?
- 3. Does the relative frequency of confirmatory inferences vary as a function of the order of presentation of client information (i.e., group)?
- 4. Does the relative frequency of disconfirmatory inferences vary as a function of the order of presentation of client information (i.e., group)?
- 5. Does the relative frequency of contextual inferences vary as a function of the order of presentation of client information (i.e., group)?
- 6. Does the relative frequency of dispositional inferences vary as a function of the order of presentation of client information (i.e., group)?
- 7. Does the relative frequency of initial contextual inferences vary as a function of the order of presentation of client information (i.e., group)?
- 8. Does the relative frequency of confirmatory contextual inferences vary as a function of the order of presentation of client information (i.e., group)?
- 9. Does the relative frequency of disconfirmatory contextual inferences vary as a function of the order of presentation of client information (i.e., group)?
- 10. Does the relative frequency of initial dispositional inferences vary as a function of the order of presentation of client information (i.e., group)?
- 11. Does the relative frequency of confirmatory dispositional inferences vary as a function of the order of presentation of client information (i.e., group)?

12. Does the relative frequency of disconfirmatory dispositional inferences vary as a function of the order of presentation of client information (i.e., group)?

Number of Inferences

<u>Question one</u>. Question one is stated in the null form as follows: there is no significant difference in the frequency of the total or overall number of inferences posited by the clinician-participants in the two groups.

When the overall frequency of inferences is examined, the results indicate no significant difference for group, "HEnAL" (M = 74.2), "AEnHL" (M = 87.7), $\underline{F}(1,18) = 0.58$, $\underline{p} = 0.4546$ (See Table 17, and Figures 3 and 4). However, when the frequency of inferences is examined by segment, the results indicate significant differences for group for the introductory, neutral, ailing and closing segments.

Table 16 summarizes the means for the number of inferences generated by each group by segment of information.

Introductory Segment

While reading the introductory segment, participants in the "HEnAL" group generated significantly more inferences ($\underline{M} = 24.9$) than did participants in the "AEnHL" group ($\underline{M} = 9.5$), $\underline{F}(1,18) = 12.11$, $\underline{p} = 0.002$ (See Table 17).

Neutral Segment

While reading the neutral segment, participants in the "AEnHL" group

Table 16

Table of Means and Standard Deviations for the Number of Inferences Generated by Segment by Order of Presentation of Client Information

	Gro	oup 3	Gro	up 4		
	HE	HEnAL		nHL		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>		
Introductory Segment	24.90	10.63	9.50	9.10		
Neutral Segment	7.00	7.20	30.90	9.13		
Closing Segment	17.10	11.53	7.50	7.17		
Healthy Segment	16.00	5.31	18.30	13.43		
Ailing Segment	9.20	5.20	21.50	16.26		
TOTAL (overall)	74.20	26.39	87.70	49.23		

generated significantly more inferences ($\underline{M} = 30.9$) than did the participants in the "HEnAL" group ($\underline{M} = 7.0$), $\underline{F}(1,18) = 42.24$, $\underline{p} = 0.001$ (See Table 17).

Closing Segment

While reading the closing segment, participants in the "HEnAL" group generated significantly more inferences ($\underline{M} = 17.1$) than did participants in the "AEnHL" group ($\underline{M} = 7.5$), $\underline{F}(1,18) = 4.99$, $\underline{p} = 0.038$ (See Table 17).

Table 17

Analysis of Variance for the Effects of Order of Presentation of Client Information and the Dependent Variable Number of Inferences

	df	SS	ms	F Ratio	F Prob
Introductory Segr	nent				
Between Group	1	1185.80	1185.80	12.11	0.002
Error	18	1761.40	97.85		
Neutral Segment					
Between Group	1	2856.05	2856.05	42.24	0.001
Error	18	1216.90	67.60		
Closing Segment					
Between Group	1	460.80	460.80	4.99	0.038
Error	18	1659.40			
Healthy Segment					
Between Group	1	26.45	26.45	0.25	0.620
Error	18	18 76 .10	104.22		
Ailing Segment					
Between Group	1	756.45	756.45	5.19	0.035
Error	18	2622.10	145.67		
Total (Overall)					
Between Group	1	911.25	911.25	0.58	0.454
Error	18	28081.70	1560.09		



Figure 3: Types of Inferences for Participants in Group 3 "HEnAL"

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Figure 4: Types of Inferences for Participants in Group 4 "AEnHL"

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Healthy Segment

There was no significant difference in the number of inferences generated by participants in the "HEnAL" group ($\underline{M} = 16.0$) and the "AEnHL" group ($\underline{M} = 18.3$) while reading the healthy segment, $\underline{F}(1,18) = 0.25$, $\underline{p} = 0.620$ (See Table 17).

Ailing Segment

While reading the ailing segment, participants in the "AEnHL" group generated significantly more inferences ($\underline{M} = 21.5$), than did the participants who read the ailing material presented late (i.e., "HEnAL") ($\underline{M} = 9.2$),

 $\underline{F}(1,18) = 5.19, \underline{p} = 0.0351$ (See Table 17).

Initial Inferences

<u>Question two</u>. Question two is stated in the null form as follows: there is no significant difference in the number of initial inferences posited by the clinician-participants in the two groups. Table 18 summarizes the means for the number of *types* of inferences generated by each group.

When the number of initial inferences is examined, the results indicate no significant difference for group, $\underline{F}(1,18) = 0.009$, $\underline{p} = 0.922$, See Table 19 and and Figures 5 and 6). Thus, the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which initial inferences are posited.

Table 18

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Table of Means	and	Standard	Deviations	for the	Type of	Inference	Generated

	Group 3		Gro	up 4
	HE	nAL	AE	nHL
	<u>M</u>	<u>SD</u>	M	<u>SD</u>
Type				
Initial	48.00	13.44	48.70	18.06
Confirmatory	25.00	14.01	37.60	22.28
Disconfirmatory	1.20	1.40	1.40	1.90
Contextual	21.80	10.80	21.70	13.25
Initial Contextual	17.40	7.60	14.80	9.16
Confirmatory Contextual	4.20	3.19	6.80	5.63
Disconfirmatory Contextual	0.20	0.42	0.10	0.32
Dispositional	52.40	24.73	66.00	26.12
Initial Dispositional	30.60	10.02	33.90	10.32
Confirmatory Dispositional	20.80	14.15	30.80	17.57
Disconfirmatory Dispositional	1.00	1.33	1.30	1.83

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Table 19

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Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variable Type of Inference

	df	SS	ms	F Ratio	F Prob
Initial					
Between Group	1	2.45	2.45	0.009	0.922
Error	18	4560.10	253.33		
Confirmatory					
Between Group	1	793.80	793.80	2.29	0.147
Error	18	6236.40	346.46		
Disconfirmatory					
Between Group	1	0.20	0.20	0.07	0.791
Error	18	50.00	2.77		
Contextual					
Between Group	1	0.05	0.05	0.0003	0.985
Error	18	2629.70	3.88		
Dispositional					
Between Group	1	924.80	924.80	1.42	0.247
Error	18	11648.40	647.13		



Figure 5: Types of Inferences for Participants in Group 3 "HEnAL"



Figure 6: Types of Inferences for Participants in Group 4 "AEnHL"

Confirmatory Inferences

<u>Question three</u>. Question three is stated in the null form as follows: there is no significant difference in the number of confirmatory inferences posited by the clinician-participants in the two groups.

When the number of confirmatory inferences is examined, the results indicate no significant difference for group, $\underline{F}(1,18) = 2.29$, $\underline{p} = 0.147$ (See Table 19 and Figures 5 and 6). Thus, the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which confirmatory inferences are posited.

Disconfirmatory Inferences

<u>Question four</u>. Question four is stated in the null form as follows: there is no significant difference in the number of disconfirmatory inferences posited by the clinician-participants in the two groups.

When the number of disconfirmatory inferences is examined, the results indicate no significant difference for group, F(1,18) = 0.07, p = 0.791 (See Table 19 and Figures 5 and 6). Thus the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which disconfirmatory inferences are posited.

Contextual Inferences

<u>Question five</u>. Question five stated in the null form as follows: there is no significant difference in the number of contextual inferences posited by the clinician-participants in the two groups.

When the number of contextual inferences is examined, the results indicate no significant difference for group, $\underline{F}(1,18) = 0.0003$, $\underline{p} = 0.985$,

(See Table 19 and Figures 7 and 8). Thus, the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which contextual inferences are posited.

Dispositional Inferences

<u>Question six</u>. Question six stated in the null form as follows: there is no significant difference in the number of dispositional inferences posited by the clinician-participants in the two groups.

When the number of dispositional inferences is examined, the results indicate no significant difference for group, $\underline{F}(1,18) = 1.42$, $\underline{p} = 0.247$ (See Table 19 and Figures 7 and 8). Thus, the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which dispositional inferences are posited.





Figure 7: Number of Attributional Inferences for Participants in Group 3 "HEnAL"





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Contextual

Dispositional

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Initial Contextual Inferences

<u>Question seven</u>. Question seven stated in the null form as follows: there is no significant difference in the number of initial contextual inferences posited by the clinician-participants in the two groups.

When the number of initial contextual inferences is examined, the results indicate no significant difference for group, $\underline{F}(1,18) = 0.47$, $\underline{p} = 0.498$ (See Table 20 and Figures 3 and 4). Thus, the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which initial contextual inferences are posited.

Confirmatory Contextual Inferences

<u>Question eight</u>. Question eight stated in the null form as follows: there is no significant difference in the number of confirmatory contextual inferences posited by the clinician-participants in the two groups.

When the number of confirmatory contextual inferences is examined, the results indicate no significant difference for group, $\underline{F}(1,18) = 1.61$, $\underline{p} = 0.220$ (See Table 20 and Figures 3 and 4). Thus, the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which confirmatory contextual inferences are posited.

Table 20

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Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variable Type of Inference

	df	SS	ms	F Ratio	F Prob
Initial Contextual					
Between Group	1	33.80	33.80	0.47	0.498
Error	18	1276.00	70.88		
Confirmatory Cont	extual				
Between Group	1	33.80	33.80	1.61	0.220
Error	18	377.20	20.95		
Disconfirmatory Co	ntextua	1			
Between Group	1	0.05	0.05	0.36	0.556
Error	18	2.50	0.13		
Initial Dispositional					
Between Group	1	54.45	54.45	0.52	0.477
Error	18	1863.30	103.51		
Confirmatory Dispo	sitional				
Between Group	1	500.00	500.00	1.96	0.177
Error	18	4579.20	254.40		
Disconfirmatory Dis	position	al			
Between Group	1	0.45	0.45	0.17	0.680
Епог	18	46.10	2.56		

Disconfirmatory Contextual Inferences

<u>Question nine</u>. Question nine stated in the null form as follows: there is no significant difference in the number of disconfirmatory contextual inferences posited by the clinician-participants in the two groups.

When the number of disconfirmatory contextual inferences is examined, the results indicate no significant difference for group, $\underline{F}(1,18) = 0.36$, $\underline{p} = 0.556$ (See Table 20 and Figures 3 and 4). Thus, the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which disconfirmatory contextual inferences are posited.

Initial Dispositional Inferences

<u>Question ten</u>. Question ten stated in the null form as follows: there is no significant difference in the number of initial dispositional inferences posited by the clinician-participants in the two groups.

When the number of initial dispositional inferences is examined, the results indicate no significant difference for group, $\underline{F}(1,18) = 0.52$, $\underline{p} = 0.477$ (See Table 20 and Figures 3 and 4). Thus, the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which initial dispositional inferences are posited.

Initial Dispositional Inferences

<u>Question eleven</u>. Question eleven stated in the null form as follows: there is no significant difference in the number of confirmatory dispositional inferences posited by the clinician-participants in the two groups.

When the number of confirmatory dispositional inferences is examined, the results indicate no significant difference for group, $\underline{F}(1,18) = 1.96$, $\underline{p} = 0.177$ (See Table 20 and Figures 3 and 4). Thus, the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which confirmatory dispositional inferences are posited.

Disconfirmatory Dispositional Inferences

<u>Question twelve</u>. Question twelve stated in the null form as follows: there is no significant difference in the number of disconfirmatory dispositional inferences posited by the clinician-participants in the two groups.

When the number of disconfirmatory dispositional inferences is examined, the results indicate no significant difference for group, $\underline{F}(1,18) = 0.17$, $\underline{p} = 0.680$ (See Table 20 and Figures 3 and 4). Thus, the order of presentation of the material does not seem to influence the frequency, in absolute numbers, with which disconfirmatory dispositional inferences are posited.

In summary, no significant differences were found between the "HEnAL" group and the "AEnHL" group relative to the *type* of utterances and inferences

generated by clinician-participant following the presentation of contrasting sets of client information (i.e., distinctive hygiognomonic versus distinctive pathognomonic client data).

Relationship between order of the presentation of client information and kind, and the kind for each type of inference generated by clinician-participants by segment

The following section of the current research project is entirely exploratory in nature. In order to investigate the effect that the order of presentation of client information has on the nature of the inferences generated by clinician-participants, the data collected from the think-aloud protocols was subjected to a very large number of analyses. Only significant differences between groups are reported.

This section presents the results relative to the *kind* and the *kind for each type* of clinician-participant utterances and inferences generated by clinicianparticipants in each of the "HEnAL" group and the "AEnHL" group while reading each of the five casefile segments (i.e., introductory segment, neutral segment, closing segment, healthy segment and ailing segment).

Introductory Segment

Table 21 summarizes the means of the *Type* and *Kind for each Type* of inference generated by participants in response to the Introductory Segment.
Table 21

<u>Table of Means and Standard Deviations for Type, and Kind for each Type of</u> <u>Inference by Order of Presentation of Client Information for the Introductory</u> <u>Segment</u>

	HEnAL		AEnHL		
	<u>M</u>	<u>SD</u>	M	<u>SD</u>	
Type					
Non-Inference	5.40	2.25	3.00	2.36	
Contextual (Overall)	10.10	7.30	1.20	1.69	
Kind for each Type					
Contextual - Family History	9.80	7.31	0.20	0.42	
Initial - Personality	0.00	0.00	0.40	0.52	

<u>Non-Inference</u>. While reading the introductory segment (i.e., segment describing the client's presenting problem), participants in the "HEnAL" group generated significantly more non-inferences (M = 5.4) than did participants in the "AEnHL" group (M = 3.0), F(1,18) = 4.87, p = 0.04 (Table 22).

<u>Contextual Inferences</u>. While reading the introductory segment, participants in the "HEnAL" group generated significantly more contextual inferences ($\underline{M} = 10.10$), than did the participants in the "AEnHL" group ($\underline{M} = 1.2$), $\underline{F}(1,18) = 14.13$, $\underline{p} = 0.0014$ (Table 22).

Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variables Type, and Kind for each Type of Inference for the Introductory Segment

	df	SS	ms	F Ratio	F Prob
Type					
Non-inference					
Between Group	1	28.80	28.80	4.87	0.04
Error	18	106.00	5.91		
Contextual (Overall)					
Between Group	1	396.05	396.05	14.13	0.0014
Error	18	504.50	27.03		
Kind for each Type					
Contextual - Family H	Iistory				
Between Group	1	460.80	460.80	1 7 .17	0.0006
Error	18	483.20	26.84		
Initial - Personality					
Between Group	1	0.80	0.80	6.00	0.0248
Error	18	2.40	0.13		

<u>Contextual Inferences - Family History</u>. While reading the introductory segment, participants in the "HEnAL" group generated significantly more contextual inferences relative to the client's family history ($\underline{M} = 9.8$), than did the participants in the "AEnHL" group ($\underline{M} = 0.2$), $\underline{F}(1, 18) = 17.16$, $\underline{p} = 0.0006$ (Table 22).

<u>Initial Inferences - Personality</u>. While reading the introductory segment, participants in the "AEnHL" group generated significantly more initial inferences relative to the client's personality ($\underline{M} = 0.4$) than did participants in the "HEnAL" group ($\underline{M} = 0.0$), $\underline{F}(1,18) = 6.00$, $\underline{p} = 0.0248$ (Table 22).

Neutral Segment

Table 23 summarizes the means of the Kind, Type and Kind for each Type of *inference* generated by participants in response to the Neutral Segment.

Inferences - Psychological. When the neutral material followed the ailing material (i.e., "AEnHL") participants reading the neutral segment generated significantly more inferences relative to the client's psychological status ($\underline{M} = 4.0$) than did the participants who read the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 2.0$) (Table 19), $\underline{F}(1,18) = 5.14$, $\underline{p} = 0.035$ (Table 24).

Table 23

Table of Means and Standard Deviations for Kind, Type, and Kind for each Type of Inference by Order of Presentation of Client Information for the Neutral Segment

	HEnAL		AEnHL	
	M	<u>SD</u>	<u>M</u>	<u>SD</u>
Kind				
Psychological	2.00	1.70	4.00	2.21
Affect	2.40	2.91	6.30	4.03
<u>Type</u>				
Contextual (Overall)	1.70	4.03	12.20	6.11
Kind for each Type				
Initial - Affect	1.60	1.65	3.30	1.57
Contextual - Family History	1.40	4.09	10.60	6.79
Dispositional - Affect	2.30	2.79	6.00	4.14
Initial Dispositional - Affect	1.50	1.51	3.00	1.63
Confirmatory - Psychological	0.90	1.20	2.50	1.58
Confirmatory - Affect	0.80	1.40	3.00	2.90
Confirmatory Dispositional - Affect	0.80	1.40	3.00	2.90
Confirmatory Dispositional Psychological	0.90	1.20	2.40	1.71

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Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variable Kind of Inference for the Neutral Segment

	df	SS	ms	F Ratio	F Prob	
<u>Kind</u>						
Psychological						
Between Group	1	20.00	20.00	5.14	0.035	
Error	18	70.00	3.88			
Affect						
Between Group	1	76.05	76.05	6.15	0.023	
Error	18	222.50	12.36			

Inferences - Affect. When the neutral material followed the ailing material (i.e., "AEnHL"), participants reading the neutral segment generated significantly more inferences relative to the client's affect ($\underline{M} = 6.3$) than did the participants who read the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 2.4$), $\underline{F}(1,18) = 6.15$, $\underline{p} = 0.023$ (Table 24).

<u>Contextual (Overall)</u>. When the neutral material followed the ailing material (i.e., "AEnHL"), participants reading the neutral segment generated significantly more contextual inferences overall (M = 12.20), than did the participants who read

Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variable Type of Inference for the Neutral Segment

	df	SS	ms	F Ratio	F Prob	
Type						
Contextual (Overall)						
Between Group	1	551.25	551.25	20.59	0.0003	
Error	18	4 8 31.70	26.76			

the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 1.7$), <u>F(1,18) = 20.59, p = 0.0003</u> (Table 25).

Initial Inferences - Affect. When the neutral material followed the ailing material (i.e., "AEnHL"), participants reading the neutral segment generated significantly more initial inferences relative to the client's affect ($\underline{M} = 3.3$), than did the participants who read the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 1.6$), $\underline{F}(1,18) = 5.59$, $\underline{p} = 0.0295$ (Table 26).

<u>Contextual Inferences - Family History</u>. When the neutral material followed the ailing material (i.e., "AEnHL"), participants reading the neutral segment generated significantly more contextual inferences relative to the client's family history ($\underline{M} = 10.60$) than did the participants who read the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 1.4$), $\underline{F}(1,18) = 13.48$, $\underline{p} = 0.0017$ (Table 26).

<u>Dispositional Inferences - Affect</u>. When the neutral material followed the ailing material (i.e., "AEnHL"), participants reading the neutral segment generated significantly more dispositional inferences relative to the client's affect ($\underline{M} = 6.0$), than did the participants who read the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 2.3$), $\underline{F}(1, 18) = 5.49$, $\underline{p} = 0.0307$ (Table 25).

Initial Dispositional Inferences - Affect. When the neutral material followed the ailing material (i.e., "AEnHL"), participants reading the neutral segment generated significantly more initial dispositional inferences relative to the client's affect ($\underline{M} = 3.0$), than did the participants who read the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 1.5$), $\underline{F}(1,18) = 4.55$, $\underline{p} = 0.0469$ (Table 26).

<u>Confirmatory Inferences - Psychological</u>. When the neutral material followed the ailing material (i.e., "AEnHL"), participants reading the neutral segment generated significantly more confirmatory inferences relative to the client's psychological status ($\underline{M} = 2.5$) than did the participants who read the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 0.9$), <u>F(1,18) = 6.50</u>, $\underline{p} = 0.0201$ (Table 26).

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Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variable Kind for each Type of Inference for the Neutral Segment

	df	55	ms	F Ratio	F Proh
Vind for each Type	49	55		1 10000	1 1700
Kind for each Type					
Initial - Affect					
Between Group	1	14.45	14.45	5.59	0.0295
Error	18	46.50	2.58		
Contextual - Family	History				
Between Group	1	423.20	423.20	13.48	0.0017
Error	18	564.80	31.38		
Dispositional - Affect					
Between Group	1	68.45	6 8 .45	5.49	0.0307
Error	18	224.10	12.45		
nitial Dispositional	- Affect				
Between Group	1	11.25	11.25	4.50	0.0469
Error	18	44.50	2.47		
Confirmatory - Psych	ological				
Between Group	1	12.80	12.80	6.51	0.0201
Error	18	35.40	1.97		
Confirmatory - Affect	t				
Between Group	1	24.20	24.20	4.65	0.0447
Error	18	93 .60	5.20		
Confirmatory Disposi	tional - A	ffect			
Between Group	1	24.20	24.20	4.65	0.0447
Error	18	93.60	5.20		
Confirmatory Disposi	tional - P	sychological	l		
Between Group	1	11.25	11.25	5.15	0.0357
r	10	20.20	0 10		

<u>Confirmatory Inferences - Affect</u>. When the neutral material followed the ailing material (i.e., "AEnHL"), participants reading the neutral segment generated significantly more confirmatory inferences relative to the client's affect ($\underline{M} = 3.0$) than did the participants who read the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 0.8$), $\underline{F}(1,18) = 4.65$, $\underline{p} = 0.0447$ (Table 26).

<u>Confirmatory Dispositional Inferences - Affect</u>. When the neutral material followed the ailing material (i.e., "AEnHL"), participants reading the neutral segment generated significantly more confirmatory dispositional inferences relative to the client's affect ($\underline{M} = 3.0$), than did the participants who read the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 0.8$), $\underline{F}(1,18) = 4.65$, $\underline{p} = 0.0447$ (Table 26).

<u>Confirmatory Dispositional Inferences - Psychological</u>. When the neutral material followed the ailing material (i.e., "AEnHL"), participants reading the neutral segment generated significantly more confirmatory dispositional inferences relative to the client's psychological status ($\underline{M} = 2.4$), than did the participants who read the neutral material following the healthy material (i.e., "HEnAL") ($\underline{M} = 0.9$), $\underline{F}(1,18) = 5.15$, $\underline{p} = 0.035$ (Table 26).

Closing Segment

Table 27 summarizes the means of the *Type* and *Kind for each Type of inference* generated by participants in response to the Closing Segment.

Table 27

<u>Table of Means and Standard Deviations for Type, and Kind for each Type of</u> <u>Inference by Order of Presentation of Client Information for the Closing Segment</u>

	HE	InAL	AEnHL		
	M	<u>SD</u>	<u>M</u>	<u>SD</u>	
Type					
Information Request	1.20	1.81	4.40	3.34	
Contextual (Overall)	3.40	2.84	0.70	1.25	
Kind for each Type					
Contextual - Family History	2.50	2.68	0.00	0. 00	

<u>Information Request</u>. Participants in the "AEnHL" group generated significantly more questions while reading the closing segment ($\underline{M} = 4.4$), than did participants in the "HEnAL" group ($\underline{M} = 1.2$), $\underline{F}(1,18) = 7.08$, $\underline{p} = 0.0159$ (Table 28).

<u>Contextual (Overall)</u>. Participants in the "HEnAL" group generated significantly more contextual inferences ($\underline{M} = 3.4$) while reading the closing segment, than did participants in the "AEnHL" group ($\underline{M} = 0.7$), <u>F</u>(1,18) = 7.58, $\underline{p} = 0.0131$ (Table 28).

Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variables Type, and Kind for each Type of Inference for the Closing Segment

	df	SS	ms	F Ratio	F Prob
Type					
Information Request					
Between Group	1	51.20	51.20	7.09	0. 0159
Error	18	130.00	7.22		
Contextual (Overall)					
Between Group	1	36.45	36.45	7.59	0.0131
Error	18	86.50	4.81		
Kind for each Type					
Contextual - Family H	listory				
Between Group	1	31.25	31.25	8.73	0.0085
Error	18	64.50	3.58		

<u>Contextual Inferences - Family History</u>. Participants in the "HEnAL" group generated significantly more contextual inferences relative to the client's family history while reading the closing segment ($\underline{M} = 2.5$), than did participants in the "AEnHL" group ($\underline{M} = 0.0$), $\underline{F}(1,18) = 8.72$, $\underline{p} = 0.0085$ (Table 28).

Healthy Segment

Table 29 summarizes the means of the Kind, Type and Kind for each Type of *inference* generated by participants in response to the Healthy Segment.

<u>Inferences - Romantic Relationships</u>. When the healthy material was presented early (i.e., "HEnAL"), participants reading the healthy segment generated significantly more inferences relative to the client's romantic relationships ($\underline{M} = 1.4$) than did the participants who read the healthy material presented late (i.e., "AEnHL") ($\underline{M} = 0.2$), <u>F</u>(1,18) = 8.10, p = 0.01 (Table 30).

<u>Initial Inferences - Romantic Relationships</u>. When the healthy material was presented early (i.e., "HEnAL"), participants reading the healthy segment generated significantly more initial inferences relative to the client's romantic relationships ($\underline{M} = 0.9$), than did the participants who read the healthy material presented late (i.e., "AEnHL") ($\underline{M} = 0.1$), $\underline{F}(1,18) = 5.87$, $\underline{p} = 0.0261$ (Table 30).

<u>Dispositional Inferences - Vocational</u>. When the healthy material was presented late (i.e., "AEnHL"), participants reading the healthy segment generated significantly more dispositional inferences relative to the client's vocational history ($\underline{M} = 0.4$), than did the participants who read the healthy material presented early (i.e., "HEnAL") ($\underline{M} = 0.0$), <u>F(1,18) = 6.00</u>, <u>p = 0.0248</u> (Table 30).

Table of Means and Standard Deviations for Kind, and Kind for each Type of Inference by Order of Presentation of Client Information for the Healthy Segment

	HEnAL		AEnHL	
	M	<u>SD</u>	<u>M</u>	<u>SD</u>
Kind				
Romantic Relationships	1.40	1.17	0.20	0.63
Kind for each Type				
Initial - Romantic Relationships	0.90	0.99	0.10	0.32
Dispositional - Vocational	0.00	0.00	0.40	0.52
Dispositional - Romantic Relationships	1.20	0.92	0.20	0.63
Initial Dispositional - Romantic Relationships	0.70	0.82	0.10	0.32
Contextual - Romantic Relationships	0.60	0.70	0.00	0.00

Dispositional Inferences - Romantic Relationships. When the healthy material was presented early (i.e., "HEnAL"), participants reading the healthy segment generated significantly more dispositional inferences relative to the client's romantic relationships ($\underline{M} = 1.2$), than did the participants who read the healthy material presented late (i.e., "AEnHL") ($\underline{M} = 0.2$), $\underline{F}(1,18) = 8.04$, $\underline{p} = 0.011$ (Table 30).

Table 30

Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variables Kind, and Kind for each Type of Inference for the Healthy Segment

	df	SS	ms	F Ratio	F Prob
<u>Kind</u>					
Romantic Relationsh	ips				
Between Group	1	7.20	7.20	8.10	0.01
Error	18	16.00	0.88		
Kind for each Type					
Initial - Romantic Re	lationship	S			
Between Group	1	3.20	3.20	5.88	0.0261
Error	18	9.80	0.54		
Dispositional - Vocat	ional				
Between Group	1	0.80	0.80	6.00	0.0248
Error	18	2.40	0.13		
Dispositional - Roma	ntic Relati	onships			
Between Group	1	5.00	5.00	8.04	0.011
Error	18	11.20	0.62		
Initial Dispositional -	Romantic	Relationsh	ips		
Between Group	1	1.80	1.80	4.63	0.045
Error	18	7.00	0.38		
Contextual - Romanti	c Relation	ships			
Between Group	1	1.80	1.80	7.36	0.0142
Error	18	4.40	0.24		

Initial Dispositional Inferences - Romantic Relationships. When the healthy material was presented early (i.e., "HEnAL"), participants reading the healthy segment generated significantly more initial dispositional inferences relative to the client's romantic relationships ($\underline{M} = 0.7$) (Table 19), than did the participants who read the healthy material presented late (i.e., "HEnAL") ($\underline{M} = 0.1$), $\underline{F}(1,18) = 4.63$, $\underline{p} = 0.045$ (Table 30).

<u>Contextual Inferences - Romantic Relationships</u>. When the healthy material was presented early (i.e., "HEnAL"), participants reading the healthy segment generated significantly more contextual inferences relative to the client's romantic relationships ($\underline{M} = 0.6$) than did the participants who read the healthy material presented late (i.e., "AEnHL") ($\underline{M} = 0.0$), $\underline{F}(1,18) = 7.36$, $\underline{p} = 0.0142$ (Table 30). <u>Ailing Segment</u>

Table 31 summarizes the means of the *Type* of inferences generated by participants in response to the ailing segment.

<u>Dispositional Inferences</u>. When the ailing material was presented early (i.e., "AEnHL"), participants reading the ailing segment generated significantly more dispositional inferences ($\underline{M} = 17.1$), than did the participants who read the ailing material presented early (i.e., "HEnAL") ($\underline{M} = 11.2$), $\underline{F}(1,18) = 4.78$, $\underline{p} = 0.0421$ (Table 32).

Table of Means and Standard Deviations for Type of Inference by Order of Presentation of Client Information for the Ailing Segment

	HEnAL		AEnHL		
	M	<u>SD</u>	M	<u>SD</u>	
<u>Type</u>					
Dispositional (Overall)	11.20	4.37	17.10	7.32	

Table 32

Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variable Type of Inference for the Ailing Segment

	df	SS	ms	F Ratio	F Prob
<u>Type</u>					
Dispositional (Overall)					
Between Group	1	174.05	174.05	4.79	0.0421
Error	18	654.50	36.36		

Table 33

Table of Means and Standard Deviations for Kind for each Type of Inference by Order of Presentation of Client Information

	HEnAL		AEnHL	
	<u>M</u>	<u>SD</u>	M	<u>SD</u>
Kind for each Type				
Initial - Romantic Relationships	4.70	1.42	2.50	2.12
Dispositional - Affect	4.80	4.78	10.10	6.22
Dispositional - Romantic Relationships	5.90	2.60	2.90	2.18
Initial Dispositional - Romantic Relationships		1.23	2.20	1.55

<u>Overall</u>

Table 33 summarizes the means of the Type and Kind for each Type of inference generated by participants overall.

<u>Initial Inferences - Romantic Relationships</u>. Participants in the "HEnAL" group generated significantly more initial inferences relative to the client's romantic relationships ($\underline{M} = 4.7$), than did the participants in the "AEnHL" group ($\underline{M} = 2.5$), $\underline{F}(1,18) = 7.43$, $\underline{p} = 0.0139$ (Table 34).

<u>Dispositional Inferences - Affect</u>. Participants in the "AEnHL" group generated significantly more dispositional inferences relative to the client's affect

Analysis of Variance for the Effects of Order of Presentation of Client Information and Dependent Variable Kind for each Type of Inference

						_		
	df	SS	ms	F Ratio	F Prob			
Kind for each Type								
Initial - Romantic Relationships								
Between Group	1	24.20	24.20	7.43	0.0139			
Error	18	58.60	3.26					
Dispositional - Affect								
Between Group	1	140.45	140.45	4.56	0.0467			
Error	18	554.50	30.81					
Dispositional - Romantic Relationships								
Between Group	1	45.00	45.00	7.80	0.0120			
Error	18	103. 8 0	5.77					
Initial Dispositional - Romantic Relationships								
Between Group	1	12.80	12.80	6.55	0.0197			
Error	18	35.20	1.96					

($\underline{M} = 10.10$) than did the participants in the "HEnAL" group ($\underline{M} = 4.8$),

 $\underline{F}(1,18) = 4.55, \underline{p} = 0.0467$ (Table 34).

Dispositional Inferences - Romantic Relationships. Participants in the "HEnAL" group generated significantly more dispositional inferences relative to the client's romantic relationships ($\underline{M} = 5.9$) than did the participants in the "AEnHL" group ($\underline{M} = 2.9$), $\underline{F}(1,18) = 7.80$, $\underline{p} = 0.0120$ (Table 34).

Initial Dispositional Inferences - Romantic Relationships. Participants in the "HEnAL" group generated significantly more initial dispositional inferences relative to the client's romantic relationships ($\underline{M} = 3.8$), than did the participants in the "AEnHL" group ($\underline{M} = 2.2$), $\underline{F}(1,18) = 6.54$, $\underline{p} = 0.0197$ (Table 34).

In summary, participants in the "HEnAL" group made more non-inferences when reading the introductory segment, made more contextual inferences while reading the introductory segment and the closing segment, and generated more contextual family inferences while reading the introductory segment and the closing segment. Participants in the "HEnAL" group generated more initial inferences relative to the client's romantic relationships, generated more dispositional inferences relative to the client's romantic relationships, and generated more initial dispositional inferences relative to the client's romantic relationships. Moreover, participants in the "HEnAL" group, while reading the healthy information, generated more inferences relative to the client's romantic relationships, more initial inferences relative to the client's romantic relationships, more initial inferences relative to the client's romantic relationships, more initial inferences relative to the client's romantic relationships, more initial inferences relative to the client's romantic relationships, more initial inferences relative to the client's romantic relationships, more contextual inferences relative to the client's romantic relationships, more dispositional inferences relative to the client's romantic relationships, more inferences relative to the client's romantic relationships, and more initial dispositional inferences relative to the client's romantic relationships.

Participants in the "AEnHL" group asked more questions in the closing segment, made more contextual inferences while reading the neutral information and made more dispositional inferences while reading the ailing material. Participants in this group made more initial inferences relative to the client's personality while reading the introductory segment, and overall generated more dispositional inferences relative to the client's affect. When reading the neutral material, participants in the "AEnHL" group generated more inferences relative to the client's psychological status and affect, generated more initial inferences relative to the client's affect, and confirmed more inferences relative to the client's psychological status and affect. Also while reading the neutral material, participants in this group generated more dispositional inferences relative to the client's affect, made more initial dispositional inferences relative to the client's affect and confirmed more dispositional inference relative to the client's psychological status and affect. Finally, participants in the "AEnHL" group generated more contextual family history inferences while reading the neutral material.

CHAPTER V: DISCUSSION

The purpose of the present study was to further our understanding of the process by which clinicians arrived at their problem formulations. As such, the first aim of the project was to determine how the order of presentation of salient client information influenced a clinician's formation of judgments about a client. Specifically, inferential processes implicating *adjustment, anchoring*, and *adjustment mitigation* were examined. A second focus of the study was the investigation of the relationship between the fundamental attribution error and the anchoring effect. A third and final objective of the investigation was the appraisal of which sets of client material are extracted from a case history, given attentive reading, and interpreted or subjected to further elaboration.

To achieve these goals, the study examined the effect that the presentation of sets of contrasting information (i.e., distinctive hygiognomonic versus distinctive pathognomonic client data) in different orders had on the clinician-participant's ratings of a casefile client's overall level of functioning. Additionally, the clinical inferences that these clinician-participants generated relative to the casefile client data were distinguished according to their *type* (i.e., whether the inferences were contextual or dispositional, and confirmatory or disconfirmatory in nature), and their *kind* (i.e., the category of client information that the inference related to, for example, the client's family or vocational history).

Two renditions of a casefile were used in the study. The first rendition had two versions, one that described a hypothetical client in hygiognomonic terms late in the casefile, and the other describing the same client in pathognomonic terms late in the casefile. The second rendition also had two versions. The stimulus material in one version of the second rendition was hygiognomonic in nature in the beginning of the casefile, and pathognomonic in nature towards the end. The alternate version of the second rendition included duplicate client information except that the sequence of the hygiognomonic and pathognomonic material was inverted; that is, pathognomonic client information was presented in the beginning of the casefile and the hygiognomonic information towards the end. All other information about the client was identical in the four conditions and was divided into three additional segments. An introductory segment described the age, ethnicity, living condition, and presenting problem of the client; a neutral segment portrayed the client's family history, and a third, *closing segment* described the client's social, leisure, medical, and religious history.

Anchoring and Adjustment

When participants were presented with identical sets of information in different orders, that is neutral information together with either hygiognomonic or pathognomonic information early or late (e.g., "HEn" or "nHL" or "AEn" or "nAL") there was consistent support for the adjustment hypothesis. Clinicians consistently adjusted their clinical judgments to be congruous with the new,

additional information concerning the client. For example, there was no significant difference in the casefile client's perceived level of functioning, as measured by the Global Assessment Scale (GAS), for clinicians exposed to healthy early or healthy late (i.e., "HEn"($\underline{M} = 68.5$) \equiv "nHL" ($\underline{M} = 73.6$), $\underline{F}(1,18) = 4.15$, $\underline{p} = 0.056$, See Table 13 and Figure 1) or clinicians exposed to ailing early or ailing late (i.e., "AEn" ($\underline{M} = 61.4$) \cong "nAL" ($\underline{M} = 59.3$), $\underline{F}(1,18) = 0.33$, $\underline{p} = 0.570$, See Table 13 and Figure 1). Similarly, there was no significant difference in the ratings of the client's perceived level of functioning for participants exposed to healthy information early and ailing information late as compared to participants exposed to ailing information early and healthy information late (i.e., "HEnAL" ($\underline{M} = 71.4$) \cong "AEnHL" ($\underline{M} = 69.2$), $\underline{F}(1,18) = 0.29$, $\underline{p} = 0.592$, See Table 14 and Figure 2). Consistent with what could be expected according to the adjustment hypothesis, subsequently presented information about a client is assimilated and judgments concerning the client are modified or "adjusted" accordingly.

While this study provided support for the adjustment process in those conditions when participants were presented with identical sets of information in different orders, this was not always the case when participants were presented with contrasting sets of information in different order. That is, when participants were exposed to hygiognomonic information either early or late, together with pathognomonic information either early or late, participant ratings of the client's perceived level of functioning differed significantly depending on the order in which the case material was presented. Clinicians were inclined to anchor on the hygiognomonic information, particularly when it was presented early.

The results of this study suggest that the earlier presented healthy client information tempers clinician assessment of subsequently presented ailing client information. For example, participants exposed to healthy information early and ailing information late rated the client as more healthy than subjects who were exposed to ailing late (i.e., "HEnAL"($\underline{M} = 71.4$) > "nAL" ($\underline{M} = 59.3$), $\underline{F}(1,18) = 7.31$, $\underline{p} = 0.014$, See Table 14). The earlier presented healthy client information tempered the impact of the subsequently presented ailing client information. The anchoring potency of the healthy material presented early was such that clinicians did not adjust their initially healthy perceptions of the client after being presented with and reading new contrasting, pathognomonic client information.

Healthy information presented late also had an impact. Participants exposed to ailing information early and healthy information late rated the client's overall level of functioning as being more healthy than participants who were only exposed to ailing client information late (i.e., "AEnHL" (M = 69.2) > "nAL" $(\underline{M} = 59.3), \underline{F}(1, 18) = 5.72, \underline{p} = 0.028$, See Table 14 and Figure 2). Moreover, participants exposed to ailing information early and healthy late rated the client as significantly more healthy than participants exposed to only the ailing information early (i.e., "AEnHL" ($\underline{M} = 69.2$) > "AEn" ($\underline{M} = 61.4$), $\underline{t}(9) = -3.84, \underline{p} = 0.004$, See Table 15). Pairing healthy client information with ailing client information brings about an improvement in clinician ratings of the client's overall level of functioning. This effect is consistent with what would be expected according to the adjustment hypothesis wherein subsequently presented client information is assimilated and judgments concerning the client are modified or "adjusted" accordingly.

In contrast to the impact that healthy information had on subsequent ratings of the client's perceived level of functioning, the presentation of ailing information had little effect on participant ratings of client overall level of functioning. For instance, there was no significant difference in the ratings of participants exposed to ailing information early and healthy information late as compared to participants exposed to healthy late (i.e., "AEnHL"($\underline{M} = 69.2$) \equiv "nHL" ($\underline{M} = 73.6$), $\underline{F}(1, 18) = 1.92$, $\underline{p} = 0.182$, See Table 14 and Figure 2). The ailing client information presented early, did not temper the clinician ratings of the client's overall level of functioning. Similarly, the presentation of ailing late had little impact. There was no significant difference in ratings of client overall functioning for participants exposed to healthy information late as compared to participants exposed to healthy information early and ailing information late (i.e., "nHL" ($\underline{M} = 73.6$) \cong "HEnAL" ($\underline{M} = 71.4$), $\underline{F}(1,18) = 0.37$, $\underline{p} = 0.548$, See Table 14 and Figure 2). The influence of the healthy material is such that clinicians fail to accommodate the subsequently presented conflicting, pathognomonic client information into their judgments concerning the client. Prior to discussing the implications of the above, relative to *adjustment* and *anchoring*, this study's conclusions concerning *adjustment mitigation* will be reviewed.

Adjustment Mitigation

This current study provided indeterminate support for the *adjustment mitigation* hypothesis as described by Ellis, Robbins, Schult, Ladany, and Banker (1990). Adjustment mitigation refers to the instance in which the degree of "adjustment" exhibited by a clinician's ratings of a client's perceived level of functioning is "mitigated" by an anchoring bias towards earlier presented client data.

For example, in the present study, in the case of adjustment mitigation, it was expected that ratings of the client's overall level of functioning for clinicians exposed to "HEnAL" would not only be less favorable than that of clinicians exposed to "HEn" (i.e., "HEn" > "HEnAL"), but as common sense would suggest, also more favorable than that of clinicians exposed to "nAL." That is, "HEn" >

"HEnAL" > "nAL", where ("HEn" > "HEnAL") represents adjustment and ("HEnAL" > "nAL") represents anchoring. The adjustment effect of the second set of client information in the "HEnAL" presentation (i.e., "AL") would be mitigated by an anchoring bias towards the first set ("HE"). The adjustment mitigation hypothesis was not supported. Participants in the "HEnAL" group failed to adjust, in the downward direction, their ratings of client level of functioning after being presented with ailing client information (i.e., "HEn" (M = 68.5) \cong "HEnAL" (M = 71.4), t(9) = -0.99, p = 0.348, See Table 15 and Figure 2). The highly influential impact of the earlier presented healthy client information effectively preempted any adjustment effect for the subsequently presented ailing client information in the "HEnAL" presentation. As discussed earlier, the fact that ratings of the client's overall level of functioning of participants exposed to the "HEnAL" group were significantly more favorable than those exposed to the "nAL" group suggested an anchoring bias in favor of the healthy client information (i.e., "HEnAL" ($\underline{M} = 71.4$) > "nAL" ($\underline{M} = 59.3$), $\underline{F}(1,18) = 7.31$, $\underline{p} = 0.014$, See Table 14 and Figure 2).

In the case that adjustment mitigation was operative for clinicians exposed to the "AEnHL" casefile, it was expected that ratings of the client's perceived level of functioning would not only be less favorable than those of clinicians exposed to

the healthy late casefile ("AEnHL" < "nHL"), but also less favorable than that of clinicians exposed to "nHL." That is, "AEn" < "AEnHL" < "nHL", where ("AEn" < "AEnHL") represents adjustment and ("AEnHL" < "nHL") represents anchoring. In this instance of adjustment mitigation, the "adjustment" effect of the second set of client information in the "AEnHL" presentation (i.e., the healthy client information presented late) is "mitigated" by the anchoring bias towards the first set (i.e., the ailing client information presented early). The adjustment mitigation hypothesis was not supported. While ratings of the client's overall level of functioning for participants reading the "AEnHL" casefile were significantly more favorable than those exposed to "AEn." as expected in the case of adjustment (i.e., "AEnHL" ($\underline{M} = 69.2$) > "AEn" ($\underline{M} = 61.4$), $\underline{t}(9) = -3.84$, p = 0.004, See Table 15), ratings of the client's overall level of functioning for participants exposed to "AEnHL" were not significantly less favorable than those exposed to "nHL," as would be expected in the case of anchoring (i.e., "AEnHL" (M = 69.2) \cong "nHL" (M = 73.6), F(1.18) = 1.92, p = 0.182, See Table 14

and Figure 2). Once again, the patterns of results highlighted the influence that the presentation of healthy material had on the clinician-participants, and the lack of prejudice that these clinicians seemed to entertain for conflicting, pathognomonic client information. What can be concluded from these results is that anchoring

errors seem to be associated with the early presentation of salient hygiognomonic information.

These results provide a new twist to the Friedlander and Stockman (1983) query relative to the differential impact that the valence (positive or negative) of client information can have on a clinician's susceptibility to the anchoring bias. Friedlander and Stockman wondered whether clinicians were differentially sensitive to highly distinctive information that is positive (i.e., hygiognomonic) as opposed to negative (i.e., pathognomonic) when making sequential judgments about a client. The authors suggested that while anchoring under both conditions would attest to the pervasiveness of this inferential bias, anchoring only with salient positive information presented early would indicate that clinicians were more sensitive to hygiognomonic data in casting judgments. The present study's finding that anchoring errors were associated with the early presentation of salient hygiognomonic information suggests that clinicians disregard maladaptive information in cases where a client is not initially seen as severely disturbed.

This study's finding that the presentation of ailing information late had little impact on clinician-participant assessment of the earlier presented healthy information is inconsistent with those of Levin (1984) who failed to find a significant relationship between valence of material and anchoring. These results also contrast with those of Pain and Sharpley (1988) who reported that

participants altered their assessment of "good" material after reading "bad" material. Similarly, in a subsequent study, Pain and Sharpley (1989) concluded that "previous bad information overshadows good information" (p. 6).

A multiplicity of interpretations arise from these findings. These include the *weltanschauung* of counselling psychologists, possible participant sensitivity to the casefile material used in the study, and a role for various patterns of information-processing. Each of these interpretations will be now be considered.

According to Howard (1992), one of the core values of counselling psychology, and a preferred approach to viewing human problems for members of this specialty, is "growth and development (rather than pathology and remediation)" (p. 423). A clinical application for this view is the well-known lesson to "build on strengths." Perhaps the cognitive schemas of the counselling psychology clinicians in the current study operated in such a way as to uphold this principle.

Cognitive structures serve as a kind of "executive processor" holding the "blueprints" for thinking, feeling, and behaving (c.f., Meichenbaum & Gilmore, 1984). These structures are enduring characteristics of a person's cognitive organization, and are organized representations of prior experience, packaged in the form of schemas that contain silent assumptions or premises, bits of

information and conclusions. Schemas function as templates allowing a person to screen, code, and assess the full range of internal and external stimuli and to decide on a subsequent course of action (c.f., Kovacs & Beck, 1978).

Cognitive structures, then, help guide and control one's attention. According to Taylor and Crocker (1981) schemas enable the perceiver to identify stimuli quickly, chunk an appropriate unit, fill in information missing from the configuration of stimuli, and select a strategy for obtaining further information, solving a problem, or reaching a goal. As such, schemas serve both encoding and representational functions as well as interpretative and inferential functions.

Counselling psychology's paradigmatic emphasis on growth and development may account for the clinicians in this study having selectively attended to the hygiognomonic information in making their clinical judgments. The selective attention to healthy input suggests a possible bias, since the client's ailing symptomatology both past and present appeared to have been overlooked or at least insufficiently integrated into a problem formulation. The failure to accommodate the subsequently presented ailing information in the healthy information early and ailing information late presentation (i.e., "HEnAL") may suggest an inclination to "build on strengths," that have been established to be present, rather than give confounding attention to the subsequently presented ailing information. Meanwhile, the incorporation of the healthy data in the ailing information early and healthy information late (i.e., "AEnHL") may also suggest a tendency among the participants of this study to be looking for and "building on strengths." The presentation of healthy client information following disconcerting ailing information tempered the clinicians' assessment of client pathology. Perhaps different subsamples of the psychology profession may well show different levels of these effects. This proposal can only be explored by replicating the study with samples of clinicians from other training paths (i.e., social work, clinical psychology, and psychiatry).

The suggestion that the counselling psychologists in this study demonstrated a schematic bias emphasizing growth and development is reminiscent of Kuhn's (1970) proposal that scientific paradigms control and screen information that challenge a particular perspective, expectancy, or understanding. Like schemas, these paradigms operate at an automatic or unconscious level. The scientist is often unaware of the manner in which their paradigms guide and influence their perception of the world and their behavior.

Examples of such implicit unconscious processes are not limited to the domains of psychology. Harman (cited in Meichenbaum & Gilmore, 1984) has described anthropological examples of people from one tribe having a different subjective "reality" or consensual belief system by means of which they perceive the world differently than do members of another tribe. Each tribe's belief system

is validated by experience, and this is necessarily subjective. Belief systems shape perceptions and they in turn contribute to the validation process. The tribe's constellation of implicit beliefs, with accompanying expectations, serves as a framework for perceiving and evaluating the world.

An alternative interpretation relative to the appropriate adjustment that occurred when ailing information was presented early and healthy late relates to the sensitivity and familiarity that female clinicians may harbor for the type of ailing information presented in the casefile, that is, anorexia.

According to Ellis et al., anorexia is widely recognized as a disorder that almost exclusively affects women. Over the last several years, eating disorders such as anorexia and bulimia have figured prominently in the *zeitgeist* of conditions affecting women (Patton, 1992; Hoek, 1993). It seems reasonable to argue that anorexia is familiar and salient to female clinicians. Recall that Tversky and Kahneman (1974) described anchoring as one of several heuristics used by persons to reduce complex judgments to simpler tasks. One possible explanation for the apparent impartiality of the participants to the anorexia information is that anorexia was not unfamiliar to the female participants and, therefore, required less judgment under uncertainty. Perhaps particular topics, such as anorexia, are already simple tasks and lend themselves to the use of heuristics (i.e., simple rules of thumb). There is anecdotal evidence for the proposed familiarity with anorexia

among some of the female participants in this study. To illustrate, a number of participants made inferences or generated queries relative to whether or not the casefile client suffered from borderline personality disorder or addictive personality disorder. Both diagnoses have been associated with eating disorders in the literature (Lobel, 1992; Koepp, Schildbach, Schmager, & Rohner, 1993). Furthermore, other participants wondered whether the client had a history of substance abuse, or was a "survivor" of childhood sexual abuse. Both of these issues have also been reported to be associated with appetite disorders such as anorexia (Wheeler & Schmitz, 1992; Holderness, Brooks, & Warren, 1994).

Future research should examine this proposal by investigating the occurrence of the anchoring effect with case material that varies along a dimension of familiarity, complexity, and severity (Richards & Wierzbicki, 1990). For example, given the neoteric attention bestowed upon incest and sexual abuse in the etiology of eating disorders (Lobel, 1992; Wheeler & Schmitz, 1992), perhaps these types of client data would generate a more solemn response among female clinicians. Again, only replication with different types of case material will clarify the extent to which the content of the casefile itself influenced this study's findings.

The results of this study may also be interpreted through the informationprocessing perspective outlined by both Friedlander and Stockman (1983) and Levin (1984) to explain their own results. The reader will recall that these authors proposed that the presence or absence of anchoring errors might depend on the degree of distinctiveness, or consistency, between the salient information and the diagnostic schemata represented by the initial judgments. Since schemas select and organize incoming information, then schemas carry with them the potential to bias the encoding of new data that are inconsistent with the preexisting schema. The greater the inconsistency, the greater the tendency not to encode the ensuing information. On the other hand, salient information that is consistent with the initial schema or diagnosis is more likely to be processed, ensuring that the subsequent judgments are sufficiently adjusted.

The ailing information presented late in the "HEnAL" casefile, while familiar to the clinician-participants, was not only highly distinctive and inconsistent with the initial healthy impression of the client, but also inconsistent with the diagnostic schema or knowledge structures relative to the doctrine of "growth and development." This may have resulted in the anorexia information not being encoded, and the subsequent failure on the part of participants to adjust their initial judgments of the client. When the casefile was presented in the reverse order, that is "AEnHL", the familiarity with the anorexia information together with the ensuing healthy data being consistent with the diagnostic schemata relative to "growth and development," resulted in participants accommodating their impressions of the subsequently presented and well-received healthy information.

The Fundamental Attribution Error and Anchoring

A second focus of the current study was the investigation of the relationship between the fundamental attribution error and anchoring effects. More specifically, the study purported to answer the question: "Is there a relationship between the *type* of inference generated (i.e., contextual or dispositional, and confirmatory or disconfirmatory in nature) and anchoring?" That is, do clinicians show a tendency to anchor more on inferences that are of a contextual nature or do they show a predilection for inferences that are dispositional in nature? Assuming that the persistent confirmation of previously generated hypotheses is a manifestation of anchoring on those initial hypotheses, rather than an adjustment to search for and include alternative hypotheses, then clinicians in this study did indeed show a preference for confirming, and perhaps "anchoring," on previously generated dispositional inferences. Clinicians, as a whole, generated significantly more confirmatory dispositional inferences ($\underline{M} = 25.80$) than they did inferences that were contextual in nature ($\underline{M} = 5.50$), $\underline{t}(19) = -6.30$, $\underline{p} < 0.000$, See Table 11).

A cautionary message is necessary here. While there is little doubt that clinicians did indeed confirm more dispositional inferences than they did contextual inferences, it must be noted that clinicians generated over twice as many initial dispositional inferences as they did initial contextual inferences (See Table 18). If clinicians posited many more initial dispositional inferences in total, then the
likelihood that they would confirm more dispositional inferences increases as well. In any event, clinician propensity for inferences that are dispositional in nature is consistent with the evidence provided by some that observers tend to attribute the behavior of others to dispositions (Nisbett & Ross, 1980; Quattrone, 1982; Goodin Waxman, Rapagna, & Dumont, 1991; Rosen, 1993).

The fact that clinicians in this study confirmed significantly more previously generated dispositional inferences comes as little surprise. Given the fact that clinicians have a tendency to overestimate the impact of dispositional factors in behavior (Funder, 1982; Goodin Waxman, Rapagna, & Dumont, 1991; Dumont, in press), together with the fact that impressions that clinicians make tend to be tenacious (Cantor & Michel, 1979; Friedlander & Stockman, 1983; Strohmer & Chiodo, 1984, Garb, 1989), the finding that dispositional inferences were confirmed the most was to be expected.

Recently, Strohmer, and Shivy (1994) have suggested that the confirmatory bias may be a natural part of the judgment process. Likewise, Strohmer, Shivy, and Chiodo (1990) have suggested that the confirmatory bias of selecting significantly more confirmatory client facts, as compared to disconfirmatory client facts is consistent with literature in the philosophy of science that suggests that scientists cannot make observations without some guiding definition to help them make order of the massive data available to them.

Klayman and Ha (1987) have proposed that a "confirmation bias" can be understood as resulting from a basic hypothesis-testing heuristic, which they called positive test strategy. That is, people tend to test hypotheses by looking for instances where the target property is hypothesized to be present or is known to be present. Rather than proceeding within the Pepinsky and Pepinsky (1954) model of clinical judgment wherein judgments are stated as hypotheses and tested against independent observations of a client, clinicians do not make a deliberate attempt to find evidence that would falsify their current hypothesis. A positive-test strategy is incompatible with the prescription to seek disconfirmation. The use of a positive test strategy has the potential to bias clinical judgment by overweighing some data and underweighting others, that is, hypothesis-confirming evidence becomes overrepresented, and hypothesis-disconfirming becomes underrepresented.

An information-processing perspective, and in particular the notion of consistency, is effective in helping conceptualize the confirmatory bias. According to Cantor and Mischel (1979), a confirmatory bias may be attributed to the notion that people have such a stake in maintaining consistency that they hold on to initial impressions by exaggerating features of that impression. By failing to consider the importance of new incompatible features, the potential dissonance provoked by a change in judgment is avoided. Cantor and Mischel's view is consistent with Arkes and Harkness' (1980) contention that once a counsellor has made a diagnosis, he

or she may not notice symptoms that are inconsistent with that diagnosis. Snyder (1981) has summarized the social psychological research in support of such confirmatory processes in a chapter entitled "Seek and ye shall find."

Effect of Presenting Sets of Contrasting Information in Different Order on the

Categories of Clinician-Participant Utterances and Inferences

A third focus of the current research project, the exploratory component, was the examination of the effect that the order of presentation of client information had on clinician-participant utterances and inferences. That is, the *type*, *kind*, and *kind for each type* of inferences generated by clinicians as they read through the casefile were examined. Recall that the *type* of inference refers to whether the inferences was contextual or dispositional, and confirmatory or disconfirmatory in nature, the *kind* of inference relates to classification of client information (e.g., family history), and the *kind for each type* of inference refers to the type of inference generated together with the kind of client information the inference related to. The clinician-participant utterances and inferences in response to reading the "HEnAL" and "AEnHL" casefiles were thus transcribed and coded.

Taken together, there was no significant difference in the total number of inferences posited by the clinician-participants in the two groups, (i.e., $\underline{M} = 74.2$ in "HEnAL" and $\underline{M} = 87.7$ for group "AEnHL," $\underline{F}(1,18) = 0.58$, $\underline{p} = 0.454$, See Table 16 and Table 17, Figure 7 and Figure 8). Interestingly, however, when the

number of inferences generated by the clinician-participants in the two groups was examined with regards to each segment of client information (i.e., introductory segment, neutral segment, ailing segment, healthy segment, and closing segment), significant differences emerged. Moreover, there were also significant differences in the *type*, *kind*, and *kind for each type* of inferences generated by participants in the different groups in response to each of the introductory, neutral, ailing, healthy, and closing segments.

Introductory Segment

All participants, regardless of group, received the same first four paragraphs that constituted the introductory segment. The introductory segment described the age, ethnicity, living condition and presenting problem of the client.

For reasons that can only be attributed to sample vicissitude, participants in the "HEnAL" group generated many more statements relative to the material presented to them in the introductory segment, 249 statements for participants in the "HEnAL" versus 95 statements for participants in the "AEnHL" group, F(1,18) = 12.11, p = 0.002 (See Table 16 and Table 17).

While reading the introductory segment, clinicians in the "HEnAL" group generated a significantly greater number of non-inferences (i.e., irrelevant or unclassifiable statements), 54 non-inferences versus 30, $\underline{F}(1,18) = 4.87$, $\underline{p} = 0.04$ (See Table 21 and Table 22); made a significantly greater number of contextual

inferences, 101 contextual overall versus 12, $\underline{F}(1,18) = 14.13$, $\underline{p} = 0.0014$ (See Table 21 and Table 22); and made a significantly greater number of contextual inferences pertaining to the client's current family history, 98 non-inferences versus 2, $\underline{F}(1,18) = 17.17$, $\underline{p} = 0.0006$ (See Table 21 and Table 22).

Once more, for reasons that can only be attributed to sample vicissitude, clinicians in the "AEnHL" group generated a significantly greater number of initial inferences relative to the client's personality traits while reading the introductory segment, 4 for participants in the "AEnHL" versus 0 for participants in the "HEnAL" group, $\underline{F}(1,18) = 6.00$, $\underline{p} = 0.0248$ (See Table 21 and Table 22).

The different patterns of inferences generated by participants in the two groups is puzzling. Perhaps participant factors such as their age, level of experience, and theoretical orientation contributed to this finding. Despite the fact that the literature has failed to uncover a consistently positive relationship between clinician attributes such as age, race, training and experience and clinical judgment (Garb, 1989; Spengler & Strohmer, 1994, Watts, 1980), future research may benefit from including these factors as independent variables.

Neutral Segment

The neutral information, or family history component of the casefile, was always a third segment to which both groups of participants were exposed. The "HEnAL" group read the neutral segment after being exposed to the healthy material, and the "AEnHL" group read the neutral segment after being exposed to the ailing information.

No significant patterns emerged relative to the *type*, *kind*, and *kind for each type* of inferences generated by participants in the "HEnAL" group while they read the neutral segment. Neither the healthy nor the neutral client information engendered any clinical concerns. For participants in the "AEnHL" group, however, the processing of the neutral information, after being exposed to the ailing client data influenced the nature of the inferences they generated.

To begin with, participants in the "AEnHL" group were much more verbal while reading the neutral information then were participants in the "HEnAL" group. That is, participants in the "AEnHL" group generated 309 inferences versus 70 inferences for participants in the "HEnAL" group, $\underline{F}(1,18) = 42.24$, p < .001, (See Table 16 and Table 17). Moreover, clinicians in the "AEnHL" group generated a significantly greater number of contextual inferences overall, 122 versus 17, $\underline{F}(1,18) = 20.59$, $\underline{p} = 0.0003$ (See Table 23 and Table 25), and generated a significantly greater number of contextual inferences relative to the client's family history, 106 versus 14, $\underline{F}(1,18) = 13.48$, $\underline{p} = 0.0017$ (See Table 23 and Table 26).

When the neutral client information followed the ailing client clinicianparticipants focused considerably more on the client's psychological and affective

status. That is, participants in the "AEnHL" group generated significantly more inferences relative to both the client's psychological status, 40 versus 20, $\underline{F}(1,18) = 5.14$, $\underline{p} = 0.035$ (See Table 23 and Table 24), and the client's affective status, 63 versus 24, $\underline{F}(1,18) = 6.15$, $\underline{p} = 0.023$ (See Table 23 and Table 24).

Participants in the "AEnHL" group generated more initial inferences relative to the client's affect, 33 versus 16, $\underline{F}(1,18) = 5.59$, $\underline{p} = 0.0295$ (See Table 23 and Table 26), confirmed more inferences relative to the client's affect, 30 versus 8, $\underline{F}(1,18) = 4.65$, $\underline{p} = 0.0447$ (See Table 23 and Table 26), generated more dispositional inferences overall relative to the client's affect, 60 versus 23, $\underline{F}(1,18) = 5.49$, $\underline{p} = 0.0307$ (See Table 23 and Table 26), generated more initial dispositional inferences relative to the client's affective status, 30 versus 15, $\underline{F}(1,18) = 4.50$, $\underline{p} = 0.0469$ (See Table 23 and Table 26), and confirmed significantly more dispositional inferences relative to the client's affective status, 30 versus 8, $\underline{F}(1,18) = 4.65$, $\underline{p} = 0.0447$ (See Table 23 and Table 26). These clinicians confirmed more inferences relative to the client's psychological status, 25 versus 9, $\underline{F}(1,18) = 6.51$, $\underline{p} = 0.0201$ (See Table 23 and Table 26), and confirmed significantly more dispositional inferences relative to the client's psychological status, 25 versus 9, $\underline{F}(1,18) = 6.51$, $\underline{p} = 0.0201$ (See Table 23 and Table 26), and confirmed significantly more dispositional inferences relative to the client's psychological status, 24 versus 9, $\underline{F}(1,18) = 5.15$, $\underline{p} = 0.0357$ (See Table 23 and Table 26).

In summary, the processing of the neutral segment after exposure to the ailing material (as opposed to the healthy material) appeared to have an impact on the category of inferences generated. More specifically, while no significant patterns emerged in the utterances that participants in the "HEnAL" group generated while processing the neutral segment, the early exposure to the pathognomonic material appeared to induce participants in the "AEnHL" group to consider contextual inferences relative to the client's current family history and to preferentially entertain (both generate and confirm) dispositional inferences of a psychological and affective nature. Consistent with primacy effects in clinical judgment, the early presentation of ailing client information had a significant impact on the category of subsequently generated clinician inferences.

Closing Segment

The closing segment described the client's social, leisure, medical, and religious history, and was always the last segment of client information to which the participants were exposed. An examination of the *types and kinds* of utterances generated by clinicians in response to the closing segment also revealed significant differences.

Consistent with the pattern first noted for participants in the "HEnAL" group while they read the introductory segment, these clinicians were once again quite verbal while reading the information related to them in the closing segment, 171 versus 75, $\underline{F}(1,18) = 4.99$, p = 0.038 (See Table 16 and Table 17). Moreover, clinicians in the "HEnAL" group made a significantly greater number of contextual

inferences overall, 34 versus 7, $\underline{F}(1, 18) = 7.59$, $\underline{p} = 0.0131$ (See Table 27 and Table 28), and generated a significantly greater number of contextual inferences relative to the client's current family history, 25 versus 0, $\underline{F}(1, 18) = 8.73$, p = 0.0085 (See Table 27 and Table 28).

While reading the closing segment, clinicians in the "AEnHL" group wanted to know much more about the client and generated significantly more requests for additional information while reading the information related to them in the closing segment, 44 versus 12, $\underline{F}(1,18) = 7.09$, $\underline{p} = 0.0159$ (See Table 27 and Table 28).

Healthy Segment

The hygiognomonic information segment contained signs of high achievement and presented the client as optimistic and willing to confront psychological difficulties. Although there was no significant difference in the number of utterances generated by clinicians in both groups in response to this segment, clinicians in the different groups once again reacted in different ways to the healthy material.

Overall, clinicians in the "HEnAL" group focused on the client's romantic relationship history. When clinicians were exposed to the healthy material right after the introductory segment, they generated significantly more inferences emphasizing the client's romantic relationship, 14 versus 2, E(1,18) = 8.10, p = 0.01 (See Table 29 and Table 30), generated more initial inferences emphasizing the client's romantic relationship, 9 versus 1, E(1,18) = 5.88, p = 0.0261 (See Table 29 and Table 30), generated more dispositional inferences emphasizing the client's romantic relationship history, 12 versus 2, E(1,18) = 8.04, p = 0.011 (See Table 29 and Table 30), generated more initial dispositional inferences emphasizing the client's romantic relationship history, 7 versus 1, E(1,18) = 4.63, p = 0.045 (See Table 29 and Table 30), and generated more contextual inferences emphasizing the client's romantic relationship, 6 versus 0, E(1,18) = 7.36, p = 0.0142 (See Table 29 and Table 30). In the absence of pathological information about the client, participants looked to the client's relationship history when generating etiological attributions relative to the client's presenting problem.

When clinicians were exposed to the healthy material right after the neutral segment (i.e., "AEnHL), they generated more dispositional inferences relative to the client's vocational status, 4 versus 0, F(1,18) = 6.00, p = 0.0248 (See Table 29 and Table 30). In light of the pathological client information, as presented in the initial segment of the casefile, participants in the "AEnHL" group were more inclined to pay attention or "build on the strength" of the client's vocational success.

Ailing Segment

The pathognomonic segment consisted of a description of the client's family's reaction to the death of a sibling, suggested that the client had some difficulty communicating with her present boyfriend, described the client's history of anorexic behavior, and hinted at the possibility that the client has relapsed into anorexia at the present time. While no patterns emerged for participants in the "HEnAL" group while reading the ailing segment, clinicians in the "AEnHL" group not only generated more inferences than those in the "HEnAL" group, 215 versus 92, $\underline{F}(1,18) = 5.19$, $\underline{p} = 0.035$ (See Table 16 and Table 17), but also generated significantly more inferences that were dispositional in nature, 171 versus 112, $\underline{F}(1,18) = 4.79$, $\underline{p} = 0.0421$ (See Table 31 and Table 32). Thus the presentation of ailing information early as opposed to late seems to predispose clinicians to generate significantly more inferences relating to long-standing intra-psychic dynamics.

<u>Overall</u>

Finally, regardless of the segment of information, the patterns of responses made by clinicians in the "HEnAL" group are reiterated. These clinicians generated significantly more initial inferences pertaining to the client's romantic relationship history, 47 versus 25, $\underline{F}(1,18) = 7.43$, $\underline{p} = 0.0139$ (See Table 33 and Table 34), they generated more dispositional inferences pertaining to the client's romantic relationship history, 59 versus 29, $\underline{F}(1,18) = 7.80$, $\underline{p} = 0.0120$ (See Table 33 and Table 34), and they generated more initial dispositional inferences pertaining to the client's romantic relationship history, 38 versus 22, $\underline{F}(1,18) = 6.55$, $\underline{p} = 0.0197$ (See Table 33 and Table 34). Alternatively, clinicians in the "AEnHL" group generate significantly more dispositional inferences relating to the client's affective status, 101 versus 48, $\underline{F}(1,18) = 4.56$, $\underline{p} = 0.0467$ (See Table 33 and Table 34).

The foremost and most general conclusion that may be drawn from these combinations of findings is that the order of presentation of client information affected the nature of the inferences generated by the two groups of clinicianparticipants.

While clinician-participants in the "HEnAL" and the "AEnHL" groups both generated contextual inferences that probed the client's family history, participants in the "HEnAL" group were more interested in the client's romantic relationship history, and participants in the "AEnHL" group were more interested in the client's personality, psychological, and affective status. Moreover, while there was overwhelming evidence pointing to the predisposition of participants in the "AEnHL" to commit the fundamental attribution error, especially relative to the client's psychological and affective status, participants in the "HEnAL" group also committed the error, albeit less frequently, and for a different category of client material, that is, the client's romantic relationship history. This is consistent with the literature that reports that trained therapists demonstrate a bias toward emphasizing dispositional characteristics (i.e., attitudes, abilities, or personality traits) of the client as a source of problems while minimizing potential situational explanations of problem etiology (Batson & Marz, 1979; Nisbett & Ross, 1980).

Relative to a confirmational bias, participants in the "AEnHL" group were most susceptible to falling victim to this inferential error, especially with reference to inferences concerning the client's psychological and affective status. Participants in the "HEnAL," manifested no significant tendency towards confirming previously generated inferences.

Finally, neither group exhibited any propensity to disconfirm previously generated inferences. This finding is entirely consistent with the literature citing the unlikelyhood of clinical decision makers to disprove their judgments (Croxton, 1989; Lord, Lepper, & Preston, 1984).

The finding that the order of presentation of ailing client information had an undue influence on subsequently generated inferences is particularly rewarding. The reader will recall that the objective of this research project was to examine the types of data that clinicians selected in the formulation of their inferences and subsequent clinical judgments. Rather than simply presenting a case history in its entirety and then administering questionnaires to evaluate anchoring or adjustment effects (the traditional approach), this "think-aloud" study was designed to

examine the actual clinical inferences that clinician-participants were entertaining as they read through the case material.

The "traditional" component of this study found that anchoring errors were associated with the early presentation of healthy client information. That is, clinicians did not adjust their initially healthy perceptions of the client after being presented with and reading new contrasting, pathognomonic client information. On the other hand, the "think-aloud" component of the study found that anchoring, as defined by the undue influence that initially presented client information had on the generation of subsequent clinical judgment, seemed to appear following the presentation of the ailing client material. That is, the early exposure to the pathognomonic material appeared to induced participants to preferentially entertain (both generate and confirm) dispositional inferences of a psychological and affective nature. In either instance, these results are consistent with research positing that temporal order of information influences the judgment of the clinicians (Asch, 1964; Friedlander & Phillips, 1984; Friedlander & Stockman, 1983; Pain & Sharpley, 1988, 1989; Richards & Wierzbicki, 1990).

Implications

As Bruner (1957) so aptly stated, there is no such thing as an immaculate perception. Clinicians approach situations with beliefs, values, and theories that generate certain expectations and are used to filter relevant from irrelevant

information. These cognitive building blocks have the potential to play an exceedingly instrumental role. They not only produce selective attention to cues and events consistent with expectations, but also fuel active searches for expected input from the social environment and discount or overlook information or possibilities inconsistent with expectations and predispositions (Nurius & Gibson, 1990).

As Witkin (1982) points out, lest any practitioner despair over the inaccuracy of his or her judgments, some clarifying statements are in order. First, not all clinicians form biased judgments all the time (Spengler & Strohmer, 1994). Second, "clinicians are able to make reliable and valid judgments for many tasks, and their judgments are frequently more valid than judgments made by lay persons" (Garb, 1992, p. 451). Third, the emphasis is less on accuracy per se as it is on the implications and flexibility of one's judgments. The ability to use valid assessment-related data as a source of preliminary hypotheses that are also subject to being disproved and replaced is a more meaningful practice skill than having the "right" answer (Witkin, 1982).

Based on the results of this study the necessity for heightened counsellor cognizance of the pitfalls of inferential bias is obvious. To begin with, it would be wise to call supervisors' and students' attention to various aspects of human judgment research. Specifically, it would be fruitful to discuss how primacy effects

may be reflected in the expectations, cognitive capabilities, and hypothesis-testing strategies of clinicians, and how these in turn may affect the course of counselling. Ross, Lepper and Hubbard (1975) have indicated that explanations of the specific mechanisms leading people to persist in inappropriate viewpoints or inaccurate judgments can be effective in eliminating the effects of perseverance.

Mere enlightenment, however, is of little value unless steps are taken to elude these biases (Wiggins, 1981). Relative to the confirmation bias, clinicians should be encouraged to consider alternatives from multiple sources of data (Witkin, 1982; Strohmer & Blustein, 1990). Elstein, Shulman, and Sprafka (1990) found that the most accurate diagnosticians tend to arrive at their final diagnosis later than do less accurate diagnosticians. Premature closure results in the biased processing of subsequent data. Consistent with this, Nisbett and Ross (1980) suggest that people be taught maxims and slogans that emphasize the shortcomings of heuristics. Based on the results of this study, one such catchphrase could be: "that's a vivid datum all right, but I'll still consult more data; thank you."

Some researchers suggest that clinicians may reach their conclusions early, in order to ease the ambiguity and alleviate anxiety engendered by the exploration and decision-making process (Strohmer & Blustein, 1990). Consistent with this, McDermott (1981) has suggested that clinicians operate within a doctrine that

reads "when in doubt, diagnose a problem," and numerous sub-tenets of that doctrine, such as, "when in doubt, diagnose a problem in the client (rather then in the environs)" or "...diagnose something popular or acceptable..." (p.40). Rather than circumventing this source of anxiety by making impulsive or premature decisions, Strohmer and Blustein suggest providing cognition based methods or strategies for the careful consideration of options. A study of these approaches, some of which have been reviewed by Erikson and Whiteley (1980), would seem another beneficial avenue for clinicians interested in improving their hypothesis generation and testing processes.

Many factors contribute to counsellor susceptibility to the fundamental attribution error. Training programs, and some theoretical orientations, often emphasize the dispositional features of clients when conceptualizing intervention strategies aimed at assisting individuals to change (Snyder, 1977). One precaution clinicians can take relative to the fundamental attribution error is to make sure that hypotheses incorporating situational factors are also considered (Morrow & Deidan, 1992). Witkin's (1982) recommendations are also apropos. The act of being an empathic practitioner, one who is able to view the world from the client's perspective, enables clinicians to simultaneously be the actor as well as the observer. A demonstration of this point was provided by Snyder, Shenkel, and Schmidt (1976) who had participants listen to an interview in which a client

described her problem as being externally caused. The participants were then instructed to assume either the role of the counsellor or the client. Results indicated that while the participants in the counselling role rated the client's problem as significantly more person-based, participants in the role of the client saw the problem as being more situational. As demonstrated by Snyder at al., and highlighted by Arnoult and Anderson (1988), an effectual technique to attenuate actor-observer differences is for clinicians to intermittently assume the client's role.

The results of the current study showed that depending on which order casefile material was presented to participants, they not only generated different *types* of inferences, but also made different *kinds* of inferences. This is consistent with Witkin's (1982) assertion that many of the inferential difficulties encountered by clinicians may be regarded as errors in sampling and in the interpretation of data. Insofar as the clinician focuses attention only on problem-ridden areas of the client's life, basing intervention on a single diagnostic interpretation and relying solely on clinical judgment for subsequent decisions, inferential errors seem likely (Witkin, 1982). In order to prevent biased hypothesis-generation and testing, it would be fruitful to instruct clinicians in the person-as-scientist approach elaborated by Pepinsky and Pepinsky (1954). The reader will recall that these authors detailed a model of clinical judgment to describe how general and specific observations are used to develop inferences and hypotheses about clients.

Finally, instruction in a formal measure of clinical hypothesis formation would also be beneficial. Holloway and Wolleat (1980) have outlined a written adaptation of an interview format. The measure consists of five written tasks that direct the counsellor in forming and substantiating client hypotheses. Categories of information examined include information sought about the client, number of divergent questions asked about the client, inferences about the client, time frames used in developing these inferences, categories of information used to support conclusions derived about the client, and number of instances used to support these conclusions.

Future Research

Research that examines how clinicians think or process information has the potential of leading to empirically validated recommendations for improving the accuracy of clinical judgment (Spengler & Strohmer, 1994). Moreover, examining the individual differences that may exist between clinicians who are accurate as compared to those that are less so, may be an expedient path by which sound clinical information-processing may be revealed.

Faust (1986) has noted that "cognitive limitations are probably the most fundamental and troublesome source of clinical judgment difficulty" (p. 422). Bieri, et al. (1966) emphasized cognitive complexity as a significant informationprocessing variable that reconciles the stimulus-input and judgment-output sequence of clinical judgment. These authors defined cognitive complexity as an individual difference in the "capacity to construe social behavior in a multidimensional way" (p. 185). If cognitive complex clinicians do indeed demonstrate a more flexible approach to the construal of clients' thoughts, feelings, and behaviors, then, according to Holloway and Wolleat (1980), these clinicians may ask more questions, generate an increased number of hypotheses, and demonstrate more accurate judgments.

According to Spengler and Strohmer (1994), clinical judgment researchers have determined that counsellors with well developed cognitive complexity are more proficient at using incongruent or contradictory client information, consider more client information, and are able to synthesize larger amounts and types of information than are counsellors with lower cognitive complexity. These authors report that cognitively complex individuals are also less inclined to implement the cognitive simplification strategies that underlie errors in clinical judgment. The desirability of entertaining clinician cognitive complexity as a variable in future clinical judgment research seems obvious.

The transcription of audiotaped interviews into protocols provides a rich source of data through which clinical information processing may be investigated. Future research should make a more exhaustive use of data gathered through the think-aloud approach. For example, Grobe, Drew, and Fonteyn (1991) employed

the think-aloud method to collect verbal data from nurses as they formulated a plan of care. The clinical reasoning processing of these nurses was further detailed through an analysis of the generated protocols into visual representations of the clinical data that the participant used in their planning process. The protocol analysis enabled researchers to determine what information the nurses were attending to, and what associations the nurses were drafting between the distinct elements of information they were focusing on. The researchers thus represented the verbal data of each nurse into constellations of problems, linkages (or lack of linkage) between problems, linkages (or lack of linkage) between problems and interventions, or linkages (or lack of linkage) between interventions. The visual representations of the nurses' clinical reasoning illustrated how nurses concentrated on problems, established links between problems, and developed interventions based on these problems. Performing similar, detailed analysis on the problem and knowledge representation of counselling and clinical professionals would seem meritorious. Moreover a detailed single case design would help clinicians understand the temporal relationship among variables of interest, as well as the relationship of any particular variable to the passage of time.

Delimitations and Limitations

Although it is hoped that some clear conclusions can be drawn from the current study's examination of errors in clinical judgment, it would be

presumptuous to assume that generalization to the typical counselling process is completely justified.

First, a discussion of the various methodological issues encountered during the completion of this research project will serve to maximize the statistical conclusion validity of future research in this area.

Part I of the current study sought to investigate how the order of presentation of salient client information influenced a clinician's inferential processes implicating adjustment, anchoring, and adjustment mitigation. As already discussed, the decision to use an $\underline{n} = 10$ for each of the four groups in Part I was primarily, but not solely, a result of logistic limitations imposed by participant recruitment. The use of a small sample size, albeit necessary for the exhaustive application of the "think-aloud" methodology in Part II, raised concerns relative to parameters of statistical inference such as sampling error, power, alpha level, and Type I error.

Achieving levels of statistical significance depends in considerable measure on how many subjects are used in research. In research, the null hypothesis affirms that the experimental group and the control group are not different with respect to the variable under scrutiny. Under the null hypothesis it can be predicted that the mean of an experimental group will differ from the mean of a control group only to the extent that sampling fluctuations inevitably occur when samples are drawn

from a common population (Carver, 1978). Statistical significance determines mathematically how often differences as large or larger than differences found between the experimental and control group would occur as a result of chance (that is, sampling fluctuation). One approach to decreasing sampling fluctuation, or sampling error, is to increase the size of the sample. Other things being equal, the larger the sample size, the smaller the probability of error and the greater the reliability or precision of the results (Cohen, 1969). Future research would benefit from employing a larger sample of participants.

Increasing sample size also has the effect of increasing the statistical power of a test. The power of a statistical test is the probability that it will yield statistically significant results. According to Cohen (cited in Parker, 1992), researchers should design their studies so that they have an 8 in 10 chance of obtaining a statistically significant result when one actually exists. Ideally, *a priori* power analyses assist researchers to ascertain the <u>n</u> required to maximize the probability of finding an effect when one actually exists (Parker, 1992). In the current study, logistic limitations associated with participant recruitment, together with the application of the exhaustive "think-aloud" methodology in Part II, precluded the advantageous use of such *a priori* power analyses. Should their studies lend themselves to this type of analysis, future researchers may use the power tables provided by Cohen (1988) to perform *a priori* power analyses.

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The alpha level that researchers use to decide whether or not to reject the null hypothesis has an impact on statistical conclusion validity. Assuming that a phenomenon exists in a population to a given degree, other things being equal, the more stringent the alpha level, the poorer the chances that the sample will provide results which meet this criterion, and the lower the power. In education research, an alpha of .05 is often used as a cut-off decision point for describing whether an event is rare or not. Running one statistical test on a data set results in a Type I error probability (i.e., probability of falsely rejecting the null hypothesis) equal to preset alpha (Parker, 1992). With each additional statistical test, however, the pertest alpha level is reduced, and the probability of Type I error is inflated. When a large number of comparisons are anticipated, researchers may benefit from employing specific procedures, such as the Bonferroni adjusted alpha, to protect against inflated Type I error. In the current study, however, the planned comparisons identified in Part I, and the large number of exploratory analyses scrutinized in Part II, did not lend themselves to the Bonferonni procedure.

Part II of the current research study explored how the order in which client information was presented to the clinician-participants affected the way in which the client material was interpreted or subjected to further elaboration. Consistent with the "flight from theory into pragmatics," supported and documented by Omer and Dar (1992), Part II of the current study sought to explore the answer to a

pragmatic rather than a theoretical question. The goal of Part II was description and discovery rather than theory testing and verification. Part II attempted to search out patterns of inferences that could provide a basis for further investigations.

In Part II of this study, a series of one-way ANOVAs were carried out to methodically investigate the relationship between the order of presentation of client information and each of the kind, the type and the kind for each type of inference generated by the clinician-participants. The results of these ANOVAs were used to help guide interpretation of the data. That is, while alpha inflation required that obtained significance levels be interpreted with caution, a significant result relative to any particular phenomenon was tentatively taken as an indication that a pattern existed in the data. The approach taken in this study was that when statistical significance was obtained, the *scientific-clinical* significance of the result was probed. Consistent with the exploratory nature of Part II of this study, patterns that emerged in the data, albeit potentially statistically spurious, were probed as to their clinical significance. This approach is consistent with Gold's (cited in Carver, 1978) statement that even in a rigorous Fisherian design, a statistically significant result does not necessarily indicate a substantively important result: "Statistical significance is only a necessary but not sufficient criterion of importance" (p. 389).

Future researchers who choose to support their tentative speculations with additional statistical data, could report the computed "effect size," or the strength of the association between the independent variable and dependent variables. The larger the effect size, the greater, of course, the degree to which the phenomenon under study is considered in evidence (Carver, 1978).

The intent of Part II of the study was to offer an original contribution to the literature by virtue of using the think-aloud methodology. The true test of the findings described in Part II will come with replication. As Stevens (1971) points out: "In the long run scientists tend to believe only those results that they can reproduce. There appears to be no better option than to await the outcome of replication" (p. 440). If the results reported in this study are due to chance, they will not be replicable.

In addition to the aforementioned statistical concerns, other methodological issues that limit the generalizability of the study may be weighed. First, the type and amount of information presented to participants was somewhat removed from the actual realities of everyday counselling. That is, clinician-participants were exposed to detailed information comparable to clinical data, structured as a case history. Case histories are analogous to clinical interviews but differ by virtue of their logical and chronological organization. It would be unwise to unconditionally generalize conclusions from this casefile-based method of research to the two-way interchange that characterizes face-to-face counselling. For example, there may be differences due to hearing rather than reading client information. Additionally, intake interviews are longer than the stimuli used in this study, and the focus of information gathering is much more under the control of the clinician. Clinicians who have the opportunity to test their clinical hypotheses with clients may draw more accurate conclusions than those made here as a response to fixed stimuli. There are however, direct parallels between the conditions of this study and those in which counsellors receive in-house case reports, or reports of psychological assessment, and are then required to make clinical decisions. Therefore, the results of this study regarding impression formation and their effects on judgment do hold some implications for some aspects of clinical practice.

A second limitation relates to transparency and social desirability (Lopez, 1988). Abramowitz and Dokecki (1977) have argued that clinicians detect the purpose of these types of studies and respond in a fashion that does not reflect their usual behavior. It is also possible that some participants become concerned with self-presentation and thus tend to avoid extreme views when interacting with peers. Obviously, a potential towards social desirability can have the effect of producing more conservative clinical judgments by clinician-participants who are

asked to "think-aloud." Social desirability can also produce an anchoring effect if clinician-participants feel obliged to demonstrate consistency in their judgments.

A third limitation concerns the think-aloud methodology. While the thinkaloud approach provides a wealth of material for investigators interested in examining clinical reasoning, it is certain that not all thoughts are verbalized. Moreover, the act of verbally reporting what is being thought may in and of itself interrupt and compromise the thinking process. To paraphrase Nurcombe and Fitzhenry-Coor (1987), it is hard to think about thinking.

A fourth limitation is related to the participant sample. A surprising amount of self-disclosure on the part of the participants marked the interview process. Since both the casefile client and the counsellors were female, there may have been an increased identification or perceived commonality of experience among female participants and the female client. In fact some participants suggested that the type of problem discussed by the client (e.g., a difficulty maintaining a successful romantic relationship, and a strained relationship with her father) was not foreign to them personally. In fact, so much self-disclosure pertaining to the participants' own life situation was potentiated by the casefile material that a distinct coding category for self-disclosure was created. In any event, it may be that counsellors of different genders, or other types of training (e.g., social work, clinical psychology) would show different types and kinds of responses relative to both casefile content

and anchoring or adjustment effects. Since this study used female counselling psychologists, the results may be safely generalized to the information-processing and clinical judgment processes of these types of clinicians, especially as they relate to the review and interpretation of case reports.

In hindsight, rather then use a hypothetical client, it may have been more advantageous to use genuine clinical material. As indicated by Lopez (1989), the use of actual clinical material yields a defined diagnosis of the client, the judgments of expert clinicians, and the bona fide self-report ratings of the client. Future research of clinical judgment bias would benefit from using authentic case material thereby obtaining a valid standard by which to assess the nature of any possible judgment bias.

Two additional reservations relate to the case material itself. Firstly, in developing the casefile, much thought was invested before deciding to label the "client" as female and assigning her a diagnosis of anorexia. While it is true that this gender and medical condition has been ascribed to the client in previous anchoring research, doing so has the potential of engendering criticism concerning sex and sex-role stereotyping in clinical research (cf., Broverman, Broverman, Clarkson, Rosenkrantz, & Vogel, 1970). In fact, whether the client in this casefile had been named "John" or "Joan" there would have been grounds for criticism. For instance, with "Joan" as the client there is the subliminal message that women should not be fat, nor should they have short relationships. On the other hand, "John's" difficulty in having a long-term relationship with a woman could have suggested heterosexism on the part of the research team if the reason for John's difficulty was a "repressed" homosexual orientation.

Secondly, the suggestion that client information can be valence-free or neutral is moot. In all likelihood, there exist as many interpretations of discrete casefile client data as there are clinicians who read the casefile. Rather than striving to prove that the so-called valence-free client data are indeed neutral (an impossible task), a solid effort was made to validate the hygiognomonic and pathognomonic manipulations.

Epilogue

While it is often assumed that problem-solving in the field of psychology proceeds like scientific reasoning, through observation, induction, deduction, testing, and evaluation, this can only be partially the case. The very cognitive processes that are meant to facilitate problem-solving have the potential of impeding the process. What's more, these cognitive processes, which include inferential search, storage, and retrieval processes, operate at an unconscious level. A case in point, for clinicians influenced by the so-called anchoring effects, ensuing data, gleaned from a client, have the potential of being biased by opinions formed during the initial appraisal period. Moreover, data consistent with the earlier

inferences or hypotheses have been shown to be given added credence, while data inconsistent with the earlier hypotheses are sometimes disregarded.

Under most circumstances we do not attend to the ways in which we process information. Fortunately, as Meichenbaum and Gilmore (1984) point out, in the same way that one's attention may be focused on automatic and usually "unconscious" physiological processes, such as breathing and stomach contractions, one can focus one's awareness on one's psychological processes.

As a result of this study, a number of strategies have been proposed to call clinicians' attention to processes by which they encode and interpret details about their clients, make causal attributions relative to their client behaviors, and generate and test hypotheses pertaining to categories of client information. First, while generating hypotheses about their clients, clinicians are to be encouraged to consider alternatives from multiple sources of data. Second, in generating attributions relative to clients' presenting problem, clinicians should ensure that their hypotheses incorporate situational as well as dispositional factors. Third, the act of being an empathic practitioner, not only enhances a clinician's ability to understand the client from the latter's point of view, but also attenuates the actor-observer differences of the fundamental attribution error. Fourth, instruction in the practitioner-as-scientist approach to clinical hypothesis is recommended. That is, clinicians should be encouraged to a) observe their client's behavior, b)

form tentative conclusions based upon these observations, c) state their conclusions as hypotheses, and d) test their hypotheses by gathering additional information about the client. Furthermore, this additional information should reflect a counterbalanced number of hypothesis-confirming as well as hypothesisdisconfirming data.

In closing, it is recommended that future research in the area of clinical judgment would benefit from employing authentic case material that varies along the various dimension of familiarity, complexity, and severity. The use of this type of material would not only counteract any undue sensitivity or familiarity that clinicians may harbor for the type of information presented in the casefile, but would also ensure that researchers have a valid standard by which to assess the nature of any possible judgment bias. Additionally, it is proposed that the information processing strategies of clinicians from other clinical disciplines (e.g., social work, clinical psychology, and psychiatry) be investigated. Finally, future researchers may also wish to engage a more detailed exploration of individual differences in the information processing strategies of clinicians who are more accurate vis-à-vis those that are less so.

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Appendix A

DEPARTMENTAL LETTERHEAD

October 21, 1994

«FirstName» «LastName» «Address1» «City», «QC», «Code»

Dear «LastName»:

As a doctoral student in the counselling psychology program of the Department of Educational and Counselling Psychology, I am writing to you to appeal for your voluntary participation in my dissertation project.

My study is part of a larger research undertaking investigating the ways in which mental health professionals process information. More specifically, I intend to examine factors that influence clinical judgment. Hopefully, knowledge derived from my project will be used to improve clinical training and practice in clinical and counselling psychology.

Your participation in the study would require you to read a casefile that describes a female client seeking counselling. You will be asked to share your thoughts about the case material *aloud* as you read it. As you share your thoughts about the client, you will be asked to give your perception of the client's overall level of functioning and to establish a prognosis for her.

Your participation in the study would require between 45 and 60 minutes. You will have the option of meeting with me on the McGill campus, or at a location of your choice. I am only able to pay you an honorarium of \$45.00 for your participation, which I recognize is not normally suitable compensation for your professional time. It should be noted that even if you agree to participate in the study, you will be free to stop participating at any time without penalty. At all times during the conduct of the study, including the latter stages of data analysis and interpretation, your answers will be treated as confidential and your anonymity will be safeguarded. If you are interested in participating in this project, or simply wish to obtain more information before deciding, please do not hesitate to contact me at (514)733-3979.

Thank you in advance for your consideration.

Sincerely,

Derek N. Aronoff, M.A.

Appendix **B**

Statement of Informed Consent

PLEASE REVIEW THE FOLLOWING DISCUSSION OF THE STUDY AND SIGN THIS FORM IF YOU AGREE TO PARTICIPATE

Dear Colleague:

This study is part of a larger research project investigating the ways in which mental health professionals process information. The present study examines the *factors that influence clinical judgments*. Knowledge derived from this project will be used to improve clinical training and practice in clinical and counselling psychology. As part of the study, you will be asked to read a short casefile and share your thoughts about the case material aloud. This methodology is referred to as "think-aloud methodology."

We greatly appreciate your *voluntary* participation in this study, and thank you in advance for your openness and honesty in responding to the material contained in the case file. Your answers will be treated as confidential and your anonymity will be safeguarded. As you will see, we do not need your name or any other identifying information at any point in this study. It will take about 30 minutes to complete the study. Although we would like you to complete as much of the case file as possible, *you are free to stop participating in this study at any time* without penalty.

If you decide to be a participant in this study, please sign and date this informed consent statement, and immediately hand it to the person conducting the study so that your name is not associated with your responses in any way.

Thank you for your cooperation.

Derek N. Aronoff, M.A. Doctoral Candidate, Department of Educational Psychology and Counselling

"I have read the description of the study and agree to be a participant. I am eighteen years of age or older."

Signature

Date

Appendix C

Personal Data Form

Please do not write your name

Please respond to all of the following questions. Your answers will remain *anonymous* and only group statistics will be reported.

- 1. Age
 1) 21-26
 3) 33-38
 5) over 45

 2) 27-32
 4) 39-44
- 2. Highest professional Degree 1) M.A. or M.Ps.
 2) M.Sc. or M.Ed.
 3) Ph.D., Psy.D. or Ed.D.
 4) Other (e.g., M.S.W., D.S.W.)
- 3. Length of *full-time* professional work, (including internship), or full time equivalence:

1) Less than 1 year	3) 5 to 9 years	5) Over 15 years
2) 1 to 4 years	4) 10 to 14 years	

4. **Primary professional role**:

1) Direct client service	3) Research	5) Other
2) Academic	4) Administration	

5. Approximate amount of professional time spent weekly in direct client contact of any nature:

1) Less than 5 hours	3) 15-24 hours	5) over 35 hours
2) 5 to 14 hours	4) 25-34 hours	

Appendix D

Global Assessment Scale (GAS)

Use this scale to rate Joan's <u>overall level of functioning</u> by selecting a number which describes her functioning on a hypothetical continuum of mental health/illness as compared with clients typically seen in private practice. Use intermediary levels when appropriate (e.g., 35, 58). Rate her actual functioning independent of the fact that she is receiving and may be helped by treatment. Mark your ratings on the answer sheet.

- 100 No symptoms, superior functioning in a wide range of activities life's, problems never seem to get out of hand, is sought out by others because of her warmth and integrity.
- 90 Transient symptoms may occur, but good functioning in all areas, interested and involved in a wide range of activities, socially effective, generally satisfied with life, "everyday" worries
- 81 that only occasionally get out of hand.
- 80 Minimal symptoms may be present but no more than a slight impairment in functioning, Transient symptoms may occur, but good functioning in all areas, interested and involved in a wide range of activities, socially effective, generally satisfied with life, "everyday" worries that
- 71 only occasionally get out of hand.
- 70 Some mild symptoms (e.g., depressive mood and mild insomnia) OR some difficulty in several areas of functioning, but generally functioning pretty well, has some meaningful interpersonal
- 61 relationships, and most untrained people would not consider her "sick."
- 60 Moderate symptoms OR generally functioning with some difficulty (e.g., few friends and flat affect, depressed mood and pathological self-doubt, euphoric mood and pressure of speech,
- 51 moderately severe antisocial behavior).
- 50 Serious symptoms, or impairment in functioning that most clinicians would think obviously require treatment or attention (e.g., suicidal preoccupation or gesture, severe obsessional
- 41 rituals, frequent anxiety attacks, serious anti-social behavior, compulsive drinking.)
- 40 Major impairment in several areas, such as work, family relations, judgment, thinking or mood (e.g., depressed person avoids friends, neglects family, unable to do domestic chores), OR
- 31 some impairment of reality testing or communication (e.g., speech is at times obscure, illogical, or irrelevant), OR single serious suicide attempt.
- 30 Unable to function in almost all areas (e.g., stays in bed all day) OR behavior is considerably influenced by either delusions or hallucinations OR serious impairment in communication
- 21 (e.g., sometimes incoherent or unresponsive) or judgment (e.g., acts grossly inappropriately).
- 20 Needs some supervision to prevent hurting self or others, or to maintain minimal excitement), OR gross impairment in communication (e.g., largely incoherent or mute).
- 10 Needs constant supervision to prevent hurting self or others, and/or makes no attempt to maintain minimal personal hygiene (e.g., requires intensive care unit with special observation by staff.).

Instructions to Participants and Casefile

Instructions

The casefile you will be asked to consider consists of a summary of an intake interview of a person seeking help for personal problems. Assume that the client is being seen by a clinician in a private practice setting (yourself). As you read, and "think-aloud" about the summary you will be asked to indicate a few general judgments about the case. Make your judgments as if you were working with the client. Using the two rating scales (see the detached page A & B), you will rate (a) how well the client is functioning now in life, and (b) how well the client is likely to function after receiving psychological help. If you wish you may refer back to the case material.

As we know that clinical judgment is not an exact science, *there are no right or wrong answers*. We are interested in your own impressions as you read the material presented.

As you go through the summary, you might feel that you yourself would not have conducted the interviews in the manner described here. What is important to focus on is the information presented, rather than the interview <u>per se</u>.

The materials should take about 25 to 30 minutes to complete. Your responses are extremely important to us. The effort you invest in them will largely determine the value of the study. Please devote as much attention to this task as you can. However, should you get bogged down (i.e., taking more than 45 minutes to complete the readings and judgments) you are probably spending more time than is necessary.

Thank you very much for your time and effort.

Casefile by Segment

Introductory Segment

Joan is a 32-year-old Caucasian woman, who lives alone.

She has come for counselling with the following complaint: "I haven't been able to have a good romantic relationship with a man."

At the present time, Joan wants to get married. She is concerned about growing old alone, and feels that "time is running out. If I don't get married and have children soon, I'm afraid I never will."

Joan reports that since late adolescence, she has had many brief sexual relationships, or in her own words, "one-night stands," with different men. When she does stay connected with a man, the relationship usually ends when the man loses interest in her. The longest relationship she has been in is her current one; so far it has lasted six months. Joan states there might be some psychological basis behind her difficulties with men, although she cannot think of what that might be.

Healthy Segment

Joan describes herself as "a survivor" (as distinguished from a victim). "Having been raised in an alcoholic family, I've been through a lot of emotionally trying times." As a result, "I am a stronger person who is able to take things in stride."

When Joan left home to start university, her mother sought treatment for her drinking problem, and her parents tried some couple counselling.

Joan remembers deciding that she too "could use a little help." She entered brief counselling to begin exploring her feelings about the brother she had lost (through death in an accident), and became involved with ALANON to help her with her feelings about her mother.

In university, Joan worked at two jobs to put herself through. During this time, She began channeling her drawing and math skills into architecture. She became quite proficient in her major, and eventually graduated with honours.

Nearing graduation, Joan was actively recruited by a prestigious architecture firm (her current employer). She is happy with her job and has risen "through the ranks very quickly."

Casefile by Segment (cont'd)

Joan goes on to say that "except for when it comes to my relationship with men, basically I'm an optimist. I have learned to focus on the positive."

She wants to continue "growing as a person" and trying to become "the best person I can be."

Neutral Segment

Joan's father was a newspaper editor, who "knew everything about everything." According to her, he relished the frustration he caused others by proving them wrong.

Joan never felt close to her father, and swore as a teenager that she would never marry a man like him.

Joan stated that her father really only showed affection towards his son.

Her mother worked as a homemaker all her life. Joan reported that despite a drinking problem, her mother "tried to be a loving person."

Joan described the relationship between her parents as distant; they hardly spoke and rarely touched. They maintained separate bedrooms.

Joan was obedient and tried to please her parents, especially her mother. She helped a lot, for example, with household chores.

Three years ago, Joan's parent's retired and moved to Florida. They exchange letters occasionally, and call each other on such family occasions as birthdays, holidays, and Father's and Mother's Day.

Joan has one sister who is two years younger than her. As a child, Joan regarded her sister as tall, attractive, athletic, and very talented in music and art. On the other hand, Joan remembers herself as being "fat and ugly" and not feeling feminine.

Her sister is married and has three children. Joan reported that, although privately she dislikes her sister's husband and disapproves of their marriage, she adores their children. The sister's family lives in a city adjacent to the city Joan lives in, and Joan sees them several times a year.

Joan's older brother, Alec, died in a car accident when she was 15 years old. A newly licensed driver, he took the family for a drive one day. Mother and father had some minor

Casefile by Segment (cont'd)

injuries, Joan herself remembers "coming out practically unscathed." Alec had been her "best friend."

Ailing Segment

The time around Alec's death was a difficult period for everyone. Her father withdrew, "Dad was no help, he just ignored the whole thing," her mother's drinking got worse, and Joan remembers getting depressed. The first year after the death was the worst period. Joan suddenly started

getting very thin, had trouble eating, and was eventually hospitalized for two months. They had to force-feed her. "I suppose I must have gotten down to 85 lbs. or so. They told me I was anorexic and that it was all in my head."

Joan has been dating the same man, Jim, for six months. Although she hasn't told him, she has grown very close to Jim and "doesn't know what I would do with out him." Asked why Jim seems like the only man for her, Joan replies, "being overweight, I don't think I've ever really been attractive to guys."

Actually, Joan has purposely lost 22 lbs. over the last few months to make herself more attractive to Jim. "I still have a way to go yet before I'm sure that he'll like what he sees, and before pregnancy gets me for good." The last time she lost so much weight was 17 years ago, after the death of her older brother.

Closing Segment

Except for the period after her brother's death, Joan has been in good physical health. "I don't do drugs and I rarely drink (alcoholic beverages)." With the exception of the occasional allergy, Joan reports never "getting sick." The only medication she takes is allergy pills.

Joan has two female friends that she is very close to. "We do a lot of fun things together and I can really open up with them."

In her free time, Joan participates in aerobic boxing at the YWCA twice a week, is a member of a horseback riding club, and volunteers at the local animal shelter.

Although she reports having difficulty reconciling some aspects of her lifestyle with the teachings of her church, Joan has continued to practice her family's religion, Roman Catholicism.

Casefile 1

Please read the following casefile *aloud* and *think aloud*, telling me everything that comes to your mind in terms of the client's problems. You may go back over the material at any time.

Joan is a 32-year-old Caucasian woman, who lives alone.

She has come for counselling with the following complaint: "I haven't been able to have a good romantic relationship with a man."

At the present time, Joan wants to get married. She is concerned about growing old alone, and feels that "time is running out. If I don't get married and have children soon, I'm afraid I never will."

Joan reports that since late adolescence, she has had many brief sexual relationships, or in her own words, "one-night stands," with different men. When she does stay connected with a man, the relationship usually ends when the man loses interest in her. The longest relationship she has been in is her current one; so far it has lasted six months. Joan states there might be some psychological basis behind her difficulties with men, although she cannot think of what that might be.

Joan's father was a newspaper editor, who "knew everything about everything." According to her, he relished the frustration he caused others by proving them wrong.

Joan never felt close to her father, and swore as a teenager that she would never marry a man like him.

Joan stated that her father really only showed affection towards his son.

Her mother worked as a homemaker all her life. Joan reported that despite a drinking problem, her mother "tried to be a loving person."

Joan described the relationship between her parents as distant; they hardly spoke and rarely touched. They maintained separate bedrooms.

Joan was obedient and tried to please her parents, especially her mother. She helped a lot, for example, with household chores.

<u>Casefile 1</u> (cont'd)

Three years ago, Joan's parent's retired and moved to Florida. They exchange letters occasionally, and call each other on such family occasions as birthdays, holidays, and Father's and Mother's Day.

Joan has one sister who is two years younger than her. As a child, Joan regarded her sister as tall, attractive, athletic, and very talented in music and art. On the other hand, Joan remembers herself as being "fat and ugly" and not feeling feminine.

Her sister is married and has three children. Joan reported that, although privately she dislikes her sister's husband and disapproves of their marriage, she adores their children. The sister's family lives in a city adjacent to the city Joan lives in, and Joan sees them several times a year.

Joan's older brother, Alec, died in a car accident when she was 15 years old. A newly licensed driver, he took the family for a drive one day. Mother and father had some minor injuries, Joan herself remembers "coming out practically unscathed." Alec had been her "best friend."

Joan describes herself as "a survivor" (as distinguished from a victim). "Having been raised in an alcoholic family, I've been through a lot of emotionally trying times." As a result, "I am a stronger person who is able to take things in stride."

When Joan left home to start university, her mother sought treatment for her drinking problem, and her parents tried some couple counselling.

Joan remembers deciding that she too "could use a little help." She entered brief counselling to begin exploring her feelings about the brother she had lost (through death in an accident), and became involved with ALANON to help her with her feelings about her mother.

In university, Joan worked at two jobs to put herself through. During this time, She began channeling her drawing and math skills into architecture. She became quite proficient in her major, and eventually graduated with honours.

Nearing graduation, Joan was actively recruited by a prestigious architecture firm (her current employer). She is happy with her job and has risen "through the ranks very quickly."

Joan goes on to say that "except for when it comes to my relationship with men, basically I'm an optimist. I have learned to focus on the positive."

Casefile 1 (cont'd)

She wants to continue "growing as a person" and trying to become "the best person I can be."

Except for the period after her brother's death, Joan has been in good physical health. "I don't do drugs and I rarely drink (alcoholic beverages)." With the exception of the occasional allergy, Joan reports never "getting sick." The only medication she takes is allergy pills.

Joan has two female friends that she is very close to. "We do a lot of fun things together and I can really open up with them."

In her free time, Joan participates in aerobic boxing at the YWCA twice a week, is a member of a horseback riding club, and volunteers at the local animal shelter.

Although she reports having difficulty reconciling some aspects of her lifestyle with the teachings of her church, Joan has continued to practice her family's religion, Roman Catholicism.

Casefile 2

Please read the following casefile aloud and think aloud, telling me everything that comes to your mind in terms of the client's problems. You may go back over the material at any time.

Joan is a 32-year-old Caucasian woman, who lives alone.

She has come for counselling with the following complaint: "I haven't been able to have a good romantic relationship with a man."

At the present time, Joan wants to get married. She is concerned about growing old alone, and feels that "time is running out. If I don't get married and have children soon, I'm afraid I never will."

Joan reports that since late adolescence, she has had many brief sexual relationships, or in her own words, "one-night stands," with different men. When she does stay connected with a man, the relationship usually ends when the man loses interest in her. The longest relationship she has been in is her current one; so far it has lasted six months. Joan states there might be some psychological basis behind her difficulties with men, although she cannot think of what that might be.

Joan's father was a newspaper editor, who "knew everything about everything." According to her, he relished the frustration he caused others by proving them wrong.

Joan never felt close to her father, and swore as a teenager that she would never marry a man like him.

Joan stated that her father really only showed affection towards his son.

Her mother worked as a homemaker all her life. Joan reported that despite a drinking problem, her mother "tried to be a loving person."

Joan described the relationship between her parents as distant; they hardly spoke and rarely touched. They maintained separate bedrooms.

Joan was obedient and tried to please her parents, especially her mother. She helped a lot, for example, with household chores.

Casefile 2 (cont'd)

Three years ago, Joan's parent's retired and moved to Florida. They exchange letters occasionally, and call each other on such family occasions as birthdays, holidays, and Father's and Mother's Day.

Joan has one sister who is two years younger than her. As a child, Joan regarded her sister as tall, attractive, athletic, and very talented in music and art. On the other hand, Joan remembers herself as being "fat and ugly" and not feeling feminine.

Her sister is married and has three children. Joan reported that, although privately she dislikes her sister's husband and disapproves of their marriage, she adores their children. The sister's family lives in a city adjacent to the city Joan lives in, and Joan sees them several times a year.

Joan's older brother, Alec, died in a car accident when she was 15 years old. A newly licensed driver, he took the family for a drive one day. Mother and father had some minor injuries, Joan herself remembers "coming out practically unscathed." Alec had been her "best friend."

The time around Alec's death was a difficult period for everyone. Her father withdrew, "Dad was no help, he just ignored the whole thing," her mother's drinking got worse, and Joan remembers getting depressed. The first year after the death was the worst period. Joan suddenly started getting very thin, had trouble eating, and was eventually hospitalized for two months. They had to force-feed her. "I suppose I must have gotten down to 85 lbs. or so. They told me I was anorexic and that it was all in my head."

Joan has been dating the same man, Jim, for six months. Although she hasn't told him, she has grown very close to Jim and "doesn't know what I would do with out him." Asked why Jim seems like the only man for her, Joan replies, "being overweight, I don't think I've ever really been attractive to guys."

Actually, Joan has purposely lost 22 lbs. over the last few months to make herself more attractive to Jim. "I still have a way to go yet before I'm sure that he'll like what he sees, and before pregnancy gets me for good." The last time she lost so much weight was 17 years ago, after the death of her older brother.

Except for the period after her brother's death, Joan has been in good physical health. "I don't do drugs and I rarely drink (alcoholic beverages)." With the exception of the occasional allergy, Joan reports never "getting sick." The only medication she takes is allergy pills.

Casefile 2 (cont'd)

Joan has two female friends that she is very close to. "We do a lot of fun things together and I can really open up with them."

In her free time, Joan participates in aerobic boxing at the YWCA twice a week, is a member of a horseback riding club, and volunteers at the local animal shelter.

Although she reports having difficulty reconciling some aspects of her lifestyle with the teachings of her church, Joan has continued to practice her family's religion, Roman Catholicism.

Casefile 3

Please read the following casefile aloud and think aloud, telling me everything that comes to your mind in terms of the client's problems. You may go back over the material at any time.

Joan is a 32-year-old Caucasian woman, who lives alone.

She has come for counselling with the following complaint: "I haven't been able to have a good romantic relationship with a man."

At the present time, Joan wants to get married. She is concerned about growing old alone, and feels that "time is running out. If I don't get married and have children soon, I'm afraid I never will."

Joan reports that since late adolescence, she has had many brief sexual relationships, or in her own words, "one-night stands," with different men. When she does stay connected with a man, the relationship usually ends when the man loses interest in her. The longest relationship she has been in is her current one; so far it has lasted six months. Joan states there might be some psychological basis behind her difficulties with men, although she cannot think of what that might be.

Joan describes herself as "a survivor" (as distinguished from a victim). "Having been raised in an alcoholic family, I've been through a lot of emotionally trying times." As a result, "I am a stronger person who is able to take things in stride."

When Joan left home to start university, her mother sought treatment for her drinking problem, and her parents tried some couple counselling.

Joan remembers deciding that she too "could use a little help." She entered brief counselling to begin exploring her feelings about the brother she had lost (through death in an accident), and became involved with ALANON to help her with her feelings about her mother.

In university, Joan worked at two jobs to put herself through. During this time, She began channeling her drawing and math skills into architecture. She became quite proficient in her major, and eventually graduated with honours.

Casefile 3 (cont'd)

Nearing graduation, Joan was actively recruited by a prestigious architecture firm (her current employer). She is happy with her job and has risen "through the ranks very quickly."

Joan goes on to say that "except for when it comes to my relationship with men, basically I'm an optimist. I have learned to focus on the positive."

She wants to continue "growing as a person" and trying to become "the best person I can be."

Joan's father was a newspaper editor, who "knew everything about everything." According to her, he relished the frustration he caused others by proving them wrong.

Joan never felt close to her father, and swore as a teenager that she would never marry a man like him.

Joan stated that her father really only showed affection towards his son.

Her mother worked as a homemaker all her life. Joan reported that despite a drinking problem, her mother "tried to be a loving person."

Joan described the relationship between her parents as distant; they hardly spoke and rarely touched. They maintained separate bedrooms.

Joan was obedient and tried to please her parents, especially her mother. She helped a lot, for example, with household chores.

Three years ago, Joan's parent's retired and moved to Florida. They exchange letters occasionally, and call each other on such family occasions as birthdays, holidays, and Father's and Mother's Day.

Joan has one sister who is two years younger than her. As a child, Joan regarded her sister as tall, attractive, athletic, and very talented in music and art. On the other hand, Joan remembers herself as being "fat and ugly" and not feeling feminine.

Her sister is married and has three children. Joan reported that, although privately she dislikes her sister's husband and disapproves of their marriage, she adores their children. The sister's family lives in a city adjacent to the city Joan lives in, and Joan sees them several times a year.

Casefile 3 (cont'd)

Joan's older brother, Alec, died in a car accident when she was 15 years old. A newly licensed driver, he took the family for a drive one day. Mother and father had some minor injuries, Joan herself remembers "coming out practically unscathed." Alec had been her "best friend."

The time around Alec's death was a difficult period for everyone. Her father withdrew, "Dad was no help, he just ignored the whole thing," her mother's drinking got worse, and Joan remembers getting depressed. The first year after the death was the worst period. Joan suddenly started *getting* very thin, had trouble eating, and was eventually hospitalized for two months. They had to force-feed her. "I suppose I must have gotten down to 85 lbs. or so. They told me I was anorexic and that it was all in my head."

Joan has been dating the same man, Jim, for six months. Although she hasn't told him, she has grown very close to Jim and "doesn't know what I would do with out him." Asked why Jim seems like the only man for her, Joan replies, "being overweight, I don't think I've ever really been attractive to guys."

Actually, Joan has purposely lost 22 lbs. over the last few months to make herself more attractive to Jim. "I still have a way to go yet before I'm sure that he'll like what he sees, and before pregnancy gets me for good." The last time she lost so much weight was 17 years ago, after the death of her older brother.

Except for the period after her brother's death, Joan has been in good physical health. "I don't do drugs and I rarely drink (alcoholic beverages)." With the exception of the occasional allergy, Joan reports never "getting sick." The only medication she takes is allergy pills.

Joan has two female friends that she is very close to. "We do a lot of fun things together and I can really open up with them."

In her free time, Joan participates in aerobic boxing at the YWCA twice a week, is a member of a horseback riding club, and volunteers at the local animal shelter.

Although she reports having difficulty reconciling some aspects of her lifestyle with the teachings of her church, Joan has continued to practice her family's religion, Roman Catholicism.

Casefile 4

Please read the following casefile aloud and think aloud, telling me everything that comes to your mind in terms of the client's problems. You may go back over the material at any time.

Joan is a 32-year-old Caucasian woman, who lives alone.

She has come for counselling with the following complaint: "I haven't been able to have a good romantic relationship with a man."

At the present time, Joan wants to get married. She is concerned about growing old alone, and feels that "time is running out. If I don't get married and have children soon, I'm afraid I never will."

Joan reports that since late adolescence, she has had many brief sexual relationships, or in her own words, "one-night stands," with different men. When she does stay connected with a man, the relationship usually ends when the man loses interest in her. The longest relationship she has been in is her current one; so far it has lasted six months. Joan states there might be some psychological basis behind her difficulties with men, although she cannot think of what that might be.

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Joan has been dating the same man, Jim, for six months. Although she hasn't told him, she has grown very close to Jim and "doesn't know what I would do with out him." Asked why Jim seems like the only man for her, Joan replies, "being overweight, I don't think I've ever really been attractive to guys."

Casefile 4 (cont'd)

Actually, Joan has purposely lost 22 lbs. over the last few months to make herself more attractive to Jim. "I still have a way to go yet before I'm sure that he'll like what he sees, and before pregnancy gets me for good." The last time she lost so much weight was 17 years ago, after the death of her older brother.

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Joan never felt close to her father, and swore as a teenager that she would never marry a man like him.

Joan stated that her father really only showed affection towards his son.

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Her sister is married and has three children. Joan reported that, although privately she dislikes her sister's husband and disapproves of their marriage, she adores their children. The sister's family lives in a city adjacent to the city Joan lives in, and Joan sees them several times a year.

Joan describes herself as "a survivor" (as distinguished from a victim). "Having been raised in an alcoholic family, I've been through a lot of emotionally trying times." As a result, "I am a stronger person who is able to take things in stride."

When Joan left home to start university, her mother sought treatment for her drinking problem, and her parents tried some couple counselling.

Casefile 4 (cont'd)

Joan remembers deciding that she too "could use a little help." She entered brief counselling to begin exploring her feelings about the brother she had lost (through death in an accident), and became involved with ALANON to help her with her feelings about her mother.

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Nearing graduation, Joan was actively recruited by a prestigious architecture firm (her current employer). She is happy with her job and has risen "through the ranks very quickly."

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She wants to continue "growing as a person" and trying to become "the best person I can be."

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Although she reports having difficulty reconciling some aspects of her lifestyle with the teachings of her church, Joan has continued to practice her family's religion, Roman Catholicism.

Appendix F

Practice Tasks

Before we begin with the casefile, here are some practice tasks to help you become comfortable with reading and *thinking aloud*. You may reread the instructions any time you wish to.

- 1. How many windows are there in your home. Describe your thoughts as you count them.
- 2. Subtract the following: Five hundred and twenty-one minus two hundred and ninety-two. Describe the manner in which you calculate this example.
- 3. Here is one more practice task. Please read the following case material and verbalize all the thoughts you have about it relative to the problems the client is dealing with:

Peter, age 22, has been referred for counselling by his physician because of the increasing difficulty he is having attending school. This problem began approximately 6 months ago. He has difficulty falling asleep, and once he does, he finds himself waking up several times. The client reports lethargy and decreased interest in a wide variety of activities. A good student, he finds "classes a drag, the material uninteresting, and school friends a bore." is mother died one year go. Peter is an only child.
Appendix G

Prompts 1 4 1

- 1. You may re-read the instructions any time you like.
- 2. Please tell me what you are thinking at the end of each sentence, if possible.
- 3. There may be information that is not present in the casefile and that you might find helpful to have. However, given this information, please tell me what comes to your mind in terms of assessment and in terms of the client's problems.
- 4. What are you wondering about?
- 5. Now you can proceed with the casefile in the same manner as you have with the Practice Task.
- 6. Would you like to re-read the Instructions?

Based on the attached casefile please answer the following questions:

1) a) Rate Joan's overall level of functioning at this point in time by selecting a number which describes her functioning on a hypothetical continuum of mental health/illness as compared to clients typically seen in private practice.

"Level of Functioning" rating:

b) Rate the highest level of adaptive functioning which could be expected for Joan (i.e., a prognosis) at this point in time, given sufficient motivation for change, a good therapeutic relationship, and adequate time for whatever form of treatment is adopted. Note that in making your rating consider this client in comparison with those usually seen in private practice.

"Prognosis After Treatment" rating:

c) How often would you arrange to see Joan for therapy at this point in time:

i) not at all ii) everyday iii) once a week iv) once a month v) Other _____

- d) What total length of treatment would you recommend ? A minimum of ______ weeks/months (circle one).
- 2) a) Rate Joan's overall level of functioning at this point in time by selecting a number which describes her functioning on a hypothetical continuum of mental health/illness as compared to clients typically seen in private practice.

"Level of Functioning" rating: _____

b) Rate the highest level of adaptive functioning which could be expected for Joan (i.e., a prognosis) at this point in time, given sufficient motivation for change, a good therapeutic relationship, and adequate time for whatever form of treatment is adopted. Note that in making your rating consider this client in comparison with those usually seen in private practice.

"Prognosis After Treatment" rating:

c) How often would you arrange to see Joan for therapy at this point in time:

i) not at all ii) everyday iii) once a week iv) once a month v) Other

d) What total length of treatment would you recommend ? A minimum of ______ weeks/months (circle one).

Based on the attached casefile please answer the following questions:

3) a) Rate Joan's overall level of functioning at this point in time by selecting a number which describes her functioning on a hypothetical continuum of mental health/illness as compared to clients typically seen in private practice.

"Level of Functioning" rating:

b) Rate the highest level of adaptive functioning which could be expected for Joan (i.e., a prognosis) at this point in time, given sufficient motivation for change, a good therapeutic relationship, and adequate time for whatever form of treatment is adopted. Note that in making your rating consider this client in comparison with those usually seen in private practice.

"Prognosis After Treatment" rating:

c) How often would you arrange to see Joan for therapy at this point in time:

i) not at all ii) everyday iii) once a week iv) once a month v) Other _____

- d) What total length of treatment would you recommend ? A minimum of ______ weeks/months (circle one).
- 4) a) Rate Joan's overall level of functioning at this point in time by selecting a number which describes her functioning on a hypothetical continuum of mental health/illness as compared to clients typically seen in private practice.

"Level of Functioning" rating:

b) Rate the highest level of adaptive functioning which could be expected for Joan (i.e., a prognosis) at this point in time, given sufficient motivation for change, a good therapeutic relationship, and adequate time for whatever form of treatment is adopted. Note that in making your rating consider this client in comparison with those usually seen in private practice.

"Prognosis After Treatment" rating:

c) How often would you arrange to see Joan for therapy at this point in time:

i) not at all ii) everyday iii) once a week iv) once a month v) Other

d) What total length of treatment would you recommend ? A minimum of ______ weeks/months (circle one).

Appendix H

- 6. The approach that best describes your primary applied-theoretical orientation to therapy is:
- 7. How important do you think your theoretical orientation was in your assessment of "Joan?"
 - Very important
 Moderately important
- 4) Not important at all (i.e., not relevant)5) Other ______
- 3) Minimally important
- 8. What information was most helpful to you in judging this case? State the client data that were most important or useful to you. Rank-order the data from the most important to the least important.

Appendix I

Data Analysis using MANOVA

Analyzing multiple dependent variables through several univariate ANOVAs, one for each dependent variable, can lead to inaccuracies in the interpretation of results by virtue of inflated Type I error rates. Moreover, multiple separate univariate analyses cannot take into consideration possible intercorrelations among the dependent variables.

MANOVA models are ANOVA models that are suitable for analysis of data from experiments that give rise to more than one dependent variable (Haase & Ellis, 1987). The use of MANOVA provides a test of the existence of group differences across all dependent variables simultaneously (Betz, 1987). Statistical reasons why researchers may favor performing MANOVA procedure over separate univariate analyses include: a) MANOVA keeps overall alpha level under control, b) MANOVA takes into account the intercorrelation among variables, and c) MANOVA may reveal differences not shown in separate ANOVAs. That is, although the groups may not be significantly different on any of the variables individually, small differences on several of the variables may combine to produce a reliable overall difference (Stevens, 1992).

In the context of the current study, the application of a MANOVA procedure would help determine whether the behavior of the clinician-participants, as reflected by the dependent variables (e.g., type, kind and kind for each type of inference), was changed by manipulating the independent variable (e.g., group or order of presentation of client information). Statistically speaking, the MANOVA would test whether the independent variable significantly affected an optimal linear combination of the dependent variable means (optimal in the sense that group difference were optimized). Should a significant MANOVA main effect be found, follow-up tests would then be performed to help identify the extent to which the individual dependent variables contributed to the significant multivariate effect.

Two frequently used follow-up procedures to MANOVA are the protected univariate \underline{F} test and discriminant analysis (Betz, 1987; Haase & Ellis, 1987). Given a study with sufficient sample size, and in order to avoid the experiment-wise error inherent

in repeated univariate analyses, a discriminant analysis could be used to examine the extent to which the scores on the dependent variables differentiated participants in the groups. From the perspective of the present study, a discriminant analysis would answer the question: Has the order of presentation of client information produced enough difference in the predictor variables (e.g., kind, type and kind for each type of inference) that the separate groups (e.g., "HEnAL" and "AEnHL") can be reliably separated on the basis of those variables? The calculated discriminant function coefficients would be measures of the unique contribution of any dependent variable over and above that of the remaining dependent variables. It is important to note, however, that unless the total sample size to number of variables ratio is large (i.e., 20:1), results would have to be interpreted with caution (Stevens, 1992). To accommodate to difficulties associated with recruiting, interviewing, and applying the "think-aloud" methodology to a large sample of participants, researchers would benefit from carefully choosing, combining, and/or limiting he number of dependent variables "of interest" they wish to investigate. For example, relative to the kinds of inferences generated by clinician-participants in the current study, whereas twenty kinds of inferences were identified as possible dependent variables, six of them (i.e., those relating to the client's family history, romantic relationship history, psychological status, affective status, personality factors, and coping strategies) accounted for 90% of the kinds inferences generated.

Betz, N. E. (1987). Use of discriminant analysis in counseling research. Journal of Counseling Psychology, 34(4), 393-403.

Haase, R. F., & Ellis, M. V. (1987). Multivariate analysis of variance. Journal of Counseling Psychology, 34(4), 404-413.

Stevens, J. (1992). <u>Applied multivariate statistics for the social sciences</u> (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.







TEST TARGET (QA-3)









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