THE UNIVERSITY OF CALGARY

Changes in Counselling Skills and Cognitive Structure of Counsellor Trainees

by

Pamela Margaret Johnson

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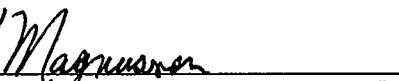

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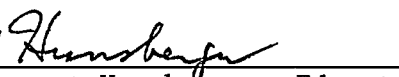

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ABSTRACT

The contemporary counselling role necessitates a high level of counselling and cognitive skill. Counsellor education programs have focused primarily on teaching counselling skills and, for the most part, have neglected the training of higher-order cognitive skills.

The purpose of the study was to examine changes in counselling skills and conceptualizations accompanying master's level prepracticum skill training. Six students voluntarily participated in the study. The study utilized a pretest posttest design. Participants' counselling skills were measured through the use of videotaped counselling interviews and conceptualizations were measured by a cognitive mapping task.

Statistically reliable changes for six out of twelve discrete counselling skills were found. Proportions of certain facilitative skills to total utterances increased and proportions of nonfacilitative skills to total decreased. Participants evidenced increased organization and hierarchical structure in their cognitive maps. The acquisition of core concepts in counselling was noted also. Participants with the most dramatic changes in skills also showed the most change in conceptualizations of counselling.

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CHAPTER ONE
INTRODUCTION

We are living in a time of rapid social change. Instability, diversity, and disorder characterize the world at the end of the 20th century (Toffler, 1984). Society is in a profound crisis of intellectual, moral, and spiritual dimensions (Capra, 1988), manifest in social issues such as ecological concerns, increased crime and violence, overcrowding, and unemployment. The complexities of these problems and the unidentified challenges of the future are having a negative psychological impact on many people. In order to gain better skill in coping with such change and to discover personal meaning in their new environments and lifestyles, some turn to counselling.

Counselling aims to promote client change and growth in order to enhance personal freedom, satisfaction, and competence. This is accomplished not only through enhanced awareness and understanding, but also through an increased ability to meet the challenges of a changing environment. The professional counsellor is concerned with processes occurring within the client and problems and resources in the client's environment (Blocher, 1987). The counsellor must understand the complex interactions between people and their environments across the life span. The rate of change and the demands of modern life have increased the complexity of the counsellor's role.

In order to meet the challenges of the contemporary counselling role, counsellors require a high level of skill and knowledge. They must be able to assess client problems and situations, choose from among a wide variety of potential intervention strategies, recognize their own limitations, and be aware of alternative resources for their clients. Increasingly, counsellors require excellent preparation in their training programs in order to effectively meet client needs.

The goal of counsellor training is the education and development of competent, ethical, and responsible counsellors (Blocher, 1983). A central component of counsellor education programs has been the development of basic counselling skills. The emphasis placed on this training component derives from an assumption that a good repertoire of skills will enable counsellors to foster client change (Hiebert & Noort, 1988). However, counsellor educators have begun to emphasize the need to provide for the development of the cognitive dimension as well (Cummings, Hallberg, Martin, Slemon, & Hiebert, 1990; Fuqua, Johnson, Anderson, & Newman, 1984; Hiebert, 1987; Hillerbrand, 1989; Martin, 1990).

The multidimensional and often ambiguous nature of counselling necessitates a high level of counsellor cognitive functioning. Cognitive functioning is comprised of two main components, cognitive process and cognitive structure. Cognitive process refers to ongoing, moment-by-moment thinking; cognitive structure to organized networks believed to exist in long-term memory (Hiebert, 1987). These structures provide a category system for organizing and adding meaning to the information received from the environment. It appears that cognitive resources play a central role in counsellor effectiveness (Blocher, 1983; Hiebert, 1987; Martin, 1984).

Statement of The Problem

This research examined counsellor trainees' acquisition of counselling skills and accompanying changes in cognitive structure. The exploration of this area is important for several reasons. The literature is replete with studies on the acquisition of counselling skills but offers little on the cognitive structure of counsellor trainees. Thus, an important dimension in counsellor functioning may be overlooked in counsellor training programs. It may be that certain types of cognitive structure are associated with enhanced counsellor functioning or facilitate acquisition of counselling skills. Before developing ways to augment counsellor cognitive functioning, an important first step is to demonstrate the relationship between cognitive structure and counselling skill.

The purpose of the study was to follow counsellor trainees across a prepracticum course in order to: 1) measure changes in counselling skill, 2) analyze the nature and extent of changes in cognitive structure, and 3) determine the relationship between changes in counselling skills and cognitive structure.

Overview

The second chapter reviews the relevant counsellor education literature in the areas of skill development and cognitive functioning. Chapter three describes the participants involved in the study, the methods and instruments utilized in the research, and the statistical treatment of the data. Chapter four presents the descriptive and statistical findings of the study and a synthesis of results, and Chapter five provides a discussion and interpretation of the findings along with suggestions for further research in this area.

CHAPTER TWO
SURVEY OF RELATED LITERATURE

This chapter provides the theoretical framework and the empirical support for the present study. The first section outlines current counsellor education approaches to master's level training. The second section describes training models for acquiring counselling skills and reviews empirical studies regarding the effectiveness of skill training. The third section examines the impact of cognitive psychology on counselling and counsellor education and reviews recent literature on counsellor cognitive functioning. The chapter ends with the research hypotheses that formed the basis for the study.

Counsellor Education

The goal of counsellor education programs has been to provide high quality education and training for the counselling professional. Hiebert and Uhlemann (in press) stated that the effectiveness of counsellor education programs rests on a clear conception of how counselling psychologists define themselves. Unfortunately, counselling psychology is in the midst of an identity crisis (Hiebert, Simpson, & Uhlemann, in press; Shertzer & Isaacson, 1980).

Counselling psychology's identity continually changes as the profession develops and matures. Early definitions focused on the provision of preventive and remedial services to normal clients, the developmental nature of client concerns, the positive aspects of individuals, and the appropriateness of educational settings for the practice of the specialty (Watkins, 1988; Watkins, Lopez, Campbell, & Himmell, 1986). Recent definitions have neither distinguished between the normal and the more disturbed client, nor designated educational institutions as the primary work setting (Watkins, 1988). Significant content clusters within the specialty were enumerated by Gelso et al., (1988): career development and intervention, psychotherapeutic and personal counselling process, student ecology and development, group processes and interventions, training and supervision, and diagnosis and assessment. Despite changes in emphasis in these areas over the years, counselling psychologists continue to provide a broad range of services to the community.

The profession has adopted the scientist-practitioner model as a framework for training in counsellor education programs (Gelso, Raphael, Black, Rardin, & Skalkos, 1983; Meara, 1987). The model is based on the premise that scientist-practitioners: (1) utilize new research findings in order to apply the latest treatments developed, (2) empirically evaluate their interventions, and (3) produce and report data from their work

settings to the scientific community (Barlow, Hayes, & Nelson, 1984). In this way, scholarly inquiry guides the activities of counselling psychologists (Meara et al., 1988). However, in a recent occupational analysis study, Fitzgerald and Osipow (1986) found that counselling psychologists engage primarily in counselling and psychotherapy, teaching, and administration. Research did not receive the same emphasis. Given the centrality of the model in training the counselling professional, one would expect conceptual shifts among counsellor trainees in the direction of research activity. However, low research productivity among counselling psychologists has brought the viability of the model into question (Barlow et al., 1984; Fitzgerald & Osipow, 1986; Gelso et al., 1983; Goldfried, 1984; Magoon & Holland, 1984). Meara (1987) recommended reconsideration of the scientist-practitioner model for the following reasons: (1) increased instability in society has made therapy more complex and challenging necessitating more clinical preparation than in the past, (2) financial support from universities has dwindled thereby increasing pressure on students, (3) students have more interest in pursuing private practice than research activities, and (4) research training is not integrated into practice experiences.

Belar and Perry (1992) stated that the hallmark of the scientist-practitioner model is not whether graduates publish in scientific journals, but whether scientific methods are integrated with practice. Gelso et al., (1988) suggested that practitioners have difficulty appreciating the interdependence of research and practice because of the indirectness of the link: research affects practice through the indirect path of the practitioner's conceptual framework. Further, they recommended enhancing the relationship between science and practice by: (1) including practitioners in research teams, (2) developing practice-oriented syntheses of research, and (3) examining counselling participants' "ways of knowing" about counselling. Belar and Perry (1992) urged counsellor educators to prepare trainees to adapt to continual changes in both the knowledge/theory base in psychology and problems in practice.

Effectiveness of Training

Cook, Berman, Genco, Repka, and Shrider (1986) reported that counsellor education programs are being pressured to modify existing curriculum and training practices. The need to meet present training standards and the idiosyncracies of a changing job market were cited as sources of this pressure. Birk and Brooks (1986) added changing social trends to the list of factors adding to the complexity of the counsellor training issue. Meara (1987) pointed out that counsellor educators have lost control of education and training decisions and are reacting instead to pressures from inside and outside psychology.

In a survey of APA-affiliated master's level counsellors about their graduate training and counselling career, Watkins, Campbell, and McGregor (1989) found that over two-thirds of the respondents felt their training had prepared them adequately for counselling. In terms of satisfaction, only 55% of respondents were "quite" or "very" satisfied with their graduate education. Further, 85% reported "some" satisfaction with their career, but when asked if they would choose counselling as a career again, only half said they would. Rather, they would choose clinical psychology or psychiatry if they were given another opportunity. Therefore, the data suggested that counselling psychologists are not so much dissatisfied with their work, but with their identity and status. Perhaps the lack of a clear professional identity in training contexts has exacted a toll.

In order to acquire the requisite skill and knowledge base for facilitating client change, novice counsellors require an optimal learning environment. A first step is an accurate and thorough understanding of the counselling psychologist's professional identity. Unfortunately, counselling psychology's identity has been in continual flux since its inception, and some have called the present difficulties an identity crisis (Hiebert et al., in press; Shertzer & Isaacson, 1980). Part of this crisis involves doubts about the viability of the scientist-practitioner model as a framework for training. Identity issues have added to the already difficult task of planning training programs whose goal it is to help novices develop into counselling professionals.

Trainee Development

Several models of trainee development have been generated in the counsellor supervision literature. The general tenets of these models are that development is continuous and proceeds from the use of simple, concrete constructs toward complex and abstract conceptualizations, and that trainees progress through sequential and hierarchical stages as they learn conceptual and behavioral counselling skills (Borders, 1989; Stoltenberg, 1981; Stoltenberg & Delworth, 1987). Overall, there has been reasonable support for these general principles (McNeill, Stoltenberg, & Pierce, 1985; Worthington, 1987).

Loganbill, Hardy, and Delworth (1982) posited that trainees recycle through three developmental stages: stagnation, confusion, and integration. Stage 1, stagnation, is characterized by naïve unawareness in the beginning trainee, or "stuckness", in a more experienced counsellor. The confusion in Stage 2 consists of instability, disorganization, conflict, and fluctuations in development. Trainees reach integration in stage 3 as new conceptual understanding, reorganization, flexibility, and security is achieved.

Stoltenberg's (1981) counsellor complexity model views the trainee as an individual who will emerge from training with a counsellor identity. This identity entails integration of skills, theory, and an enhanced awareness of self and others. The model posits four levels of trainee characteristics and education environments for optimal development. Level 1 counsellors generally have had a minimal amount of experience and are therefore insecure and dependent on the supervisor for instruction. The trainee at this stage is beginning to learn various counselling techniques and how theory is related to the counselling experience. Level 2 is characterized by oscillation between strong dependency on the supervisor and overconfidence in newly learned counselling skills. Experimentation with different counselling styles and the beginning of a counsellor identity is noted. Level 3 counsellors demonstrate increased empathy toward others and a more differentiated interpersonal orientation. Tolerance of different theoretical views and ability to work with a broader variety of clients also is evident. Level 4 counsellors are capable of independent practice due to integration of professional standards within a personal value system. At this level, counsellors also exhibit awareness of personal limitations and personal security.

Using Perry's (1970) developmental scheme, Cooper and Lewis (1983) pointed out that counsellor trainees commonly progress through cognitive transitions as they grapple with competing theoretical orientations. This often takes the form of a progression from a dualistic framework, to an acceptance of pluralism, and through to personal commitment to a theory.

McNeill et al., (1985) demonstrated that trainees progress through a continuous developmental sequence. Self-confidence, the ability to critique their own skills, and the ease with which they apply skills and theory improves with experience, education, and supervision. Similarly, in their three-year study of trainees in a counselling program, Hill, Charles, and Reed (1981) found that over time, trainees reported improved empathy for clients and an improvement in their ability to focus more on the client and less on themselves during an interview. Trainees also reported an enhanced ability to be more relaxed, natural, and spontaneous, as well as increase their use of interpretation and confrontation skills toward the end of their program. These studies support an expectation of conceptual change on the part of counsellor trainees as they move through the various developmental stages.

In the present study, participants were in the prepracticum phase of master's level training. A typical prepracticum experience and expected competencies at this level are therefore briefly described.

The Prepracticum

Loganbill et al., (1982) described three learning tasks for counselling psychologists: factual knowledge and theoretical concepts, skills, and personal self-knowledge. These tasks are accomplished through involvement in a program which comprises the following four elements: skill training, didactic coursework, auxiliary methods, and individual supervision.

The prepracticum typically concentrates on the first two of these: a course in fundamental counselling skills and the study of academic subjects designed to enhance understanding of human behavior (Stoltenberg, 1981). An introductory course in research methods is usually required as well in order to meet the requirements of the scientist-practitioner model (Haring-Hidore & Vacc, 1988).

Sansbury (1982) outlined counsellor competencies expected at the prepracticum level. Using an internal-external expansion paradigm, he suggested that "internal expansion competencies" expected of prepracticum students are: to feel comfortable in counselling situations and assimilate the role of the counsellor including appropriate distance, limits and attitudes. The "external expansion competencies" at this stage are: to learn basic listening, understanding, and communication skills, manage silences, establish rapport with a broad range of clients, assist clients with self-exploration, and form a general conceptual framework for interview direction and goals.

In an empirical investigation of the prepracticum phase of training, Stillman (1980) provided evidence that the level of facilitative responding in a prepracticum is related to later practicum performance. High ratings early in training on empathy, respect, genuineness, immediacy, concreteness, and confrontation correlated significantly with high ratings during practicum.

This brief description of the prepracticum highlights its importance in the total educational program. Counsellor educators seek to equip trainees with the requisite counselling skills and knowledge base for effectiveness in the applied setting. Furthermore, although theorists disagree as to the nature of change, there is agreement that counsellor trainees pass through definite developmental stages in training and it seems reasonable to conclude that counsellors' ways of conceptualizing the counselling process may change across time in addition to other kinds of knowledge or skill changes that typically are the focus of training. It is reasonable also to expect that certain kinds of conceptual change may facilitate or interfere with knowledge and skill acquisition. The next section of this review focuses on the acquisition of counselling skills.

Counselling Skills

The process of skill acquisition in counsellor education has been well-documented (Martin & Hiebert, 1985; Peters, Cormier & Cormier, 1978). The literature has viewed counselling skills as behavioral expressions of desirable counsellor attitudes and values (Stone & Kelly, 1983). Consequently, skill training has been a central focus of most counsellor education programs (Cummings et al., 1990; Fuqua & Gade, 1982; Hiebert & Noort, 1988; Kelly & Stone, 1989). Various theoretical orientations have impacted the way in which skill training is approached.

Theoretical Influences on Skill Training

Newman and Scott (1988) cited three major theoretical influences on the skill training process: Ivey's (1971) microcounselling program, Bandura's (1977) social learning theory, and Carkhuff's (1969) human relations training. Collectively, these approaches are referred to as communication skills training models (Fuqua & Gade, 1982).

Ivey's (1971) microcounselling program may have had the most impact on skill training (Stoltenberg & Delworth, 1987). It is based on the assumption that complex skills are learned best by breaking them down into smaller units. Therefore, trainees learn discrete counselling skills in limited and focused training segments. Microcounselling's skill emphasis appears to be particularly useful in helping counsellor trainees obtain a vocabulary for the helping process (Ivey, 1990). Often simulated diadic, triadic, or videotaped practice is used. This approach was the first to apply social learning theory to training (Ivey, 1990).

Bandura's (1977) social learning theory viewed human learning as a result of a continuous interplay between cognitive, behavioral, and environmental factors. It proposes that most important human learning occurs through the processes of observation and instruction. The first stage of observation learning is acquisition of a response by attending to and retaining the important aspects of a model's behavior. The second phase requires the observer to transform the stored representations of the model's behavior into his or her own performance. Through modeling and self-corrective adjustments in response to feedback from performance, people learn to perform complex skills.

Carkhuff's (1969) human relations training model was formalized for training counsellors in the skills that were believed to be related to client change. The model emerged from a client-centered perspective (Truax & Carkhuff, 1967) and integrated didactic and experiential learning. The didactic component emphasized cognitive learning and counselling techniques and the experiential component emphasized development of the

trainee's self-awareness (Russell, Crimmings, & Lent, 1984). Modeling was included also in the form of live or videotaped demonstration of a discrete skill, followed by practice of the skill by the learner (Roffers, Cooper, & Sultanoff, 1988).

As a result of these influences, communication skills are usually taught in multiple-component training modules (Fuqua & Gade, 1982) that blend several distinct ingredients such as explanation, modeling of skills, practice, feedback about performance, and transfer of learning (Martin & Hiebert, 1985). Research has shown that multi-method models facilitate the acquisition of counsellor skills (Uhlemann, Lea, & Stone, 1976; Stone & Vance, 1976). With these developments, skill training has moved from an ill-structured enterprise to a clear system of instruction (Baker & Daniels, 1989).

The evolution of systematic counsellor training has included the development of various skill taxonomies for classifying counsellor skills. Four skill taxonomies used within counsellor education contexts are described next.

Counselling Skill Taxonomies

Robert Carkhuff's (1983) skill program views the effective helping process as involving four phases and types of skills: attending, responding, personalizing, and initiating. Attending facilitates the client's involvement in the helping process. Responding skills facilitate client self-exploration. Personalizing skills provide a transition from exploring to acting by helping the client understand personal goals. Initiating skills involve the development and implementation of steps needed to begin to live more effectively. These actions lead to deeper insights which, in turn, lead to more rewarding actions.

Ivey's (1988) taxonomy consists of a pyramid of microskills through which trainees progress. At the base of the pyramid is "attending behavior". Attending behaviors include eye contact, body language, vocal qualities, and verbal tracking. Once this unit is mastered, students learn questioning, client observation, reflection of feeling, paraphrasing, encouraging, and summarizing skills in the "basic listening sequence". The next stage is learning how to conduct a well-formed interview using "the five-stage interview structure": (1) rapport/structuring; (2) defining the problem; (3) defining a goal; (4) exploration of alternatives and confronting incongruity; and (5) generalization to daily life. The student then proceeds to learn the more advanced microskills of developmental assessment, focusing, reflection of meaning, and interpersonal influence. At this point, students are prepared for "skill integration" as they consider how the various skills relate to different theories, situations, and cultural groups. Finally, counsellor trainees reach the apex of the pyramid, "determining personal style and theory", which encourages the development of

personal style and an eclectic blend of skills and theories. Careful practice of microskills helps trainees generate a large array of alternatives for helping others.

Another popular microskills training program in counsellor education was developed by Gerard Egan. Egan (1990) leads the trainee through three stages of counselling technique. Stage 1 is an exploration stage and focuses on establishing the relationship, developing new perspectives, and beginning to work on issues that will make a difference. Stage 2 concentrates on developing preferred scenarios and acts as a bridge to stage 3 which links preferred scenarios to action plans and strategies.

The participants in the present study were trained in the Martin and Hiebert (1985) instructional counselling model, a systematic, atheoretical approach to counselling. The model provides a taxonomy of skills and strategies to help counsellors arrange appropriate learning activities for clients. The skill taxonomy divides counsellor skills into three broad skill clusters: structuring, soliciting, and reacting. Each of these skill clusters has a specific purpose in counselling. Structuring skills provide a meaningful context for learning and include Overviews, Transitions, and Summaries; soliciting skills provide opportunities for client cognitive or behavioral activity and include Open Questions and Declarative Probes; and reacting skills provide feedback to the client about client activity and include Reflect of Meaning and Reflect of Affect.

One goal of the Martin and Hiebert (1985) model is for counsellors to acquire extensive repertoires of discrete counselling skills. Trainees learn to select and sequence discrete skills to form counselling strategies that will help bring about client change. Trainees also learn to use discrete skills independently. Combining discrete skills results in a "Fused" utterance, which is to be avoided, as it creates confusion for the client. For instance, fusing a Summary with a Closed Question might result in an utterance such as, "It seems like you've sorted out the situation and decided on a plan of action. Do you want to continue now?" The client must then decide which aspect of the utterance to respond to.

Robinson and Halliday (1987) compared the stages and skills of the three major microcounselling approaches. They stated that Carkhuff, Ivey, and Egan share a view of counselling as a set of separate skills embedded in a problem-solving approach. They also agree that the first stage in the counselling process is discovering how the client views the problem. Descriptions of the second stage in the process vary only slightly. Egan (1990) and Carkhuff (1969) reported that the client's view of the problem often needs to be modified by the counsellor. Ivey is less explicit about modifying the client's understanding. He seems to view problem definition as discovering the client's view of the problem and then gathering supplementary data to ensure the most important aspects of the problem

are covered. The skills involved in the two stages demonstrate considerable agreement as well. Attending, listening, and reflection are used in the first stage to understand how the client views the world. Carkhuff described personalizing as intrinsic to the second stage. Personalizing is identifying the implications of the situation for the client and how the client contributes to the problem, and identifying goals for change. Egan and Ivey both include challenging and influencing as necessary skills for completing the second stage.

Four current skill taxonomies have been described to illustrate the fact that differences among the models are mostly semantic in nature rather than substantive. Conceptually, there are many similarities among the models. For instance, all view counselling as a succession of phases. Each phase consists of a specific set of counsellor skills employed with intentionality to influence client activity (Martin, Martin, Meyer, & Slemon, 1986).

Effective counselling requires more than a repertoire of discrete counselling skills (Martin & Hiebert, 1985; Patterson, 1988; Robinson & Halliday, 1987; Stone & Kelly, 1983). Appropriate use of skills requires an understanding of their purpose and potential effect upon the client and the helping relationship and intentional use requires a grasp of how skills augment treatment plans. Microskills form the basis of interviewing and help the counsellor learn to interact intentionally with a client (Ivey, 1988).

Intentional Use of Counselling Skills

The difference between counselling and everyday conversations with supportive members of one's family and friends is that there is a higher likelihood of achieving a desired outcome in counselling (Hiebert, 1990). In most counsellor training programs there is an emphasis on the process of counselling. Hiebert (1990) argued for an expanded conceptualization of counselling to include the outcome of counselling, not just the process. In this conceptualization, process and outcome variables would be seen as inseparable components of counselling, and counselling would be achieved only when client change occurred.

Ivey (1988) proposed that the construct of intentionality may help intertwine process and outcome. Ivey (1988) defined intentionality in counselling as "acting with a sense of capability and deciding from a range of alternative actions. The intentional individual has more than one action, thought, or behavior to choose from in responding to changing life situations. The intentional individual can generate alternatives in a given situation and approach a problem from different vantage points, using a variety of skills and personal qualities, adapting styles to suit different cultural groups" (p. 11). Lack of intentionality exists when the counsellor persists with a skill, problem definition, or theory

that is not having the desired effect (Ivey, 1983). Martin and Hiebert (1985) asserted that training effective counsellors requires an emphasis on counsellor intention, use of counselling skill (structure), and client change (function). "Counselling students must not only learn to perform specific counselling actions, they must learn to perform these actions in purposeful ways that result in client learning consistent with counselling objectives" (p. 226).

The notion of intentionality has received increasing support in the literature. Horvath, Marx, and Kamann (1990) examined the role of therapist and client intentions in counselling. They pointed out two distinct aspects of therapist intentions: (1) the reason and (2) the plan. The reason refers to the thoughts counsellors have about their own intentions and actions, and the plan refers to what the therapist has in mind for the client in terms of the client's thoughts, feelings, and behavior. Their investigation showed that clients valued therapist intentions that helped them (1) feel positive during sessions, (2) become aware of their feelings, and (3) feel understood. Counsellors valued intentions that were cognitive (e.g., learning, recognizing, making connections between ideas) and behavioral (e.g., ceasing or reducing a specific behavior) in focus. Clients, then, appear to interpret counselling as a method of reducing distress, whereas counsellors view therapy through generalized interpretations of client difficulties. This may reflect a difference between novice and expert conceptualizations of counselling. Heppner and Heesacker (1982) found that planfulness characterized those counsellors whose perceived expertness increased. In their analysis of counsellor intentions, Hill, Carter, and O'Farrell (1983) concluded that the construct of intentionality appeared to be a promising way to examine counsellor behavior.

There appears to be extensive support for the importance of intentionality in counselling. Effective counsellors act with intentionality in choosing skills and strategies (Schmidt, 1984). Greater intentionality can be expected as counsellors acquire greater expertise. Facilitative skills require purposeful application to effect successful outcomes in counselling.

Research Supporting Skill Training

Several studies support the emphasis on skill acquisition training in counsellor education. Cook et al., (1986) surveyed mental health agency employers' perceptions about knowledge and skill competencies of master's level counsellors and found that "skills in individual counselling" were considered the most important feature of training. After conducting a meta-analysis on microcounselling research, Baker and Daniels (1989) concluded that the approach "is effective for teaching simple, clearly defined skills to a

variety of trainees" (p. 219). Another study showed that a group of trainees schooled in a skill-based training model had higher skill levels and were able to apply their skills to actual client interviews significantly better than a group trained in conceptual skills only (Roffers et al., 1988). Finally, Kaplan's (1983) review of practicum research indicated that microtraining was effective in practicum.

Research on Limitations of Skill Training

Several researchers have pointed out limitations of skill training models. One problem skill-based education models have not addressed adequately is the difficulty novice counsellors have in transferring their newly acquired skills. Guttman and Haase (1972) showed that transfering skills from training to applied settings two weeks after training reflected a dramatic reduction in skill level. Bouchard et al., (1980) found that skill-based training was better than conceptual-based training for skill acquisition, but that few acquired skills transfered from role-played interviews to actual client interviews. They also found that neither training method was effective in facilitating client change. The Roffers et al., (1988) study mirrored these findings. Trainees in both the skill-based and conceptual-based groups exhibited a relatively low level of skill when required to transfer their skills. Similarly, Stone and Vance (1976) demonstrated that counselling students were only able to demonstrate their newly-acquired skills in written response formats, not in applied contexts. Skill relapse is still an important, unresolved issue in skill training (Roffers et al., 1988).

Another problem is that counsellor skill training does not necessarily improve counselling-related attitudes (Stone & Kelly, 1983). Negatively valenced adjectives about clients were generated after participants received skill training believed to enhance positive views of clients. They argued that "counsellor educators have defined training methods and skill outcomes with little attention given to the cognitive processes and content associated with skill development" (p. 213).

A third problem with skill-based training models was identified by Robinson and Halliday (1987). In their view, microcounselling approaches: (1) do not explain how an understanding of the client's problem is reached, (2) concentrate on communication techniques involved in increasing the client's understanding, and (3) leave counsellors without a rationale for their use of the various skills. An illustration of these problems was found in Tracey, Hays, Malone, and Herman's (1988) study. Beginning counsellors focused on the use of certain skills and applied them in a rigid manner. In contrast, doctoral counsellors were more flexible in their use of skills. These results suggest that

counselling skills need to be used within conceptual guidelines. The ability to cognitively organize client information and a broad base of practical and theoretical knowledge may help counsellors form treatment goals that enhance intentional use of skills (Mallinckrodt & Nelson, 1991).

Other researchers have indicated the need to expand the focus of skill acquisition. Some have suggested it is time to examine the effects of teaching higher-order skills (Baker & Daniels, 1989; Fuqua & Gade, 1982; Hill et al., 1981). Examples of what is meant by higher-order counselling skills emerged from the Hill et al., (1981) study: "timing, appropriateness of intervention, ability to conceptualize client dynamics, planning treatment strategies, methods for working with resistant and defensive clients, and ideas about when and how to terminate" (p. 434). Fuqua and Gade (1982) emphasized the need to develop means of assessing the acquisition of higher-order counselling skills.

Martin (1990) defined skills as discrete behaviors that can be improved with practice, and expressed the belief that skills probably can be trained. However, he cautioned against referring to psychological phenomena such as empathy and coping as skills or collections of skills. Skills are involved in empathy and coping, but considerable knowledge about the contexts and purposes associated with effective skill use is essential. Martin (1990) also stressed that recent empirical research has pointed to conceptualizations underlying skill usage, rather than skills per se, as leading to helpful counsellor actions. Part of these conceptualizations undoubtedly pertain to the purpose of the counselling interview. It is reasonable to assume that the different purposes of counselling interviews will be associated with different counselling skills and differing conceptualizations on the part of both counsellor and client. Thus, where the purpose of a counselling interview is information-gathering, counsellor conceptualizations might focus on the important factors pertaining to the problem situation and correspondingly, counsellor skills might include an emphasis on open questions and perception checking (Ivey, 1988). On the other hand, where the purpose of the interview is to establish a relationship, counsellor conceptualizations might focus on the nature of the client as a person and counselling skills might demonstrate a predominance of reflections of meaning and affect (Carkhuff, 1983; Ivey, 1988).

Skill training models appear to have limitations. While microcounselling has permeated training in the helping professions, it does not represent a comprehensive training theory (Ivey, 1990; Newman & Scott, 1988). Many theorists and researchers agree that microcounselling fails to address the training of the cognitive dimension in counselling (Blocher, 1983; Fuqua & Gade, 1982; Hill et al., 1981; Robinson & Halliday, 1987). The

relationship between counselling skills and cognitions has important implications for counselling and counsellor education (Fuqua, Johnson, Anderson, & Newman, 1984). If the nature of conceptual change that facilitates maximum skill acquisition can be identified, then counsellor educators can focus on facilitating conceptual changes as well as skill acquisition. Improved understanding of the relationship between skills and cognitions is possible through recent findings in cognitive psychology.

The Cognitive Dimension

The cognitive dimension has become dominant in psychology in recent years (Anderson, 1990; Di Vesta, 1987; Martin, 1989; Stone, 1980). "Cognitive psychology attempts to understand the nature of human intelligence and how people think" (Anderson, 1990, p. 1). This includes the study of human appraisals, attributions, belief systems, intentions, and expectancies. Past experiences are brought to present learning situations and affect what is perceived, attended to, and remembered. This notion reflects a central tenet of cognitive psychology: individuals are active learners rather than passive recipients of information. Individuals construct their own thoughts, meanings, and behavior in a unique way. In its attempt to grasp the nature of human thought processes, cognitive psychology has much to offer.

Anderson (1990) gave two reasons for the study of cognitive psychology: (1) scientific curiosity and (2) practical implications of the field. Besides the natural desire to know, understanding human cognition benefits individuals and society. Many of our current problems result from an inability to cope with cognitive demands, particularly amidst the "information explosion" and the "technological revolution" we are experiencing. One practical application for studying cognitive psychology, then, is to discover ways of helping people in their quest for more effective living. This includes improving our ability to teach those engaged in intellectual pursuits.

West, Fensham, and Garrard (1985) stated that, in theory, the purpose of teaching is to impart an intended knowledge structure of a particular domain to a student. In practice, however, students develop their knowledge store with "different degrees of completeness, different degrees of accord with the intended meanings and with different nature and degree of relationship with other aspects of their cognitive structure" (p. 36). Understanding how individuals conceptualize a knowledge domain has the potential of enhancing instructional endeavours. Within the vast field of cognitive psychology, an approach has emerged that attempts to specify the nature of conceptualization.

The Information Processing Approach

As the name suggests, the information processing approach is concerned with how information is moved through the cognitive system (Klahr & Wallace, 1976). The overall goal of this approach is to understand the cognitive processes and strategies people use in performing tasks (Sternberg, 1985).

The information processing models that have been developed propose a cognitive system comprised of several interrelated systems (Gagné, 1977). In general, it is hypothesized that all incoming information enters the sensory information storage system for a brief time. Through processes such as selective attention, some information is transferred to short-term memory. The short-term systems process information into forms that can be stored in long-term memory. Long-term memory consists of complex cognitive structures that allow for acquisition of new knowledge as well as recall of past knowledge. Existing cognitive structure is the principal factor in meaningful learning and retention of domain-specific content (Ausubel, Novak, & Hanesian, 1978). When people encounter new information, past knowledge is required to fill in missing information or to make sense of what is currently happening. The new information subsequently modifies the existing cognitive structure.

Cognitive structure has two components: (1) concepts and (2) the organization of those concepts (West et al., 1985). Concepts are basic units of information such as facts or beliefs (White, 1985), joined together by propositional links (Martin, 1985), stored either in schemata or in production systems (Martin, 1987). Schemata organize experienced knowledge and encompass all that the learner knows about self and the world whereas production systems organize knowledge about the execution of skills (Glaser, 1984). Efficient information processing requires effective organization of concepts; organization facilitates storage as well as recall and application of the material (Gagné, 1977).

The acquisition of concepts is a never-ending process (Pines, 1985). Conceptual growth occurs as individuals continually "revise and reorganize their cognitive structures in the direction of greater complexity" (Blocher, 1987, p. 320). This occurs through the processes of active integration and differentiation (Van Hesteren, Sawatzky, & Zingle, 1982). Integration refers to the interrelatedness of concepts, and differentiation means that specific concepts are subsumed under more general concepts (West et al., 1985). These processes allow the individual to adapt to a complex, ever-changing environment.

Understanding how individuals use knowledge to perform particular cognitive tasks has relevance for counselling as client problems can often be traced to inadequate cognitive functioning (Martin, 1985). Similarly, knowing how counsellor trainees conceptualize

counselling and client functioning influences the way in which counsellor educators plan and implement training procedures.

Cognitive Psychology and Counselling

In the field of counselling, the cognitive orientation is apparent in treatment strategies which emphasize the role of cognitions in psychological difficulties (Beck, 1970; Meichenbaum, 1977). However, these approaches have not changed research efforts regarding counselling effects (Martin, 1984). Traditionally, counselling research has emphasized a process-product approach, focusing on treatment techniques and therapy outcomes (Hiebert, 1987; Martin, 1984). Martin (1984) stated that the basic assumptions of this tradition are called into question by recent advances in cognitive psychology. As an alternative, he offered the cognitive mediational paradigm. In keeping with the tenets of cognitive psychology, the cognitive mediational paradigm holds that counsellors and clients are cognitively active during counselling. Further, cognitive activity mediates between the counselling process and the resulting client change. Although most theorists would acknowledge a reciprocal influence between cognitive activity and behavioral or affective experience, cognitive psychologists hold to the primacy of cognition in this relationship. While the primacy of cognitive factors has been debated in the literature (Zajonc, 1984; Lazarus, 1984), the cognitive perspective provides the framework for investigation in this study. The cognitive mediational paradigm represents a potentially dramatic shift in counselling research and education.

Cognitive Functioning of Counsellors

Counselling is a highly complex cognitive process. During an interview, a counsellor must "simultaneously listen, respond effectively, gather information, formulate diagnostic hypotheses, and develop plans for the helping process" (Patterson, 1988, p. 195). Each of these tasks is complex in itself, and together present an extreme cognitive demand (Patterson, 1988).

A primary task of counsellors is to facilitate cognitive competence in clients, which involves helping them acquire the knowledge and thinking skills that are necessary to move toward personal goals (Martin, 1987). Also, counsellors often help clients organize information (Wexler, 1974). Understanding a client's experience requires an ability to construct a complex, organized model of the client's inner world (Benack, 1988) through gathering and processing information from the client's cognitive, affective, and behavioral responses. Client data generated in this way must be continually integrated with previously stored knowledge about counselling theory (Johnson & Heppner, 1989).

Therefore, a considerable amount of cognitive skill is needed, even for experienced counsellors.

It is not hard to imagine, then, that counsellor trainees find the time with clients very demanding (Patterson, 1988). Some may be overwhelmed by the cognitive demands (Johnson & Heppner, 1989). Frequently, trainees encounter problems of "what to do next", management of interview time, problem clarification, and intervention (Lopez, 1985). As beginning counsellors become more proficient with counselling skills, they can direct their attention to the higher-order cognitive skills involved in understanding and acting on client information (Patterson, 1988).

Although counselling necessitates high cognitive functioning on the part of the counsellor, little attention has been given to this important area of counselling research until recently (Borders, Fong-Beyette, & Cron, 1988; Fuller & Hill, 1985; Fuqua et al., 1984; Martin, 1984). At present, little is known about what counsellors are thinking and how they are making judgments (Hayden, 1988).

Cognitive Process

Some researchers have attempted to measure the conscious information processing of counsellors and clients in counselling. Several methods have been used, such as thought-listing (Fuller & Hill, 1985), interpersonal process recall (Kagan, 1975), and stimulated recall (Martin et al., 1986). These methods require that participants recall their thoughts during a counselling interview at some point during the session (thought-listing) or immediately after the session (IPR and stimulated recall). The goal of this research has been to study how cognitive activity mediates the chain of events from counsellor intention, counsellor behaviors, client cognitions, to client responses (Fuller & Hill, 1985; Hill, Helms, Spiegel, & Tichenor, 1988; Martin, Martin, & Slemon, 1989).

In a naturally occurring counselling setting, Martin et al., (1986) used information processing categories to measure counsellor intentions as well as client perceptions and cognitive processes about those intentions. Results showed that counsellors and clients are cognitively active during counselling and that cognitive activity is consistent with both use of counselling skills and counselling outcome. However, they did not find statistically reliable correlations between accurate client perception of counsellor intentions and ratings of counselling effectiveness.

Martin, Martin, and Slemon (1989) stated that cognitive mediational research has provided evidence of characteristic patterns of relations between counsellor intentions and counsellor behaviors, and between counsellor behaviors and client cognitions. They also

stated that empirical findings of this kind may help form the groundwork for a cognitive mediational account of therapeutic interaction.

In their study of in-session cognitions of a beginning counsellor, Borders et al., (1988) concluded that novice counsellors may have few intentional thoughts while counselling. Similarly, in studying a group of trainees, Borders (1989) found a lack of direction across counselling sessions; trainees focused on present-session events which hampered recognition of patterns and themes about client functioning overall.

Robinson and Halliday's (1987, 1988) investigations concentrated on how counsellors integrate information, develop and test hypotheses, and make inferences about client problems. The results showed that counsellor statements expressing understanding of client information ("accessible reasoning"), were infrequent. The data suggested that the information a counsellor acquires about a client is not predictive of the quality of problem analysis, but reasoning about that information is. The researchers suggested that a feature of expert counselling is the ability to simultaneously gather information and reason about it. Perhaps the ability to organize the incoming information is an important factor in accessible reasoning.

The above studies focused on cognitive process in counselling. As well as the need for studying cognitive process, investigating cognitive structure is necessary because the memory stores that allow new knowledge and skills to be acquired may be as important as the knowledge and skills themselves (Hiebert, 1987). Cognitive structure is fundamental to cognitive processes because it enables "translation of information in memory into plans, goals, intentions, and actions" (Martin, 1987, p. 195).

Cognitive Structure

The information processing literature has focused mainly on two aspects of cognitive structure: cognitive complexity and expert-novice differences. This literature is reviewed next.

Cognitive complexity. As counselling has been described as a mutual processing of complex verbal and nonverbal information (Blaas & Heck, 1978), it is reasonable to speculate that the complexity of counsellors' cognitional structure might have an impact on counselling process and outcome. Vannoy (1965) described cognitive complexity as the number of dimensions or the degree of differentiation in a knowledge specialty. Bieri (1961) defined it as the tendency to interpret social behavior in a multidimensional way. Schroder, Driver, and Streufert (1967) concluded that individuals with a higher level of cognitive complexity tend to: (1) interpret social situations from different points of view,

(2) possess internal standards for evaluating stimuli, (3) show increased tolerance for ambiguity, and (4) use comprehensive rules for integrating conflicting information.

Several studies on conceptual complexity of counsellors have provided evidence of its benefits in counselling. Bieri (1955) found that cognitively complex subjects were better at predicting the behavior of others than those who were more cognitively simple. Other studies report that cognitively complex counsellors demonstrate more empathy in their interactions with clients (Blaas & Heck, 1978; Hale & Delia, 1976; Strohmer, Biggs, Haase, & Purcell, 1983). Goldberg (1974) showed that cognitive complexity is related to differences in novice counsellors' skills. Novices with more abstract, higher-level conceptual systems were more likely to respond to affect and to encourage the exploration of feelings than those with lower-level systems. Richardson and Stone (1981) found that teaching conceptual skills (predicting, planning, checking) to trainees improved empathic and confrontation abilities. The results of these studies indicate that complex cognitional structure is an enormous asset to counsellors, but they do not inform us as to the nature of cognitions or cognitive structures that facilitate the counselling process.

Novice-expert differences. The second important focus in the information processing approach has been investigating the differences between the knowledge structures of novices and experts. The question implicit in this area of study is, "How does one help a novice become an expert?" Investigating the characteristics and influence of knowledge structures acquired from experience may provide useful information for the design of instruction.

Much of what we know in this area has been derived from the study of novices and experts in well-structured domains like physics, mathematics, and computer science (Martin, Slemon, Hiebert, Hallberg, & Cummings, 1989). From these investigations we know that novices tend to organize knowledge around the "literal objects" of a problem statement (Glaser, 1984). In contrast, experts organize knowledge around principles and abstractions about those objects. Further, experts' knowledge includes an understanding about how to apply what they know; whereas this is lacking in novices' schemata. In light of this, Glaser (1984) suggested that problem-solving difficulties of novices may be due to an inadequate knowledge base rather than processing problems. It is not clear whether the same differences exist in less structured domains such as counselling.

Recent studies in counselling have shown that experts made larger and qualitatively different inferences in their reasoning, concentrated on less superficial features of a problem, and therefore reached different conclusions than novices (Hillerbrand & Claiborn, 1990). In a summary of the development of novice counsellors'

conceptualizations of counselling, Borders (1989) described the beginning stage as typified by black-and-white thinking and linear problem-solving. In the middle stage, more skill and confidence coupled with awareness of limitations allows more complete client conceptualizations. In the later stages, trainees show comprehensive, synthesized conceptualizations of client problems, flexibility in choice of intervention, and consideration of complex dynamics.

Other studies have challenged basic assumptions about the relationship between counsellor experience and the quality of the therapeutic relationship. Heppner and Heesacker (1982) reported no relationship between counsellor experience and expertness, attractiveness, and trustworthiness. Novice counsellors did not differ from experienced counsellors in the quality of response to affective client statements (Howell & Highlen, 1981). Holloway and Wolleat's (1980) study revealed that prepracticum counselling students at higher conceptual levels formed more effective clinical hypotheses and posed a greater number of divergent questions, regardless of counselling experience.

These studies highlight the importance of cognitive variables in counselling and counsellor education. They also support the need to better understand the nature of counsellor trainees' conceptualizations of counselling. Relatively few studies have attempted to access directly the cognitive structure of counsellors. This may have been due to methodological difficulties (Claiborn & Dixon, 1982; Hayden, 1987; Van Hesteren et al., 1982). Cognitive structure is not directly measureable, and therefore requires special research methods to make it available for examination. This section now describes an innovative method of accessing cognitive structure.

The Cognitive Mapping Task

A cognitive mapping task (CMT) has been devised recently that allows access to and provides a visual representation of cognitive structure (Cummings et al., 1990; Hiebert, 1987; Hiebert & Noort, 1988; Martin et al., 1989). The CMT makes use of free-association and conceptual mapping techniques and is used to tap the less conscious, structural aspects of cognition (Martin, 1987). Although the CMT is still in its developmental stage, it appears to be a valuable tool for examining conceptual changes within counsellor education contexts (Cummings et al., 1990). It has been used to describe how the conceptualizations of counsellors and counselling practicum students change over time (Hiebert, 1987; Hiebert & Noort, 1988; Martin, 1985, 1987; Martin, Martin, & Slemon, 1989; Martin et al., 1989).

Using the CMT, Martin, Slemon, Hiebert, Hallberg, & Cummings (1989) found that experienced counsellors had more elaborate, general conceptualizations of specific client problems than did novice counsellors. Hillerbrand (1989) pointed out that the use of such

general conceptualizations increases cognitive capacity because the counsellor's attention can be concentrated on novel information.

In a pilot investigation of changes in skills and conceptualizations of counselling practicum students, Hiebert and Noort (1988) observed that cognitive schemata became more integrated and more balanced as counselling skills increased. Claiborn and Dixon (1982) stated that trainees "develop conceptual skills as they endeavor to make sense of information gathered in the interview. They use the resulting conceptualization as a guide for further interviewing and in choosing appropriate interventions" (p. 274-275). Similarly, Hiebert and Noort (1988) suggested that the cognitive structure of beginning counsellors may expand as counselling skills are acquired.

In a study of conceptual changes during assertiveness training, Comeau and Hiebert (1990) found a positive relationship between conceptual growth measured by the CMT and competence in assertion. Clients who were assertive at posttest exhibited more differentiated and elaborated schemata, more connectedness between concepts, and greater conceptual reformulation than did the unassertive group.

The CMT has provided an avenue for accessing conceptualizations of counsellors and counselling students. The nature of conceptualizations of counselling students and the kinds of conceptualizations that might be associated with skilled counselling practice has remained unaddressed.

Summary and Intent

Counsellor education programs require a strong sense of professional identity in order to plan and implement training procedures that will result in the kinds of competencies required for the counselling psychologist's role. Several present-day difficulties exist that hamper this mandate. The very identity of counselling psychology is in question along with the scientist-practitioner model that has been central to training endeavours. Further, counselling research has been characterized by a process-product approach which is being challenged by new information from cognitive psychology. The information processing approach within cognitive psychology has attempted to shed light on how individuals conceptualize new information in their environments and make sense of it in terms of past knowledge. The cognitive mediational paradigm has been proposed as an alternative approach to counselling research.

Counsellor education programs have paralleled the process-product research paradigm by focusing on counsellor skills believed to facilitate the client change process. However, skill training per se generally is considered insufficient for adequate counsellor

preparation. Intentional use of skills requires a thorough understanding of how facilitative skills fit into the total treatment package. Planning and implementing treatment programs as well as cognitively organizing new client information necessitates a high level of cognitive skill. It is proposed that well-developed cognitive structures (conceptualizations) of counselling and client difficulties enhance the processing of the complex material inherent in the counsellor role.

Research Hypotheses

Based on the existing theoretical and empirical literature on training counsellor skills and conceptualizations, the following research hypotheses were generated:

Counselling Skills

Three categories of change in counselling skills were hypothesized.

1. Discrete counselling skills will change from pre to posttest. The skills that are expected to increase with training are: (a) Overview, (b) Transition, (c) Summary, (d) Open Question, (e) Declarative Probe, (f) Reflect of Meaning, and (g) Reflect of Affect. The skills that are expected to decrease are: (a) Closed Question, (b) Paraphrase of Verbal Content, (c) Other Structuring, (d) Other Soliciting, and (e) Other Reacting.
2. The proportion of certain skills/skill clusters to total counsellor utterances is expected to change with training. Skills expected to increase proportionately are: (a) Open Question, (b) Reflect of Meaning/Affect, and (c) structuring skills, and those expected to decrease proportionately are: (a) Closed Question, (b) "Other"/"Uncodable", and (c) "Fused" utterances.
3. The frequency of (a) structuring skills and (b) reacting skills will increase with training. Increases in these skill clusters will result in a more balanced use of skills.

Counsellor Conceptualizations

Counsellor conceptualizations will change between pre and posttest. Expected changes were categorized in two levels: (1) a general organizational level and (2) a specific level, derived from the course content.

1. Change in cognitive structure over the study period will result in posttest maps that generally appear (a) more organized and (b) more hierarchical than pretest maps.
2. Due to the focus of the prepracticum skill training course, the posttest cognitive maps will evidence a greater number of concepts that pertain to (a)

intentionality/planfulness/structure, (b) knowledge/theory base, (c) communication skills, (d) hypothesis testing, (e) problem definition, (f) ethics/professionalism, and (g) counselling-as-outcome.

Increases in the quantitative indices are expected in the cognitive maps. There will be an increase in:

1. the extent of conceptualizations (more concepts generated),
2. the interconnection between concepts (more lines between concepts),
3. the integration scores (number of lines/number of concepts), and
4. the conceptual diversity scores (more concept clusters).

Increased centrality of key concepts is expected (concepts that are most central in participants' thinking will have more lines emanating from them than other concepts in the map).

Counsellor Skills and Conceptualizations

There will be a relationship between the changes in counsellor skills and changes in counsellor conceptualizations. That is, those participants making the greatest changes in counsellor skill will evidence the greatest changes in cognitive maps.

CHAPTER THREE
METHOD

This study examined how the acquisition of counselling skills relates to changes in the conceptualization of counselling. This chapter describes the participants, instrumentation, and procedures used for testing the hypotheses.

Participants

Participants were recruited from a 13-week prepracticum skill training course entitled "Introduction to Counselling Practice". Written consent (see Appendix A) was obtained from six female students who agreed to participate in the study. Ages ranged from 32-47, with a mean of 41.5. Five of the participants were first year master's students in the Counselling Program pursuing a M.Sc. degree, while one was registered as an Unclassified student. Prior to enrolling in the Program, all participants had completed an undergraduate course entitled "Communication Skills in Guidance". Three participants were instructed in the Martin and Hiebert (1985) model, while three participants were trained in other skill training methods. In addition, all participants had received training as volunteers in lay counselling settings. This demographic information was obtained through Personal Information Sheets devised by the researcher (see Appendices B and C).

Procedures

The study used a pretest posttest design. Both testing sessions took place during regular classroom instruction hours. The pretest took place during the first class and the posttest during the last class of the course. Simulated interviews were used to measure counselling skill and the cognitive mapping task (CMT) was used to measure counsellor conceptualizations.

Counselling Skills

Pre and posttesting of skills was based on simulated counselling interviews. Randomly paired participants conducted 10-minute videotaped interviews of each other. In order to enhance comparability of data, information gathering was the counselling goal across the two testing periods. In the pretest, the purpose of the counselling session was to gather information in order to introduce the interview partner to the class. In the posttest, participants were paired with the same partner, and the purpose of the interview was to gather information about plans to continue practising counselling skills. This information was then presented to the class.

For coding purposes, a skill coding grid was developed using nine frequently used discrete counselling skills from Martin and Hiebert's (1985) skill taxonomy (see Appendix

D). The structuring skills were Overview, Transition, and Summary; the soliciting skills were Open Question, Closed Question, and Declarative Probe; and the reacting skills were Paraphrase of Verbal Content, Reflect of Meaning, and Reflect of Affect. The code "Other" was included in each of the three skill clusters for those instances when counsellor statements could not be identified with a particular skill but were distinguishable in terms of skill cluster. "Uncodable" was included to classify skills that did not fit into any category. "Fused" utterances were marked and numbered in the same column. Skill definitions are provided in Appendix E.

In order to assess changes in counselling skills, three categories of indices were used. The first category analyzed the changes in all "discrete" skills from pre to posttest. The second category assessed proportions of certain skills/skill clusters to total utterances: (a) Open Question, (b) Closed Question, (c) Reflects of Meaning and Affect combined, (d) "Other" and "Uncodable" skills, (e) "Fused" utterances and (f) structuring skills. The third category analyzed changes in the (a) structuring and (b) reacting skill clusters over time.

Coder training. In order to ensure at least 80% agreement in skill coding across the researcher and her two research assistants (RA's), a coder training verification was conducted. The RA's had been trained previously in the Martin and Hiebert (1985) skill taxonomy. Training ended when 92% agreement across the three raters was attained.

Reliability and validity. This procedure has been used in previous research and has demonstrated suitable reliability with inter-rater agreement of 80% agreement among three raters on the discrete skill and 85% agreement on the skill cluster (Hiebert & Noort, 1988). In the present study, inter-rater agreement was as follows: for RA's #1 and #2 (Cohen's k = 92%); #1 and #3 (Cohen's k = 90%); and #2 and #3 (Cohen's k = 90%).

The Cognitive Mapping Task

The cognitive mapping task (CMT) is described in the literature (Cummings et al., 1990; Hiebert, 1987; Martin 1985, 1987; and Martin et al., 1989) as a two-step process in which concepts are generated and then arranged into a pictorial map. These researchers believe that cognitive maps generated in this way represent participants' conceptualization of the problem domain under consideration.

Concept generation. In the present study, a free association method was used to generate concepts for the CMT (Martin, Slemon, Hiebert, Hallberg, & Cummings, 1989). Participants were given one minute to complete this task. The time limitation was imposed in order to ensure only important concepts were generated rather than a forced list of insignificant concepts (Hiebert, 1987). The probe questions were "What happens during counselling to help clients change?" and "What are the characteristics of an effective

counsellor?" These questions were chosen on the basis that they would be dissimilar from an expert's perspective, but would be general enough to expect that novice counsellors would have formed some opinions about them.

Arranging concepts. The concepts generated were arranged according to a five-step procedure read aloud to participants:

1. Transfer each concept you generated to a paper sticker.
2. Arrange the stickers on the graph paper in a way that illustrates how the concepts are related in your thoughts; that is, the more concepts are related to each other, the closer together they should appear on your map.
3. Use the china marker to draw lines between stickers that are related. You are encouraged to rearrange the stickers and the lines until you are confident the map represents your understanding of the concepts and the relationships between them.
4. Draw a circle around clusters of concepts. That is, if some concepts seem to be part of some larger concept, draw a circle around them.
5. Label each circle you have drawn.

At posttest, an additional step was added. After concepts were generated, participants were given their list of concepts from the pretest in order to check for any synonymous terms. If found, they wrote the pretest synonym beside the posttest concept. This enhanced the comparison of pre and posttest maps.

The quantitative CMT indices used in this study were based on previous cognitive mapping research (Cummings et al., 1990; Hiebert, 1988; Martin et al., 1989). They were: (1) extent (number of concepts), (2) conceptual interconnection (number of connecting lines between concepts), (3) conceptual integration (number of lines/number of concepts), (4) conceptual diversity (number of clusters of concepts), and (5) centrality (number of lines emanating from each concept). The first score, "extent", is an index of the comprehensiveness of the trainees' conceptualization. "Conceptual interconnection" provides a measure of how concepts are linked together in the participants' cognitive schemata. "Conceptual integration" assesses how well-connected (integrated) or over-connected (undifferentiated) each concept is to other associates. "Conceptual diversity" provides evidence of the number of major organizing concepts. "Centrality" examines the degree to which each concept is a central aspect of the overall cognitive map. These indices are thought to capture the essence of the cognitive structure of participants and allow comparison of pre and posttest similarities and differences.

Reliability and validity. The CMT has been reported in the literature at least five times. Martin et al., (1989, p. 397) stated that "the CMT procedure yielded data much more proximate to real-life counselling than data from measures...that require more decontextualized responses to generic sentence stems". Face validity was rated by participants in the Martin, Slemon, Hiebert, Hallberg, & Cummings (1989) study. On a 4-point scale (1 = very poor accuracy to 4 = high accuracy), over 95 percent of the CMT interpretations were rated 3 or 4. Further, in a test for reliability in the same study, the various CMT measures were consistent across three testing periods. In the present study, participants were invited to review the researcher's interpretations of results (see Appendix F). This step was taken to increase the validity of the CMT and to provide a further learning experience for participants. All participants consented to this follow-up interview. For a measure of accuracy of the researcher's interpretations of CMT's, the same 4-point scale (1 = very poor accuracy to 4 = high accuracy) was used as in Martin, Slemon, Hiebert, Hallberg, & Cummings (1989). Participants' ratings for question 1 descriptions were 2 (1 out of 12 maps or 8.3%), 3 (1 out of 12 maps or 8.3%), and 4 (10 out of 12 maps or 83.4%). For probe question 2 the ratings were 3 (2 out of 12 maps or 16.6%) and 4 (10 out of 12 maps or 83.4%). Discrepancies between how participants viewed their maps and how the researcher interpreted them were discussed. The researcher's descriptions were subsequently amended.

Quantitative analysis. The researcher instructed two RA's in the quantitative indices used in the study, and the researcher and the RA's then counted the indices for each map. Inter-rater reliability across the three counters for the five indices are reported in Table 1.

Table 1

Inter-rater Reliability for CMT Quantitative Indices

Index	Mean Accuracy (%)
Extent	100.0
Conceptual Interconnection	95.5
Conceptual Integration	95.4
Conceptual Diversity	100.0
Centrality	95.4

Descriptive analysis. One area of interest in this study concerned conceptual change of participants over time. It is argued that if conceptualizations of participants changed across time then pretest maps should be readily distinguished from posttest maps. In order to check out this hypothesis, several sorting tasks were executed. The researcher and four RA's sorted the maps independently while blind to any identifying information about the maps. All sorters were graduate counselling students who had completed a CMT previously but were not part of the present study.

The first team consisted of RA's #1, #2, and the researcher (RA #3). This team completed the following four tasks:

1. Task 1 was to sort the 24 maps into pre and posttest groups and describe what aspects of the maps helped in the task. The purpose of this task was to determine how easily changes in conceptualizations can be recognized by untrained raters.
2. Various criteria (see Appendix G) that could be used in sorting cognitive maps were discussed with the RA's before they began Task 2. Task 2 was identical to Task 1, except RA's were instructed to use the criteria in making their judgements. For each map, RA's placed a +/- on the criteria chart to indicate the presence or absence of an element that helped them distinguish time of testing. This step was taken to determine (a) whether accuracy of prediction improved when cognitive mapping criteria were used, and (b) which criteria actually were utilized in the decision-making process.
3. Task 3 involved dividing the 24 maps into two groups of 12 by probe question. The purpose of this task was to ascertain how conceptually similar or distinct participants' thinking was regarding the two questions. Similarity in concepts generated to both questions would indicate a globalized schemata about counselling, whereas dissimilar concepts would indicate the presence of more specific schemata for each.
4. Task 4 was to sort the maps by testing time after they had been divided by participant. Thus, RA's were given six sets of four maps, one set for each participant, and asked to separate pretest from posttest maps. If RA's were able to tell the pre from the posttest maps for a given participant, this would provide an indication that the participant had learned. Conversely, if a participant's pretest maps were difficult to distinguish from posttest maps, little change might be inferred.

The second team (RA's #4 and #5) was employed to prevent carryover effects. The first two tasks this team completed were identical to those of the first team (Tasks 1 and 2). That is, they divided the maps by testing time, first without and then with criteria charts. This augmented the information provided by the first team of sorters.

5. Task 5 involved pairing maps by participant after receiving them pre-sorted by testing time. Thus, RA's were presented with two groups of 12 maps each, and asked to pair two maps at a time that they thought were produced by one person. If pretest maps could be more easily paired than posttest maps, this might signify that more diversity in thinking about the two probe questions had occurred after training. RA's #4 and #5 also recorded the criteria that assisted them in detecting similarities in the pairs of maps.

6. Task 6 required RA's to decide which four maps were produced by a single participant after maps had been divided by testing time. If participants' maps were easily matched, this might indicate little change between pre and posttest or provide evidence of a consistent theory of counselling over time. Again, the criteria charts provided information about which features of the maps cued the sorters.

Results from all sorting tasks were recorded. They were then used to augment the researcher's descriptions of individual participant's cognitive maps.

The researcher's descriptions consist of an assessment of key features of participants' maps. These are: (a) the visual characteristics of the maps (e.g., clarity, structure, and organization), (b) the concept and cluster labels and their match with the counselling literature, (c) the quantitative indices, and (d) changes in central concepts.

CHAPTER FOUR
RESULTS

The results presented in this chapter constitute a description of changes in participants' counselling skills and conceptualizations accompanying prepracticum training. The results are organized in three sections. The first section presents inferential analyses of participants' counselling skills derived from the information gathering interviews. The second section provides the results of the cognitive mapping task. Statistical analyses and nonstatistical descriptive comparisons of maps are given. The third section relates participants' counselling skills to their conceptualizations of counselling.

Counselling Skills

The results of the statistical analysis of counselling skills should be viewed cautiously because of the small n and few degrees of freedom. Statistical analysis was performed on three categories of counselling skills. The first was a general analysis of overall changes in discrete counselling skills. The second category analyzed certain skills/skill clusters that were expected to change proportionate to total counsellor utterances. The third category provided for an analysis of changes in two of the three skill clusters. Appendix H provides the counselling skills raw data.

The results of the statistical analyses of counselling skills are provided first. Then, changes in individual participants' counselling skills over the prepracticum skill training course are described briefly. Summary observations about skill changes conclude the section.

Statistical Analysis

Discrete Counselling Skills

A multivariate analysis (Hotelling's T^2) was conducted to determine the extent to which skill frequencies changed over time. A significant omnibus T^2 ($T^2(6, 5) = 8.42$, $p<.05$) indicated that reliable change occurred. Post hoc univariate tests showed that six discrete skills were responsible for this effect (see Table 2). Two structuring skills increased significantly at posttest: Overview ($F(1, 10) = 10.00$, $p<.01$) and Summary ($F(1, 10) = 8.45$, $p<.05$). Two soliciting skills also changed significantly in the hypothesized direction: Closed Questions decreased ($F(1, 10) = 30.34$, $p<.01$) and Declarative Probes increased ($F(1, 10) = 11.25$, $p<.01$). The two reacting skills that showed reliable change were: an increase in Reflect of Meaning ($F(1, 10) = 11.95$, $p<.01$) and a decrease in Other Reacting $F(1, 10) = 5.57$, $p<.05$). It is interesting to note that Other Structuring and Other Soliciting comprise the largest number of skills in each of their respective skill clusters and did not change

across time. This is likely due to the fact that all skills that were not distinct were coded in the "Other" category.

Table 2

Group Means of Discrete Counselling Skills

Skill	Pretest M	Pretest SD	Posttest M	Posttest SD	F	p
Overview	0.00	0.00	0.67	0.52	10.00	.01
Transition	0.17	0.41	0.50	0.84	.77	.40
Summary	0.50	0.84	1.67	0.52	8.45	.02
Other Structuring	10.67	0.82	10.17	0.41	1.80	.21
Open Question	4.33	2.34	5.00	2.19	.26	.62
Closed Question	7.17	2.64	0.83	0.98	30.34	<.01
Declarative Probe	0.33	0.52	1.33	0.52	11.25	<.01
Other Soliciting	10.17	0.41	10.50	0.84	.77	.40
Paraphrase V. Content	1.50	1.05	1.17	1.17	.27	.61
Reflect Meaning	1.83	1.47	4.17	0.75	11.95	<.01
Reflect Affect	0.50	1.23	0.17	0.41	.40	.54
Other Reacting	12.33	2.42	10.00	0.00	5.57	.04

Skills Proportionate to Total Utterances

A multivariate analysis (Hotelling's T^2) was conducted to determine the extent to which certain skills and skill clusters proportionate to total utterances changed over time. A significant omnibus T^2 ($T^2(6, 5) = 9.55$, $p<.01$) showed that there was statistically reliable change. Post-hoc univariate F-tests revealed that four of the hypothesized proportional changes were significant: Closed Questions ($F(1, 10) = 29.47$, $p<.01$), Reflects of Meaning and Affect combined ($F(1, 10) = 10.12$, $p<.01$), "Other/Uncodable" skills ($F(1,10) = 4.89$, $p<.05$), and "Fused" utterances ($F(1, 10) = 14.69$, $p<.01$) (see Table 3).

Skill Clusters

The Hotelling's T^2 performed on the skill clusters was not statistically significant, indicating no reliable change over time.

Individual Participants' Counselling Skills

Participant 1

Participant 1 showed considerable change in skill usage over time. The number of structuring skills remained the same, although the two instances of "Other Structuring"

Table 3

Mean Proportions of Counselling Skills and Skill Clusters

Skill/skill cluster	Pretest M	Pretest SD	Posttest M	Posttest SD	F	p
Structuring/Total	.09	.11	.20	.11	3.22	.10
Open Question/Total	.21	.09	.29	.10	2.24	.17
Closed Question/Total	.37	.13	.05	.06	29.47	<.01
Refl.Meaning & Affect/Total	.12	.08	.28	.10	10.12	.01
"Other" & "Uncodable"/Total	.15	.12	.04	.06	4.89	.05
"Fused"/Total	.42	.08	.18	.13	14.69	<.01

became one each of Overview and Transition. The use of soliciting skills decreased from 10 to 6, while reacting skills increased from 0 to 6. "Other" skills were eliminated at posttest and "Fused" utterances decreased from 8 to 2.

Participant 2

This participant showed minimal change in skill usage from pre to posttest. Structuring skills increased from 2 to 3; soliciting skills from 7 to 10; and reacting skills from 5 to 7. The number of "Fused" utterances only decreased from 5 to 4 and the number of "Other" skills actually increased from 0 to 2. However, it must be noted that this participant's repertoire of skills upon entrance into the Counselling Program was broad. Her pretest interview included a Transition, a Summary, 3 Open Questions, 3 Closed Questions, a Declarative Probe, 3 Paraphrase of Verbal Content, and 2 Reflects of Meaning. Another indication of good skill at entry was the absence of "Other" skills at pretest.

Participant 3

This participant showed a mixed pattern of change in her use of counselling skills over time. Five structuring skills replaced one "Other Structuring" skill. The important change within the soliciting skill cluster was the decrease in Closed Questions from 5 to 2. No Declarative Probes at pretest became one at posttest. The number of reacting skills decreased from 11 to 4. This participant was able to eliminate 7 "Other" skills at posttest, but the number of "Fused" skills only decreased from 8 to 7.

Participant 4

This participant's skill usage became more balanced with training. Structuring skills increased from 0 to 2, soliciting skills decreased from 12 to 8, and reacting skills remained at 7. In addition, this participant eliminated the one "Other" skill used in the

pretest at posttest. Similarly, she was able to eliminate 8 "Fused" utterances from her counselling interview. Overall, this participant showed a great deal of intentional use of skills in her posttest counselling session.

Participant 5

This participant changed her pattern of skill usage considerably with practise. No structuring skills at pretest became three with training. Ten Closed Questions, 6 "Other" skills and one "Uncodable" skill at pretest were eliminated by posttest. Ten "Fused" skills were reduced to 2 with training.

Participant 6

This participant's change in counselling skill usage was mixed. In the structuring skills cluster a small change occurred with one "Other Structuring" being replaced by a Summary. A large change in the soliciting skills cluster was seen in the decrease in Closed Questions from 9 to 2. In reacting skills, one pretest Paraphrase of Verbal Content, one Reflect of Meaning, and 3 "Other Reacting" became 5 Reflects of Meaning at posttest. Four "Other" skills were reduced to 2. This participant also reduced the number of "Fused" utterances from 9 to 2.

Summary of Skill Changes

For the group as a whole, considerable change in counselling skills occurred. Within the structuring skills cluster, the number of structuring skills increased for five participants. At posttest, four participants began their counselling session with an Overview, two made explicit Transitions, and all participants Summarized at least once during the interview. Only Overviews and Summaries showed statistically reliable change.

Important changes were seen within the soliciting skills cluster. All participants reduced the number of Closed Questions at posttest, with three eliminating them entirely. All participants increased their usage of Declarative Probes at posttest. Statistically reliable change was found for both of these discrete skills. Decreased use of Closed Questions in proportion to total utterances was statistically significant.

Two reacting skills changed as predicted. The statistically significant changes were the increase in the number of Reflects of Meaning at posttest and the decrease in the number of Other Reacting skills. All participants increased the number of Reflects of Meaning and the four participants who used Other Reacting skills at pretest eliminated them at posttest. The combined skills of Reflect of Meaning and Affect also increased significantly in proportion to total utterances.

In proportion with total counsellor utterances, the non-facilitative skills "Other/Uncodable" and "Fused" skills decreased significantly from pre to posttest. Four participants eliminated "Other/Uncodable" skills entirely and the number of "Fused" skills dropped from 48 to 17.

Counsellor Conceptualizations

This section presents the results of the cognitive mapping task. The first set of results are those derived from the sorting tasks completed by RA's. Secondly, descriptions of changes observed in individual participants' cognitive maps are given. Thirdly, statistical analyses are provided. The section ends with summary observations of conceptual change over time.

Sorting Tasks

The results of all sorting tasks are presented in table form. Table 4 presents the sorting results for Task 1.

Table 4

Task 1: Sorting Maps by Testing Time Prior to Instruction in Cognitive Mapping Criteria

Research Assistant	Accuracy (%)
#1	75.0
#2	67.0
#3 (researcher)	91.7
#4	66.7
#5	75.0
M	75.1

Before any instruction in cognitive mapping criteria, RA's achieved a mean accuracy score of 75.1% in sorting maps by testing time. This indicated that certain features of the maps provided enough information for fairly accurate decision-making. RA's described which aspects of the maps helped in their sorting. RA #1 found "clarity of representation (not complexity but cohesive groupings, well labelled and set out in some manner indicating organization of thought)", "terminology", and "comprehensiveness of model (including all stages of counselling process, client and counsellor characteristics, etc.)" helpful. RA #2 used "mention of method (purposeful)", "descriptors of clusters", "mention of counsellor characteristics of knowledge and training", "mention of importance of skills", "touchy/feely

are pre, concrete concepts are post" to help in the sorting task. The researcher (RA #3) found "general appearance", "connectedness", and "specific concept labels" most useful in this task. RA #4 found that specific concept labels such as "defining problems as discrepancies" and "good instructor", as well as the "instructional counselling model: purposefulness, goals/tasks, etc.", "levels (like decision-making/skill development/self-management)", and a "focus on counsellor skills" aided in sorting maps. RA #5 wrote that she used "not a focus only on relationship", "more focus on skills, purposefulness, structure", and "in terms of counsellor characteristics, a broader perspective than simply empathic, nice, etc., rather a focus on intentional skill practice" to help her distinguish between pre and posttest maps.

After receiving instructions regarding cognitive mapping criteria (see Appendix G), RA's again sorted pre and posttest maps for Task 2 (see Table 5). Four of the five RA's changed some sorting predictions, but the mean overall accuracy (M = 75.1) remained the same.

Table 5

Task 2: Sorting Maps by Testing Time After Instruction in Cognitive Mapping Criteria

Research Assistant	Accuracy (%)
#1	75.0
#2	67.0
#3 (researcher)	83.3
#4	75.0
#5	75.0
M	75.1

Table 6 presents the results of sorting for Task 3 which involved sorting the maps by probe question. A high degree of accuracy was found overall for this task (M = 97.2). RA's were able to distinguish between the maps that answered the two probe questions. This indicated little conceptual overlap between the two probe questions. RA #2 indicated that the main feature of the maps she used in making the distinction between probe questions was that of "verb" or "adjective" concept labels. Examples of the "verb" concept labels were "listening" and "caring" and examples of the "adjective" labels were "good

listener" and "empathetic". Had she used other features of the map, her accuracy may have improved.

Table 6

Task 3: Sorting Maps by Probe Question

Research Assistant	Accuracy (%)
#1	100.0
#2	91.7
#3 (researcher)	100.0
M	97.2

Task 4 involved sorting the maps by testing time after they had been pre-sorted by participant (see Table 7). When RA's only had four maps at a time to judge, they were able to distinguish pre from posttest maps in all cases. The perfect accuracy achieved for this task meant that certain aspects of the pre and posttest maps either met the criteria found in previous cognitive mapping research or allowed easy identification of maps by testing time.

Table 7

Task 4: Sorting Maps by Testing Time Pre-sorted by Participant

Research Assistant	Accuracy (%)
#1	100
#2	100
#3 (researcher)	100
M	100

Task 5 was completed by the second team of RA's (#4 and #5). The task was to pair pre and posttest maps by participant after receiving the maps pre-sorted by testing time. Table 8 presents the results. A large difference in sorting accuracy was found for pairing pretest (M = 83.4%) and posttest maps (M = 25%). These results suggest less conceptual overlap of probe questions at posttest, an indication of greater conceptual clarity after training.

Table 8

Task 5: Pairing Pre and Posttest Maps by Participant Pre-sorted by Testing Time

Research Assistant	Accuracy (%)	
	Pretest	Posttest
#4	100.0	50.0
#5	66.7	0.0
M	83.4	25.0

For Task 6, maps were pre-sorted by testing time and research assistants were asked to match all four maps by participant. The results are presented in Table 9.

Table 9

Task 6: Matching Maps by Participant Pre-Sorted by Testing Time

Research Assistant	Accuracy (%)
#4	87.5
#5	58.3
M	72.9

Once the maps were pre-sorted by testing time, RA's were able to achieve a fairly high level of accuracy in matching four maps by participant (M = 72.9%). This indicated some similarities between maps over time.

Summary of Sorting Task Results

The sorting tasks provided information about the cognitive maps that could not have been achieved through description alone. Task 1 provided information about which features of the maps sorters intuitively used in assigning a map to the pre or posttest group. Task 2 provided more specific information about decisions made in distinguishing pre from posttest maps through the use of criteria charts. Overall, the identical results for Tasks 1 and 2 meant that in sorting maps by testing time, intuition and familiarity with the skill training course content were just as useful as criteria derived from the cognitive mapping literature. Task 3 provided an index of distinctiveness between probe questions. The results showed that for the two probe questions asked, enough distinctiveness existed

for almost perfect sorting accuracy. Less reliance on the grammatical aspects of the concept labels may have resulted in a better score for RA #2. Perfect accuracy for Task 4 showed that when presented with one participant's maps at a time, the maps provided enough information to allow perfect distinction between testing time. This signified that conceptual changes occurred with training and also that some aspects of the maps met the change criteria in the literature on cognitive mapping. Task 5 showed that less conceptual overlap existed between posttest maps than pretest maps, an indication of improved conceptual clarity and learning. Task 6 provided an index of similarity between maps. This similarity could be interpreted as either a lack of change in conceptualization of counselling with training, or, in some cases, a consistent theory of counselling.

Descriptions of Individual Participants' Cognitive Maps

Individual participants' cognitive maps are described according to the following sequence. The results for each participant are described by first indicating the sorting task results for each participant's maps. In attaching meaning to these descriptions, it should be pointed out that in accordance with the procedures described in Chapter Three (pages 36 and 37), the sorting accuracy pertains to the mean of 2, 3, or 5 RA's on the corresponding sorting tasks. Second, changes in the cognitive maps over time are described in order of probe question. Third, each participant's pretest maps are compared for an indication of conceptual overlap. Fourth, each participant's posttest maps are similarly compared. Fifth, a summary of the most important conceptual shifts is given.

Throughout the following descriptions, cognitive maps are referred to as follows: CMT 1.a - question 1 pretest; CMT 1.b - question 1 posttest; CMT 2.a - question 2 pretest; and CMT 2.b - question 2 posttest. Cognitive maps are reproduced in Figures 1 to 12. For ease in comparison, pre and posttest maps for the same probe question appear together on a page.

Participant 1

A relatively low degree of sorting accuracy across tasks was found for this participant's maps ($\underline{M}$ = 69.2%). The sorting results are presented in Table 10.

Before instruction in CMT criteria (Task 1), participant 1's maps were not easily distinguished by testing time ($\underline{M}$ = 75%). After instruction in CMT criteria for Task 2, the mean accuracy rating dropped even further ($\underline{M}$ = 65%). This indicated that the kinds of changes in this participant's maps did not conform to the changes normally seen in cognitive mapping research. For CMT 1.a, accurate sorters focused on the lack of communication skills, lack of problem definition, lack of intentionality/planfulness/

Table 10

Sorting Accuracy of Participant 1's Maps

Task	CMT	Accuracy (%)	M
1	1.a	80.0	
	1.b	60.0	
	2.a	80.0	
	2.b	80.0	75.0
2	1.a	80.0	
	1.b	80.0	
	2.a	40.0	
	2.b	60.0	65.0
3	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	100.0
4	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	100.0
5	pre	100.0	
	post	50.0	75.0
6	4 maps	0.0	0.0
			69.2

structure, lack of ethics/professionalism, and on the counselling-as-process focus and names of clusters. For CMT 1.b, accurate sorters used the concept labels to help them. For CMT 2.a, accurate sorters focused on the lack of organization, lack of hypothesis testing, lack of problem definition, and lack of ethics/professionalism, as well as the counselling-as-process focus. For CMT 2.b, accurate sorters noticed the map's conceptual integration and focus on intentionality/planfulness/structure and knowledge/theory base. For Task 3, RA's were able to sort maps by probe question perfectly ($\underline{M}$ = 100%). This denoted conceptual differentiation of the two questions. The mean accuracy for Task 4 was also 100%. This meant that given only participant 1's four maps, sorters were able to distinguish between pre and posttest maps perfectly, an indication of learning. For Task 5, both sorters were

able to pair pretest maps, but only one was able to accurately pair the posttest maps. Further, when asked to match four maps in Task 6, one RA thought CMT 1.a, 2.a, and 2.b were produced by the same participant. The other RA could only accurately discern that the pretest maps belonged together. These results showed that posttest maps differed more from each other than pretest maps, an indication of increased differentiation between questions over time.

Question 1. Maps generated by this participant in response to probe question 1 are depicted in Figure 1. Visually, one obvious difference between the pre and posttest maps was the change in extensiveness. The posttest map included fewer concepts than the pretest map. Another visible difference was the change from nonoverlapping clusters to nested clusters. Overall, these changes resulted in a more organized and simplified posttest map.

Several differences in concepts from pre to posttest were noted. A key pretest concept "knowledge of appropriate skills" was absent at posttest. However, it was replaced by the more specific skill-focused concepts "instructive feedback" and "meaningful context". The maps, therefore, provided an indication that participant 1's conceptualization about counsellor skills differentiated during training. Posttest cluster labels "Counsellor Responsibility" and "Joint Responsibility" indicated an understanding of the difference between the counsellor's sole responsibility and the joint responsibility of the client and counsellor in counselling interactions.

Concept and cluster labels also revealed some similarities across testing periods. At both pre and posttest, this participant viewed counselling as a process as evidenced by the pretest concept label "building of self esteem", the pretest cluster labels "Growth" and "Hope", and the posttest cluster label "Process Loop". The concept "hope" was repeated across testing periods.

Quantitatively, three of the measures showed a decrease at posttest, and one showed no change (see Table 11). These changes are opposite to those expected in cognitive maps after training. It is interesting to note that the extent scores dropped substantially from pre to posttest and given that the number of concepts influences the other three measures, this change is likely responsible for the unexpected results.

The central concept at pretest was "building of self-esteem". No single central concept at posttest emerged (see Table 12). However, this participant viewed the main "Counsellor Responsibility" as providing "instructive feedback".

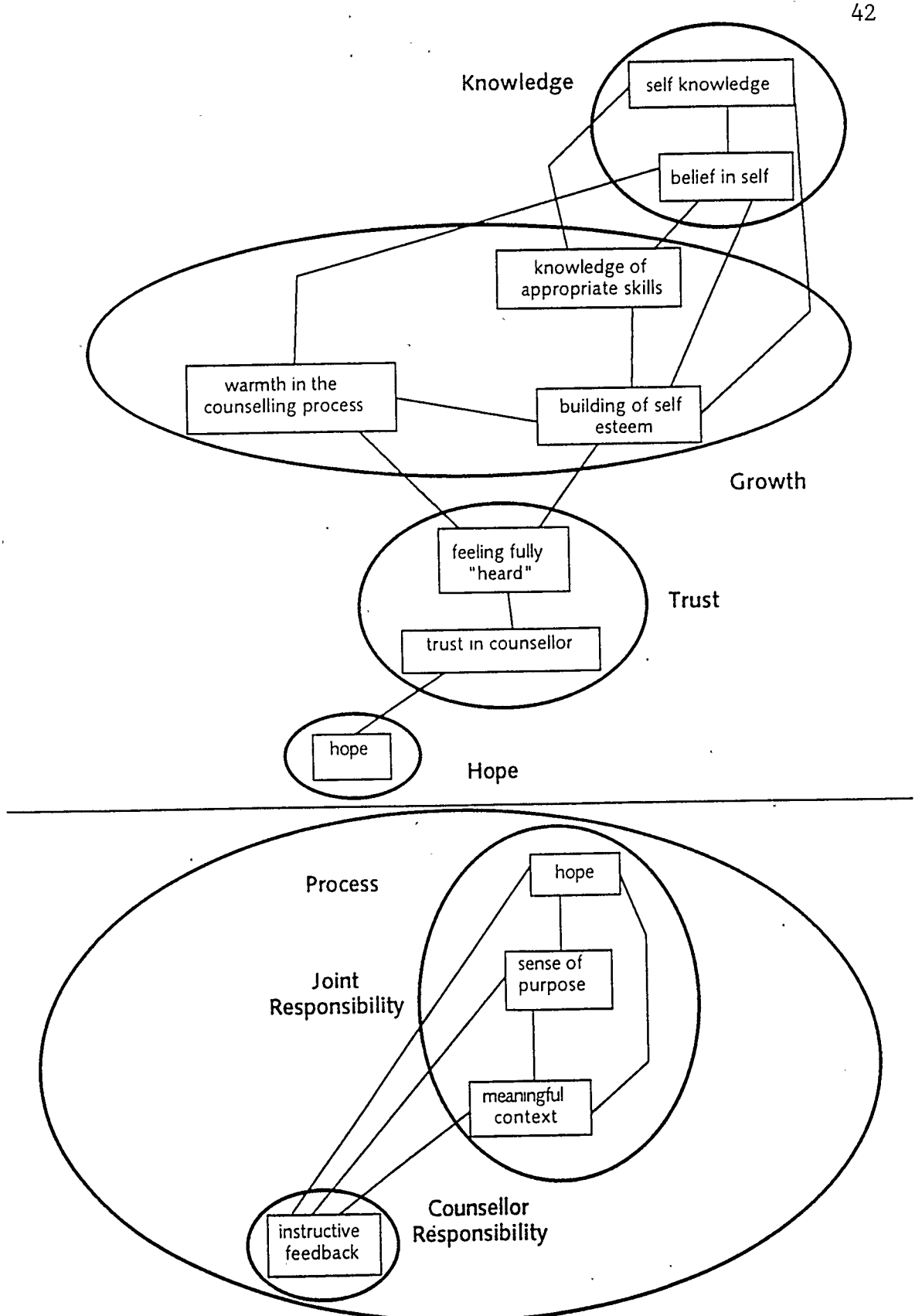


Figure 1. Cognitive maps for probe question 1 at pre-test (top) and post-test (bottom) for participant 1.

Table 11

Quantitative Data for Question 1

Index	Pretest	Posttest	Change
Extent	8.0	4.0	-4.0
Conceptual Interconnection	12.0	6.0	-6.0
Conceptual Integration	1.5	1.5	0.0
Conceptual Diversity	4.0	3.0	-1.0

Question 2. The cognitive maps for the second probe question (see Figure 2) revealed similar changes to those for question 1. That is, the posttest map was more organized and simplified. Structurally, CMT 2.b was more hierarchical than CMT 2.a.

The number of concepts, clusters, and connecting lines in the pretest map (see Table 13) might have indicated a fairly extensive, well-integrated conceptualization of counselling. However, cluster labels such as "Peace", "Hope", and "Trust" revealed a novice interpretation of counselling. In three cases, the cluster label was identical to one of the concepts within the cluster, showing an absence of superordinate schemata. However, the concept "self-esteem" in the pretest map was one of the four major concepts that consistently emerged from the cognitive maps of experienced counsellors (Cummings et al., 1990). In the posttest map, the labels "good instructor" and "purposefulness" revealed the specific focus of prepracticum training and together with the cluster label "Ability to Apply Knowledge" signified a shift in conceptualization toward an outcome orientation.

The concept "empathy" had the highest centrality score in the pretest map. Other central concepts were "humour" and "contentment". "Good listening skills" and "knowledge of the counselling process" were important concepts present in this map, but they evidenced low centrality scores. In contrast, the posttest map showed "purposefulness" as the central concept (see Table 14). This was consistent with the focus of skill training (Martin & Hiebert, 1985).

Questions 1 and 2 pretest. In response to the two questions, similar concepts were generated such as "hope", "self-knowledge", "building of self-esteem" and "belief in self"/self-esteem", "warmth in the counselling process"/"warmth", "trust in counsellor"/"trust in process". There was also overlap across probe questions in the cluster labels "Trust" and "Hope". This amount of overlap implied little distinction between client change factors and characteristics of a good counsellor at pretest.

Table 12

Centrality Scores for Question 1

Cluster/concept label	Pretest
Knowledge	
Self knowledge	3
Belief in self	4
Growth	
Knowledge of appropriate skills	3
Building of self esteem	5
Warmth in the counselling process	3
Trust	
Feeling fully "heard"	3
Trust in counsellor	2
Hope	
Hope	1
	—
	24
	Posttest
Process Loop	
Counsellor Responsibility	
Instructive feedback	3
Joint Responsibility	
Hope	3
Sense of purpose	3
Meaningful context	3
	—
	12
Change in Total Centrality Score	-12

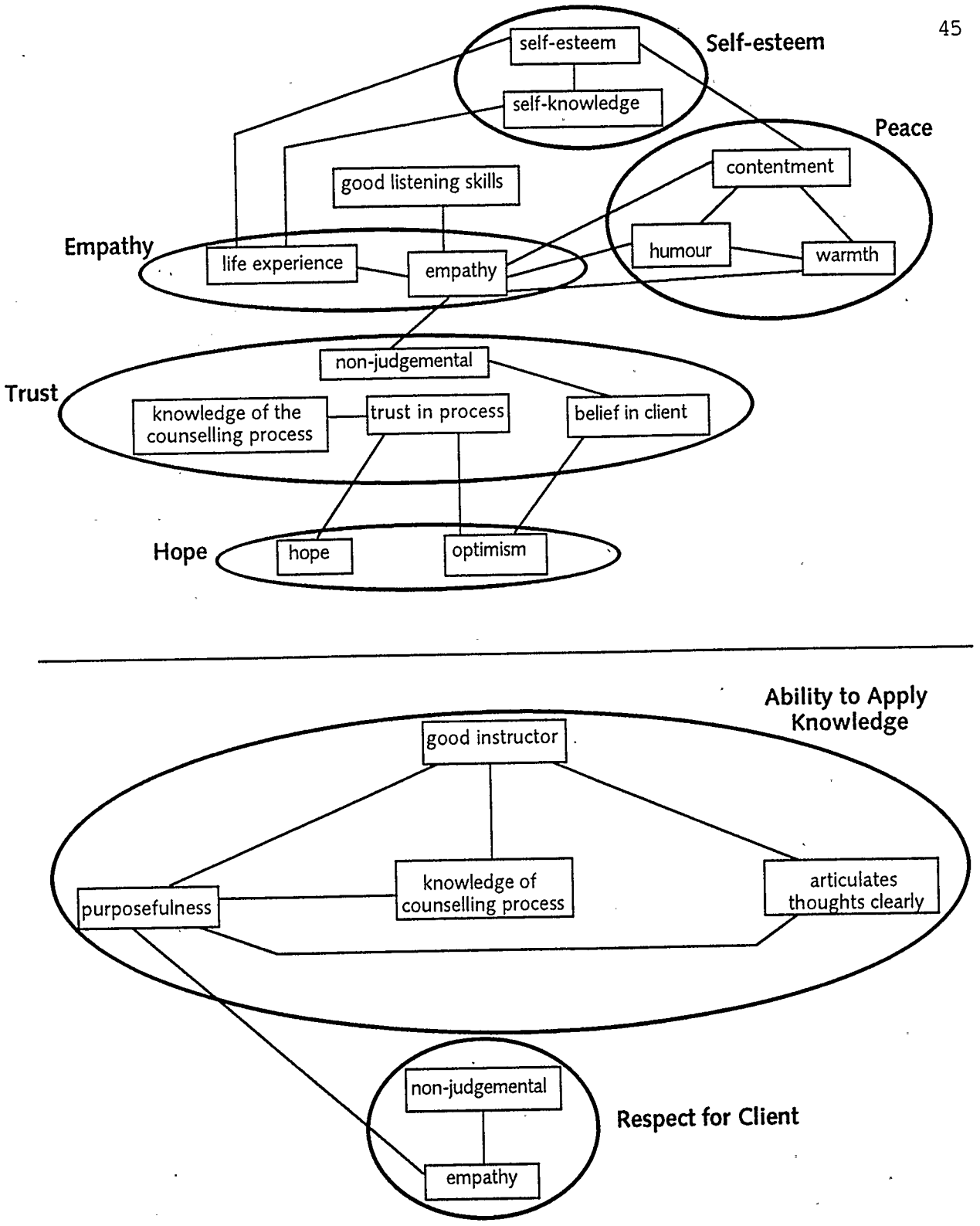


Figure 2. Cognitive maps for probe question 2 at pre-test (top) and post-test (bottom) for participant 1.

Table 13

Quantitative Data for Question 2

Index	Pretest	Posttest	Change
Extent	14.00	6.00	-8.00
Conceptual Interconnection	19.00	7.00	-12.00
Conceptual Integration	1.36	1.17	-.19
Conceptual Diversity	5.00	2.00	-3.00

Questions 1 and 2 posttest. At posttest, more differentiation between probe questions was apparent, with no duplication in concepts across questions other than "sense of purpose"/"purposefulness". Further, concept labels implied an enhanced awareness of the distinction between factors affecting client change and counsellor characteristics. Both maps exhibited clarity and simplicity of design.

Summary. Similar changes occurred across the two probe questions. Posttest maps were more simple and focused than pretest maps. Quantitative changes were all in the negative direction, with the exception of conceptual integration for question 1 which did not change. At posttest, this participant had acquired an important counselling concept, intentionality (Ivey, 1988).

Participant 2

Sorting accuracy of this participant's maps was quite low overall (M = 70.8%). Results are found in Table 15.

For Task 1, RA's achieved a high accuracy score (M = 85%). Two maps (CMT 1.a and 2.b) were accurately sorted by all RA's. Three sorters accurately predicted that CMT 1.b was a posttest map and four accurately predicted that CMT 2.a was a pretest map. Accuracy in prediction for Task 1 indicated substantial conceptual change over time for both probe questions. For Task 2, an even higher accuracy score was attained (M = 90%). This indicated that the cognitive maps conformed to changes expected in cognitive mapping research. All RA's correctly sorted CMT 1.a, 2.a, and 2.b. Only CMT 1.b presented sorting difficulties. The sorters who accurately predicted this map used the indicators of intentionality/planfulness/structure, problem definition, and centrality of key concepts as a guide. Task 3 was sorted accurately by all three RA's, an indication of distinction between probe questions. Close examination of these maps, however, revealed that there was not so

Table 14

Centrality Scores for Question 2

Cluster/concept label	Pretest
Self-esteem	
Self-esteem	3
Self-knowledge	2
Peace	
Contentment	4
Humour	4
Warmth	3
Empathy	
Empathy	6
Life experience	3
Trust	
Non-judgemental	2
Knowledge of the counselling process	1
Trust in process	3
Belief in client	2
Hope	
Hope	1
Optimism	3
Unclustered concepts	
Good listening skills	1
	38
	Posttest
Ability to Apply Knowledge	
Purposefulness	4
Knowledge of counselling process	2
Articulates thoughts clearly	2
Good instructor	3
Respect for Client	
Non-judgemental	1
Empathy	2
	14
Change in Total Centrality Scores	-24

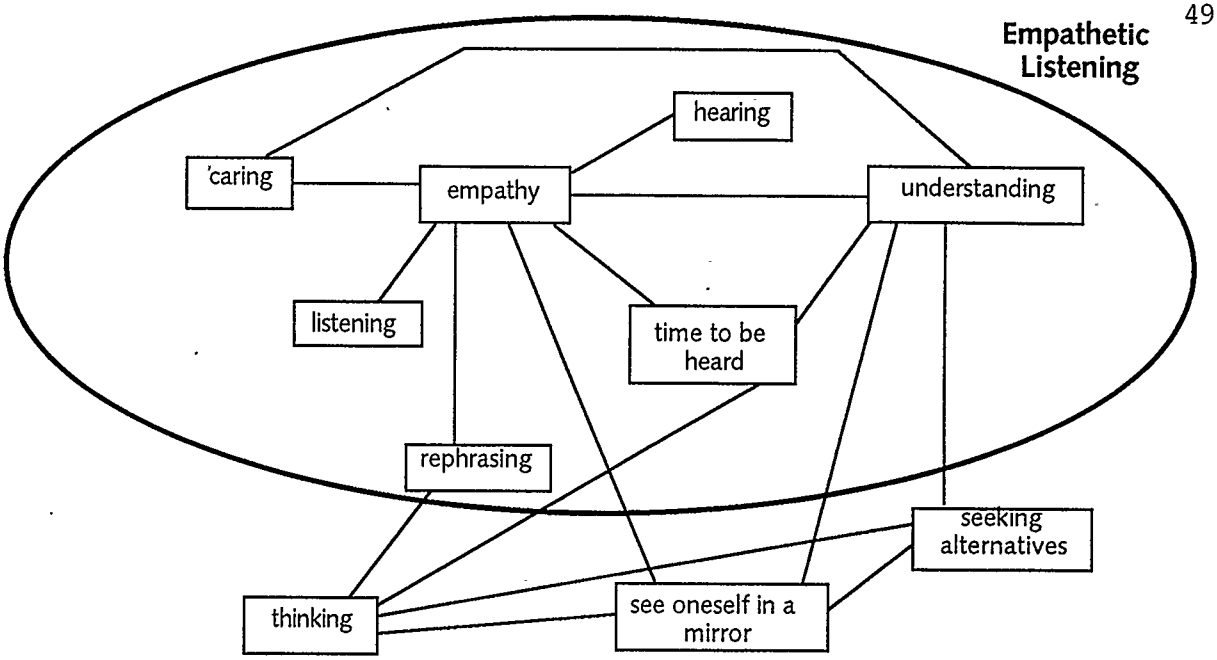
Table 15

Sorting Accuracy of Participant 2's Maps

Task	CMT	Accuracy (%)	M
1	1.a	100.0	
	1.b	60.0	
	2.a	80.0	
	2.b	100.0	85.0
2	1.a	100.0	
	1.b	60.0	
	2.a	100.0	
	2.b	100.0	90.0
3	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	100.0
4	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	100.0
5	pre	100.0	
	post	0.0	50.0
6	4 maps	0.0	0.0
			70.8

much conceptual distinction, but differences in the grammatical aspects of the concepts (e.g., "empathy"/"empathetic" and "interested"/"listening"). Task 4 was sorted accurately by all RA's also. This indicated conceptual change over time. Both sorters who completed Task 5 were able to pair pretest maps, but not posttest maps, a further indication of differentiation between probe questions after training. In completing Task 6, one RA was able to match accurately CMT 1.a, 2.a, and 2.b. The other RA was able to correctly pair pretest maps, but was unable to match either of the posttest maps with them.

Question 1. A notable difference between the pre and posttest maps was the reduced number of concepts at posttest (see Figure 3). This may have resulted from the



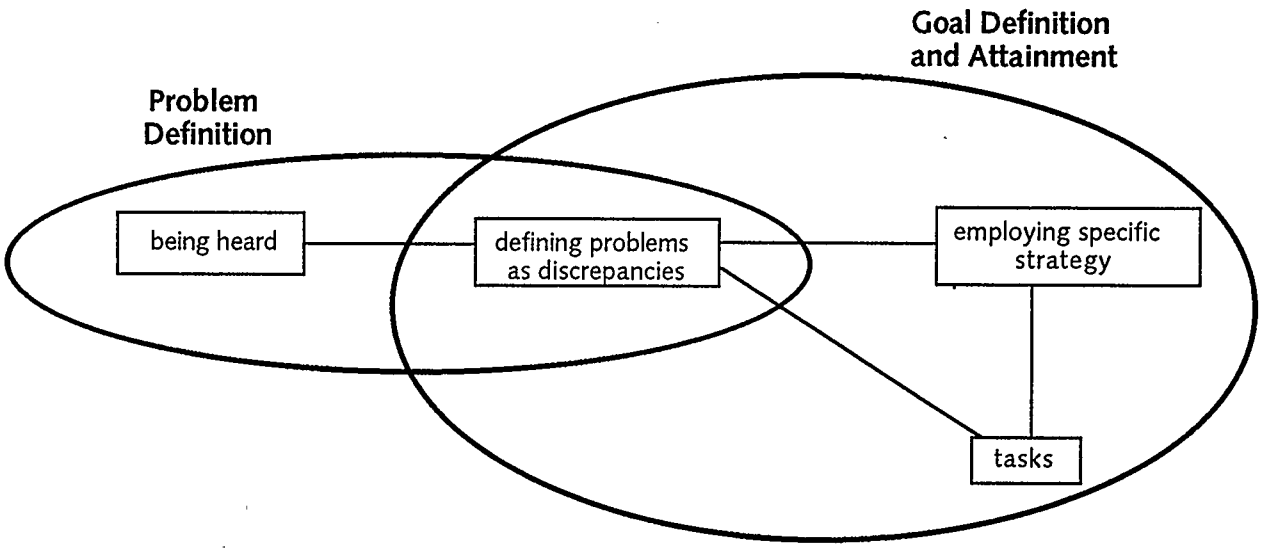


Figure 3. Cognitive maps for probe question 1 at pre-test (top) and post-test (bottom) for participant 2.

fact that several concepts in the pretest map were synonymous such as "hearing", "time to be heard", and "listening" as well as "understanding", "caring", and "empathy". The cluster label for all of these concepts was "Empathetic Listening". The posttest map, in contrast, appeared to integrate these concepts in the single concept "being heard". In the follow-up interview, this participant described her pretest map as consisting only of the exploration phase of counselling and the posttest map as going beyond this initial phase.

In the posttest map, "being heard" was linked with "defining problems as discrepancies", forming the cluster "Problem Definition". The concept "defining problems as discrepancies" was also part of the cluster "Goal Definition and Attainment". For this participant, despite the reduction in the number of concepts, it seemed that her conceptualization of counselling expanded from "Empathetic Listening" at pretest to a process in which listening was only part of defining problems, which in turn only partially accounted for goal definition and attainment. Furthermore, this participant acquired the important notion that the use of specific counselling strategies and tasks facilitates client goal attainment.

Three of the quantitative indices changed in the negative direction at posttest (see Table 16). The conceptual diversity score increased.

Table 16

Quantitative Data for Question 1

Index	Pretest	Posttest	Change
Extent	10.0	4.0	-6.0
Conceptual Interconnection	17.0	4.0	-13.0
Conceptual Integration	1.7	1.0	-.7
Conceptual Diversity	1.0	2.0	+1.0

"Empathy" had the highest centrality score at pretest, while "defining problems as discrepancies" had the highest centrality score at posttest (see Table 17). This indicated a change from a mainstream Rogerian conceptualization of counselling at pretest to a more cognitive-behavioral view. In the follow-up interview, this participant advised that she would like to have retained "empathy" as a central concept in her posttest map balanced with "defining problems as discrepancies".

Question 2. Visual inspection of the two maps in Figure 4 revealed an obvious change. The single cluster of concepts at pretest became a hierarchical, tripartite structure

Table 17

Centrality Scores for Question 1

Cluster/Concept Label	Pretest
Empathetic Listening	
Hearing	1
Caring	2
Empathy	7
Understanding	5
Listening	2
Time to be heard	3
Rephrasing	3
Unclustered concepts	
Thinking	4
See self in a mirror	4
Seeking alternatives	3
	34
	Posttest
Problem Definition	
Being heard	1
Goal Definition & Attainment	
Tasks	2
Employing specific strategy	2
Enclosed by both clusters	
Defining problems as discrepancies	3
	8
Change in Total Centrality Score	-26

at posttest. The pretest cluster "Empathetic Listening" was replaced by three posttest clusters, "Counsellor Personality Traits/Attitudes", "Counsellor Skills", and "Counsellor Knowledge". This modification indicated a more differentiated conceptualization of counsellor characteristics with training. Eight of the 12 posttest concepts were connected with the concept "good communication" only, a possible indication of over-differentiation.

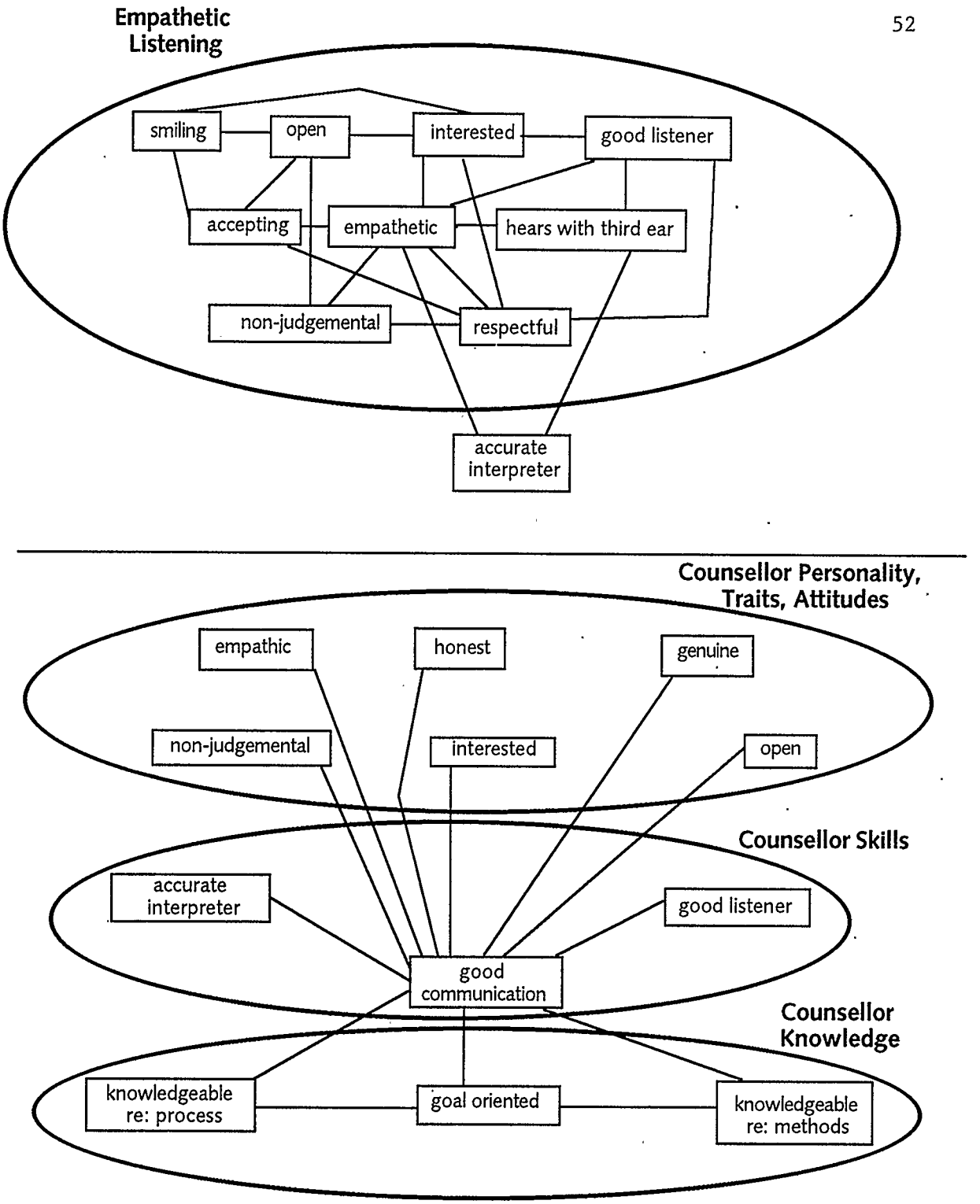


Figure 4. Cognitive maps for probe question 2 at pre-test (top) and post-test (bottom) for participant 2.

Quantitative changes were mixed. Extent and conceptual diversity increased and conceptual interconnection and integration decreased (see Table 18).

Table 18

Quantitative Data for Question 2

Index	Pretest	Posttest	Change
Extent	10.00	12.00	+2.00
Conceptual Interconnection	20.00	13.00	-7.00
Conceptual Integration	2.00	1.08	-.92
Conceptual Diversity	1.00	3.00	+2.00

"Empathetic" was the key concept at pretest with several other concepts evidencing comparatively high centrality scores: "interested", "respectful", "good listener", "open", and "accepting". In comparison, the posttest map showed an obvious central concept, "good communication". This change implied a recognition that "empathy", "interested", "respectful" were not discrete, but form part of a larger picture, namely "good communication" (see Table 19). As in question 1, this participant advised that she would like to have increased the centrality score of "empathic" so it balanced with "good communication", as both these concepts are central in her thinking about effective counsellor characteristics.

Questions 1 and 2 pretest. The structure of the two pretest maps was virtually identical and the cluster label was identical. This indicated the participant's thinking about the two questions was not distinct at pretest, despite the accuracy of sorting in Task 3.

Questions 1 and 2 posttest. In contrast, marked differences were noted in comparing the two posttest maps. The two questions were clearly distinguished from each other. CMT 1.b focused on client problem and change goals, while CMT 2.b highlighted counsellor attitudes, skills, and knowledge. This distinction represented a substantial shift in conceptualizing counselling change variables and counsellor characteristics since the beginning of training. In contrast with pretest maps, there were no unclustered concepts at posttest.

Summary. The posttest map for question 1 was more simple and focused than its earlier counterpart, while the posttest map for question 2 was more extensive and hierarchical than its counterpart. Quantitative changes were mixed. A small increase in

Table 19

Centrality Scores for Question 2

Question 2	Pretest
Empathetic Listening	
Smiling	3
Open	4
Interested	5
Good listener	4
Accepting	4
Empathetic	7
Hears with third ear	3
Non-judgmental	3
Respectful	5
Unclustered concept	
Accurate interpreter	2
	40

	Posttest
Counsellor Personality Traits/Attitudes	
Empathic	1
Honest	1
Genuine	1
Non-judgemental	1
Interested	1
Open	1
Counsellor Skills	
Accurate interpreter	1
Good communication	11
Good listener	1
Counsellor Knowledge	
Knowledgeable re: methods	2
Knowledgeable re: process	2
Goal oriented	3
	26
Change in Total Centrality Score	-14

extent occurred for question 2, and conceptual diversity increased for both probe questions. Conceptual interconnection and integration of schemata decreased over time. Therefore, this participant diversified her thinking without an accompanying integration of concepts.

Participant 3

Sorting results for participant 3 are found in Table 20. Accuracy in sorting this participant's maps were the highest in the study (M = 77.2).

For Task 1, only CMT 1.a presented difficulties in sorting. Only two of the five RA's correctly assessed this map as a pretest map. This indicated that participant 3 had a fairly advanced conceptualization of client change factors upon entering the Counselling Program. Using the cognitive mapping criteria for Task 2, CMT 1.a was incorrectly assessed by all RA's. Sorters focused on the map's counselling-as-outcome focus, evidence of problem definition, intentionality/planfulness/structure, extent of concepts, and centrality of key concepts. Further, all RA's predicted correctly that CMT 2.b was a posttest map. Perfect sorting accuracy of a posttest map further implied an advanced schemata for this participant. Relatively low sorting accuracy was recorded for Task 3. This indicated some overlap between conceptualizations of probe questions. All RA's were able to distinguish pre from posttest maps in Task 4. This provided an indication of learning during training. In Task 5, both RA's were able to pair pretest maps, while only one accurately paired posttest maps. This indicated more distinction between probe questions at posttest, a positive change for this participant. One RA was able to match all four maps in Task 6. The other RA matched the pretest maps with CMT 2.b. This indicated some similarities existed between maps.

Question 1. The cognitive maps participant 3 generated in response to question 1 are reproduced in Figure 5. The distinguishing difference between CMT 1.a and CMT 1.b was the visual clarity. In comparison to the pretest map, the posttest map was somewhat hierarchical. The topmost and middle clusters of the posttest map were well-integrated, while the cluster at the bottom of the map was not. The pretest map revealed five concepts outside clusters, while the posttest concepts were all enclosed, and in some cases, nested within another cluster.

This participant entered the skill training course with a conceptualization of counselling that approximated the focus of the prepracticum course. The participant attributed advanced conceptualization to participation in an undergraduate course that utilized the Martin and Hiebert (1985) instructional counselling model. Evidence of this focus was indicated by concepts in the pretest map such as "clarification of ideas, goals, and objectives", "clear planning", "direction", "structure", and "identification of success no

Table 20

Sorting Accuracy of Participant 3's Maps

Task	CMT	Accuracy (%)	M
1	1.a	20.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	80.0
2	1.a	0.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	75.0
3	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	33.3	83.3
4	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	100.0
5	pre	100.0	
	post	50.0	75.0
6	4 maps	50.0	50.0
			77.2

matter how small", as well as cluster labels "Problem Identification" and "Structuring". Concept labels such as "listening with empathy", "encouragement", and "motivation" signified knowledge of general counselling concepts. The posttest map reflected a well-developed cognitive schemata for client change. The cluster "Counselling Skills" and the concepts within that cluster, "structure/intentionality", "well-structured interview", "purposeful questions", "feedback", and "allowing client practice by repetition" indicated understanding of important concepts in skill training (Martin & Hiebert, 1985).

Close inspection of concept labels and information derived from the follow-up interview revealed that the pretest cluster "Structuring" was analogous to the posttest cluster "Counselling Skills". Within these clusters the pretest concepts "clear planning",

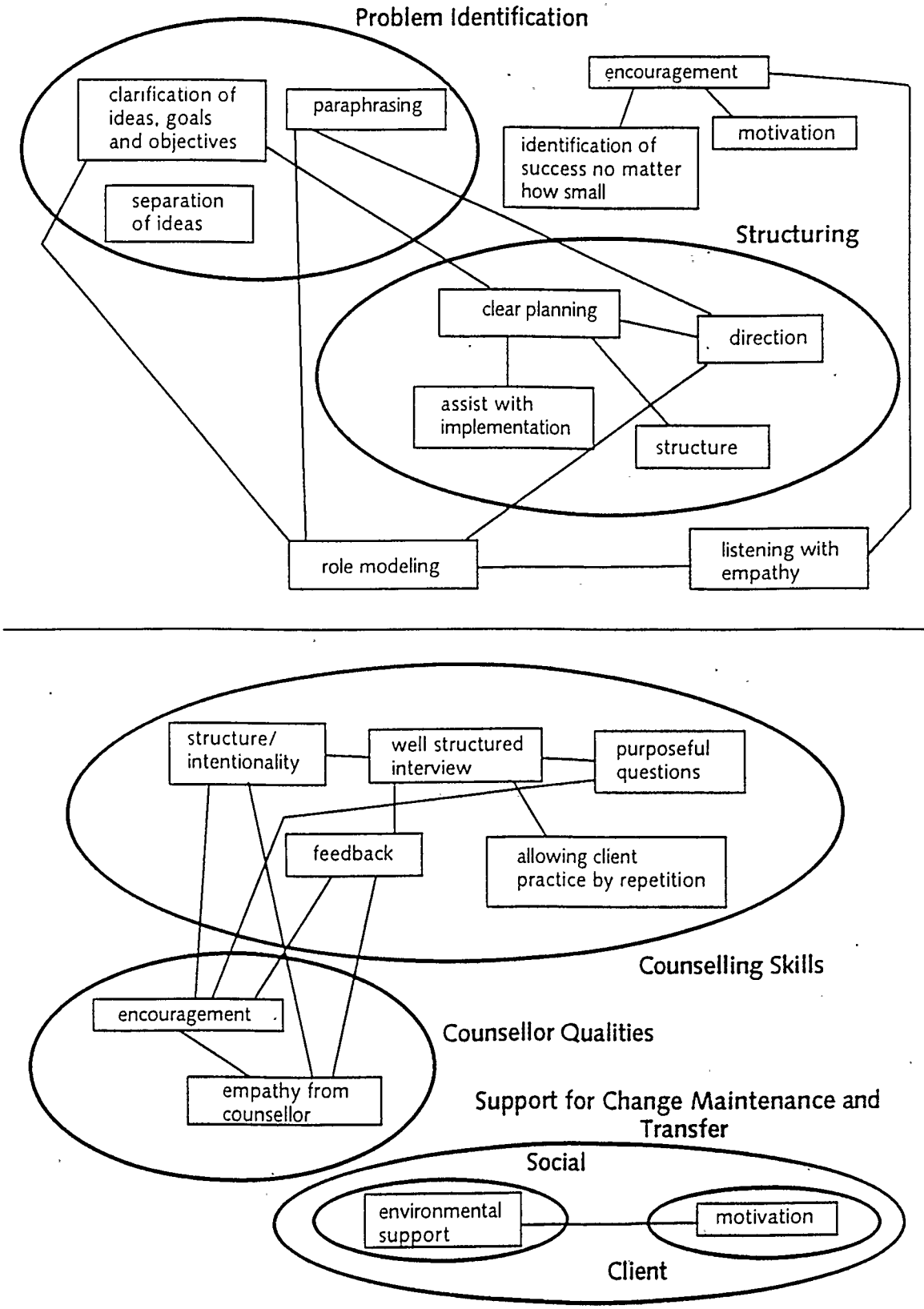


Figure 5. Cognitive maps for probe question 1 at pre-test (top) and post-test (bottom) for participant 3

"direction", and "structure" evolved into more specific posttest concepts, "well-structured interview", "purposeful questions" and "structure/intentionality". The posttest cluster also expanded to include "feedback" and "allowing client practice by repetition". The cluster at the bottom of the map, "Support for Change Maintenance and Transfer" encompassed two smaller clusters, "Social" and "Client". These smaller clusters consisted of only one concept, "environmental support" and "motivation", respectively. Consideration of the social system of the client reflected a high degree of awareness of factors affecting client change (Hillerbrand, 1989). However, these concepts were not linked to the rest of the map.

Changes in quantitative indices were small and mixed (see Table 21). Extent and conceptual interconnection decreased, while conceptual integration and diversity increased.

Table 21

Quantitative Data for Question 1

Index	Pretest	Posttest	Change
Extent	12.00	9.00	-3.00
Conceptual Interconnection	12.00	11.00	-1.00
Conceptual Integration	1.00	1.22	+.22
Conceptual Diversity	2.00	5.00	+3.00

At pretest, the concepts "clear planning" and "role modeling" had the highest centrality scores. At posttest, the concepts "well-structured interview" and "encouragement" had the highest centrality scores, although the scores were not much higher than other concepts in the map (see Table 22).

Question 2. For the second question, the most apparent change was increased conceptual interconnection (see Figure 6). Quantitative changes confirmed this visual observation (see Table 23). All quantitative measures increased from pre to posttest.

With regard to concept and cluster labels, CMT 2.a and 2.b differed in several respects. CMT 2.a was non-hierarchical structurally and conceptually. Although CMT 2.b was not structurally hierarchical, the cluster labels "Central to Counselling Process" and "Non-essential but Facilitative Characteristics" implied a hierarachy of conceptualization. The participant confirmed this observation. The concepts "purposeful", "intentional", and "open" reflected the specific training emphasis. The concepts "caring" and "non-

Table 22

Centrality Scores for Question 1

Cluster/concept label	Pretest
Problem Identification	
Clarification of ideas, goals, and objectives	2
Paraphrasing	1
Separation of ideas	1
Structuring	
Clear planning	4
Direction	2
Assist with implementation	1
Structure	2
Unclustered concepts	
Encouragement	3
Motivation	1
Identification of success no matter how small	1
Role modeling	4
Listening with empathy	2
	24
	Posttest
Counselling Skills	
Structure/intentionality	3
Well-structured interview	4
Purposeful questions	2
Allowing client practice by repetition	1
Feedback	3
Counsellor Qualities	
Encouragement	4
Empathy from counsellor	3
Support for Change Maintenance and Transfer	
Social	
Environmental support	1
Client	
Motivation	1
	22
Change in Total Centrality Score	-2

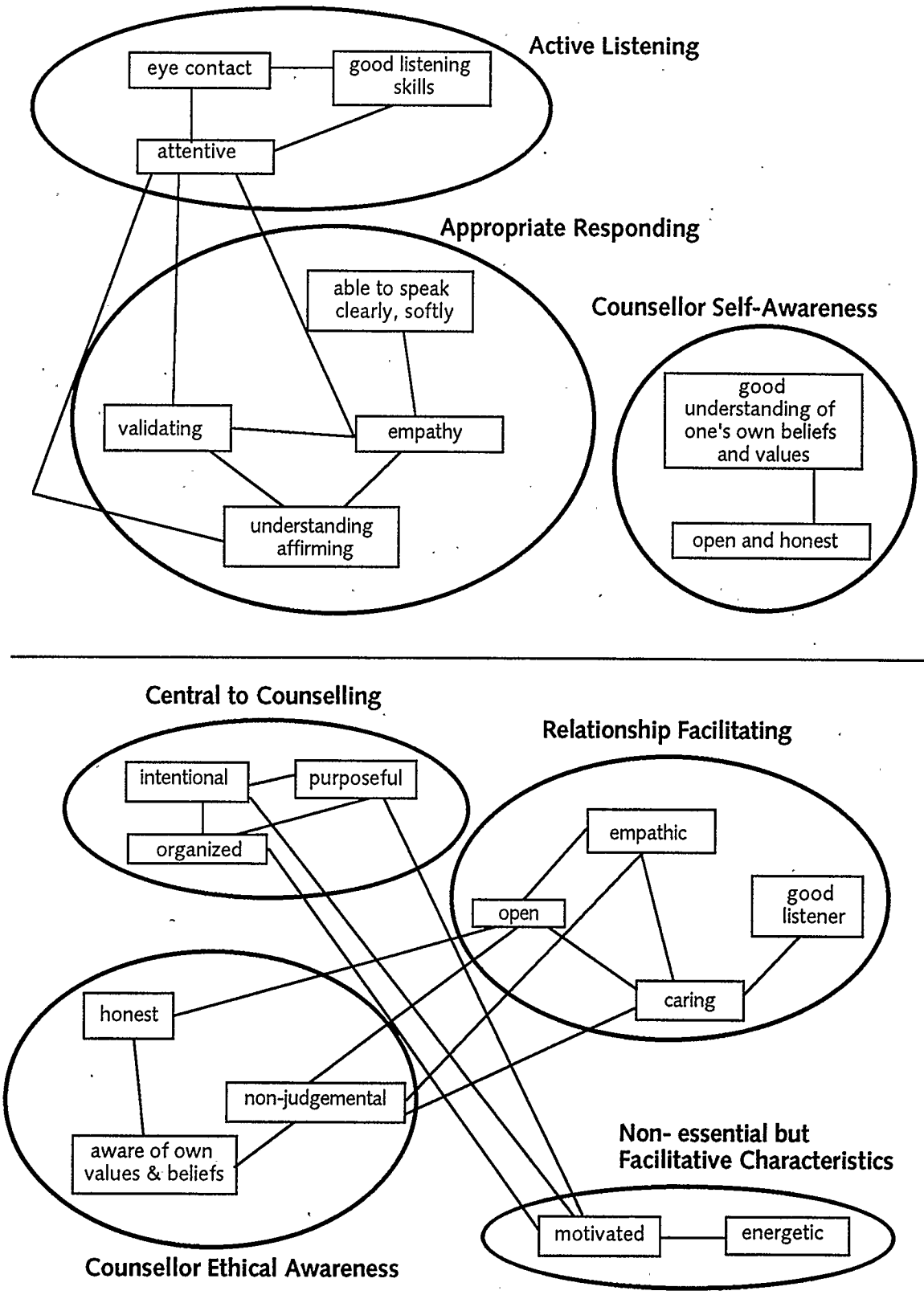


Figure 6. Cognitive maps for probe question 2 at pre-test (top) and post-test (bottom) for participant 3.

Table 23

Quantitative Data for Question 2

Index	Pretest	Posttest	Change
Extent	9.00	12.00	+3.00
Conceptual Interconnection	11.00	17.00	+6.00
Conceptual Integration	1.22	1.42	+.20
Conceptual Diversity	3.00	4.00	+1.00

judgemental" indicated an awareness of facilitative counsellor characteristics. The important notion of "Counsellor Ethical Awareness" was acquired by posttest.

In the pretest map, the concept "attentive" had the highest centrality score, with "empathy" next. In the posttest map, three concepts, "caring", "non-judgemental", and "motivated" shared the highest centrality score, which meant that no one concept emerged as central (see Table 24). In reviewing the centrality results with the participant, she advised that, with the exception of "empathy", these concepts were not central in her thinking about effective counsellor characteristics.

Questions 1 and 2 pretest. Visual similarity was apparent between pretest maps. Five concepts were unclustered in CMT 1.a while a two-concept cluster "Counsellor Self-awareness" was unconnected with the other concepts in CMT 2.a. There was good differentiation between probe questions at pretest as the only concepts that overlapped between maps were "empathy"/"listening with empathy".

Questions 1 and 2 posttest. In comparing the two posttest maps, they were not so much structurally similar as conceptually similar. It appeared that this participant conceptualized intentional behavior on the part of the counsellor as central to effective counselling. This is consistent with the counselling literature (Ivey, 1988).

Summary. A distinctive aspect of question 1 maps was the advanced conceptualization of client change factors at both pre and posttest. This highlighted differences in students' entering conceptualizations. Understanding environmental support factors in effecting and maintaining client change and counsellor ethical awareness represented further advances in this participant's schemata at posttest. For question 2, a hierarchy of conceptualization regarding counsellor characteristics appeared to be emerging. Overall, quantitative changes were mostly in the positive direction, with only

Table 24

Centrality Scores for Question 2

Cluster/concept label	Pretest
Active Listening	
Eye contact	2
Good listening skills	2
Attentive	5
Appropriate Responding	
Able to speak clearly, softly	1
Validating	3
Empathy	4
Understanding, affirming	3
Counsellor Self-awareness	
Good understanding of one's own beliefs and values	1
Open and honest	1
	22
	Posttest
Central to Counselling Process	
Intentional	3
Purposeful	3
Organized	3
Relationship Facilitating Change	
Open	4
Empathic	3
Good listener	1
Caring	4
Counsellor Ethical Awareness	
Honest	2
Aware of own values and beliefs	2
Non-judgemental	4
Non-essential but Facilitative Characteristics	
Motivated	4
Energetic	1
	34
Change in Total Centrality Score	+12

extent and conceptual interconnection in probe question 1 decreasing at posttest. A unique characteristic was the appearance of the concept "empathy" across all four maps. Because this participant entered with a fairly well-developed conceptualization of client change factors, this consistency may have represented an aspect of a consolidated theory of counselling (Cooper & Lewis, 1983; Cummings et al., 1990).

Participant 4

Sorting results are presented in Table 25. RA's achieved a high overall accuracy score in predicting participant 4's maps (M = 77.0).

Table 25

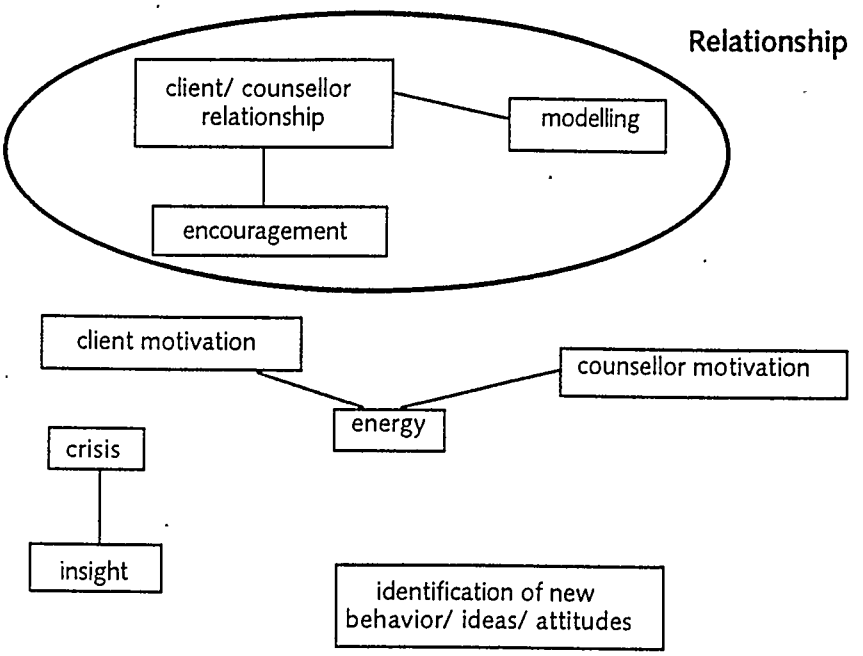
Sorting Accuracy of Participant 4's Maps

Task	CMT	Accuracy (%)	M
1	1.a	80.0	
	1.b	100.0	
	2.a	80.0	
	2.b	60.0	80.0
2	1.a	100.0	
	1.b	100.0	
	2.a	80.0	
	2.b	80.0	90.0
3	1.a	100.0	
	1.b	66.7	
	2.a	100.0	
	2.b	100.0	91.7
4	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	100.0
5	pre	50.0	
	post	50.0	50.0
6	4 maps	50.0	50.0
			77.0

For Task 1, RA's attained a mean accuracy score of 80%. Only CMT 1.b was sorted with perfect accuracy. For probe question 1, a mean accuracy score of 90% was found, which signified a large conceptual shift for this question. Probe question 2 was less well predicted, with a mean accuracy score of 70%, an indication that less change occurred in response to this question. Using CMT criteria helped RA's achieve a higher accuracy score for Task 2 (M = 90%). Maps 1.a and 1.b were accurately sorted by all RA's. The lack of organization, lack of extent, lack of integration, and lack of intentionality/planfulness/ structure helped RA's sort CMT 1.a correctly, while the interconnection, diversity, centrality of key concepts, knowledge/theory base, and counselling-as-outcome focus helped them sort CMT 1.b correctly. Maps 2.a and 2.b were accurately predicted by four RA's. Those who sorted them correctly focused on CMT 2.a's lack of integration, lack of diversity, and lack of organization, and CMT 2.b's intentionality/planfulness/structure, knowledge/ theory base, ethics/professionalism, and organization. For Task 3, CMT 1.b was incorrectly assessed by one RA. This indicated a slight overlap between probe questions. For Task 4, all sorters achieved perfect accuracy, an indication of learning over time. Pretest and posttest maps were equally well paired (50%) in Task 5, which provided some indication that posttest maps were as similar to each other as pretest maps. The identifying features that helped the accurate RA successfully pair pretest maps were the number of unclustered concepts, lack of interconnection between concepts, and style of clusters. In successfully pairing posttest maps, this RA relied on the interconnection of lines, similarity of design, and repetition of concepts. One RA was able to match all four maps in Task 6, an indication of some similarities in this participant's maps. As in Task 5, design, unclustered concepts, and lack of interconnection between clusters were clues in sorting. However, the other RA was unable to match any of the four maps in this exercise, which perhaps indicates change.

Question 1. A marked difference between participant 4's pre and posttest maps for this question occurred in the conceptual integration of concepts (see Figure 7). None of the concepts outside of the sole cluster "Relationship" at pretest were connected to the clustered concepts, an indication of an unintegrated cognitive schema. In contrast, three clusters out of four were well-integrated at posttest.

The pretest map denoted a lay conceptualization of counselling. In contrast, several concepts in the posttest map were indicative of a trained conceptualization of counselling. The concepts "clear identification of the problem", "direction", "having a goal", and "knowledge" and the cluster labels "Information/Knowledge", "Skills" and "Attitudes"



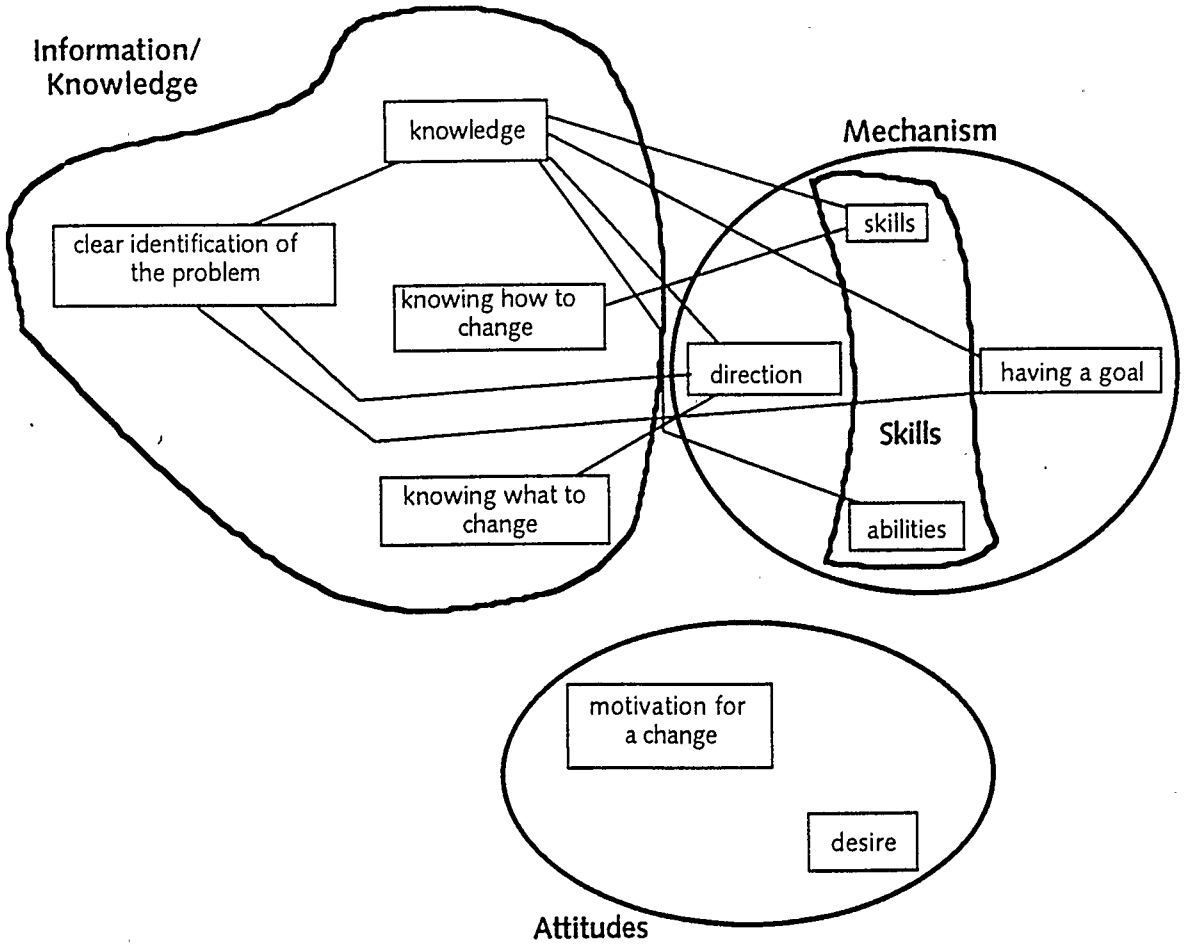


Figure 7. Cognitive maps for probe question 1 at pre-test (top) and post-test (bottom) for participant 4.

clearly signified the emphasis of prepracticum skill training and a positive shift in conceptualization.

At posttest, all concepts were perceived as part of a cluster and one cluster was nested within another cluster. Several concepts in the map were associated by virtue of being clustered together, but were not connected within the cluster, which signified incomplete integration of cognitive schemata. This participant advised that she would like to have retained the relationship aspect of the pretest map at posttest, because she sees the counselling relationship as necessary but not sufficient for client change.

The quantitative indices (see Table 26) showed increases across all measures. This indicated a substantial shift in conceptualization of question 1.

Table 26

Quantitative Data for Question 1

Index	Pretest	Posttest	Change
Extent	9.00	10.00	+1.00
Conceptual Interconnection	5.00	11.00	+6.00
Conceptual Integration	.56	1.10	+.54
Conceptual Diversity	1.00	4.00	+3.00

There was no obvious central concept in the pretest map. In comparison, the posttest map evidenced a clear central concept, "knowledge" (see Table 27), a reflection of learning during the skill training course. In the follow-up interview, this participant confirmed that "knowledge" was the most important concept in her thinking about change factors in counselling.

Question 2. The posttest map appeared to be more organized than the pretest map (see Figure 8). Four concepts at pretest were unclustered while all concepts were clustered at posttest. The clustering of concepts at posttest also appeared more logical. For instance, the concept "knowledgeable" at pretest was not clustered within the "Learned" cluster, while "knowledgeable" at posttest was clustered within the "Knowledge/Training base" cluster.

Concepts that reflected the training focus at posttest were "purposeful", "direction-focused", "well-trained", and "ethical". The participant advised that she would like to have retained the concepts "good communication skills" and "confidence in theory" at posttest.

Table 27

Centrality Scores for Question 1

Cluster/concept labels	Pretest
Relationship	
Client/counsellor relationship	2
Modelling	1
Encouragement	1
Unclustered concepts	
Client motivation	1
Counsellor motivation	1
Energy	2
Crisis	1
Insight	1
Identification of new behavior, ideas, attitudes	0
	10

	Posttest
Information/Knowledge	
Knowledge	7
Clear identification of the problem	3
Knowing how to change	2
Knowing what to change	2
Attitudes	
Motivation for change	0
Desire	0
Mechanisms	
Direction	3
Having a goal	2
Nested within Mechanisms	
Skills	
Skills	2
Abilities	1
	22
Change in Total Centrality Score	+12

Several similarities existed between pre and posttest maps. For instance, four concepts appeared at both testing times: "honest", "knowledgeable", "empathetic/empathic", and "experienced/experience". Cluster labels also remained similar over time: "Personal

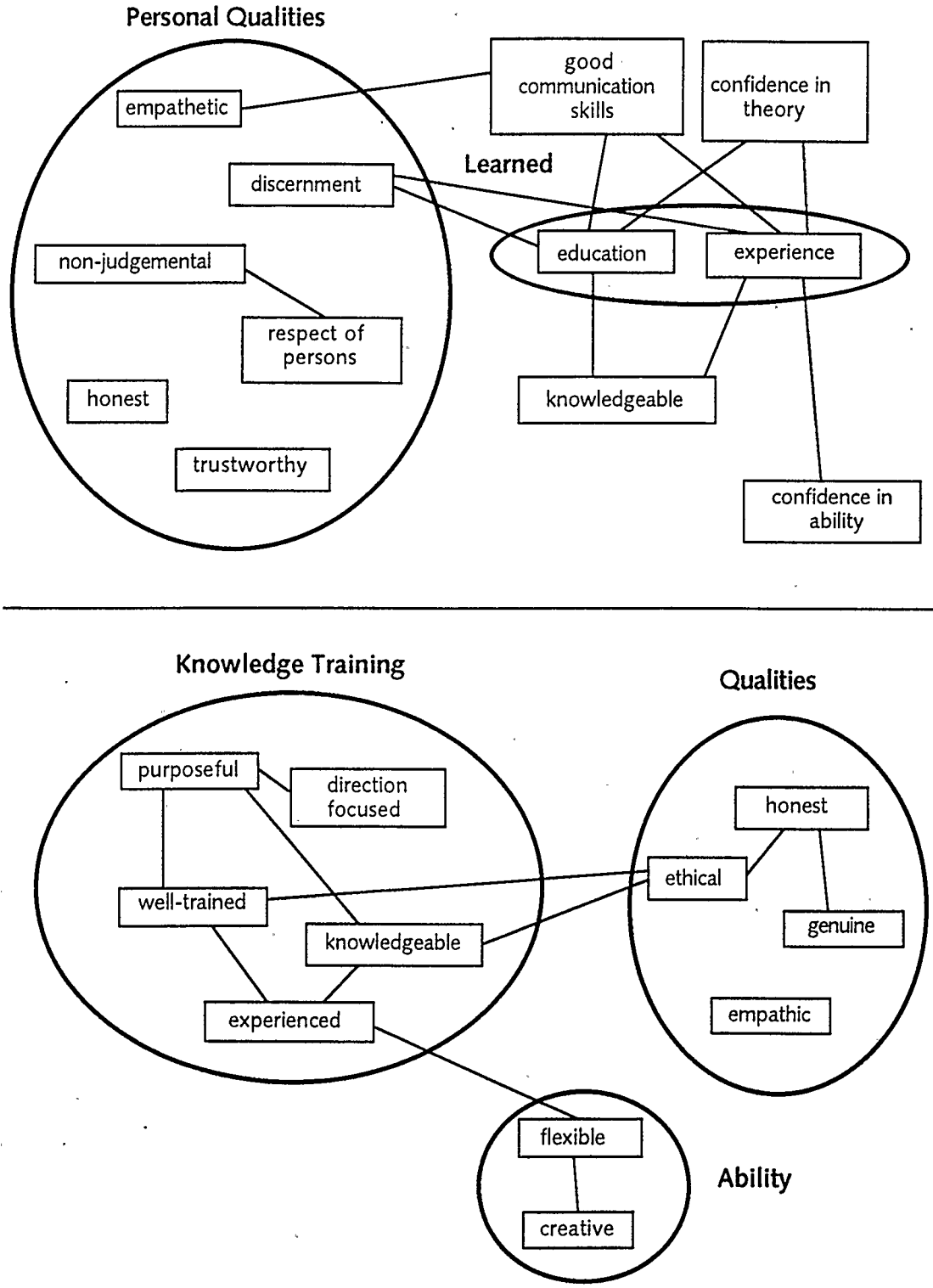


Figure 8. Cognitive maps for probe question 2 at pre-test (top) and post-test (bottom) for participant 4.

Qualities"/"Qualities" and "Learned"/"Knowledge/Training". The lack of substantial change was further borne out by very small quantitative changes from pre to posttest (see Table 28).

Table 28

Quantitative Data for Question 2

Index	Pretest	Posttest	Change
Extent	12.00	11.00	-1.00
Conceptual Interconnection	11.00	11.00	0.00
Conceptual Integration	.92	1.00	+.08
Conceptual Diversity	2.00	3.00	+1.00

The pretest map showed a clear central concept "experience". The posttest map, in contrast, showed five concepts sharing the highest centrality score (see Table 29).

Questions 1 and 2 pretest. A structural similarity in the pretest maps was the large number of unclustered concepts. In comparing concept and cluster labels, there was no overlap between questions.

Questions 1 and 2 posttest. Comparison of the two posttest maps revealed the visual similarity of a two-concept cluster at the bottom of the map with little (CMT 2.b) or no (CMT 1.b) integration with the rest of the map. With regard to concept and cluster labels, similarity existed between "knowledge" and "knowledgeable", "Knowledge/training" and "Information/knowledge", and "abilities" and "Ability".

Summary. Much change over time was observed in question 1, but little change was seen in the cognitive maps for question 2. Accordingly, quantitative indices all increased for question 1, while only conceptual integration and diversity increased for question 2. Perhaps the most obvious visual difference between pre and posttest cognitive maps was the inclusion of all concepts within clusters at posttest. Evidence of learning for this participant was the acquisition of the concept "ethical" and the notion of intentionality as seen in the label "purposeful".

Participant 5

Sorting results are presented in Table 30. The mean accuracy rating for all sorting tasks was 75%, a high accuracy score.

For Task 1, only CMT 1.b was accurately sorted by all five RA's. CMT's 2.a and 2.b were accurately assessed by four out of five sorters, while CMT 1.a was correctly sorted

Table 29

Centrality Scores for Question 2

Cluster/concept labels	Pretest
Personal Qualities	
Empathetic	1
Discernment	2
Non-judgemental	1
Respect of persons	1
Honest	0
Trustworthy	0
Learned	
Education	4
Experience	5
Unclustered concepts	
Good communication skills	3
Confidence in theory	2
Knowledgeable	2
Confidence in ability	1
	22
	Posttest
Knowledge/training base	
Purposeful	3
Direction focused	1
Well-trained	3
Knowledgeable	3
Experienced	3
Qualities	
Ethical	3
Honest	2
Genuine	1
Empathic	0
Ability	
Flexible	2
Creative	1
	22
Change in Total Centrality Score	0

Table 30

Sorting Accuracy of Participant 5's Maps

Task	CMT	Accuracy (%)	M
1	1.a	40.0	
	1.b	100.0	
	2.a	80.0	
	2.b	80.0	75.0
2	1.a	60.0	
	1.b	100.0	
	2.a	60.0	
	2.b	80.0	75.0
3	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	100.0
4	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	100.0
5	pre	100.0	
	post	0.0	50.0
6	4 maps	50.0	50.0
			75.0

by only two. Overall accuracy for this task was 75%. Using CMT criteria did not improve sorting accuracy (M = 75%). CMT 1.a was correctly sorted by two RA's, who noticed its counselling-as-process focus and its lack of organization. CMT 1.b was again accurately predicted by all RA's due to its diversity, organization, knowledge/theory base, and communication skills focus, but the other CMT's presented difficulty. CMT 2.a was correctly sorted by three RA's based on its lack of organization, lack of intentionality/ planfulness/structure, lack of hypothesis testing, and the counselling-as-process focus. CMT 2.b's extent, centrality, ethics/professionalism, knowledge/theory base, and its hierarchical nature provided clues for accurate sorters. Good distinction between questions was indicated by the accuracy of sorting for Task 3. Task 4 was perfectly sorted,

an indication of learning for this participant. Both RA's were able to pair pretest maps, but neither could pair posttest maps for Task 5. This provided an indication that greater differentiation occurred between questions at posttest. One RA was able to match all four maps in Task 6, an indication that certain aspects of the maps remained unchanged over time. This RA indicated that for CMT 1.a and 1.b, the visual structure was helpful in matching, and for CMT 2.a and 2.b, the repetition of concept labels was a clue. For this task, the other RA was able to pair both pre and posttest maps, but did not link them together correctly for a match across all four maps.

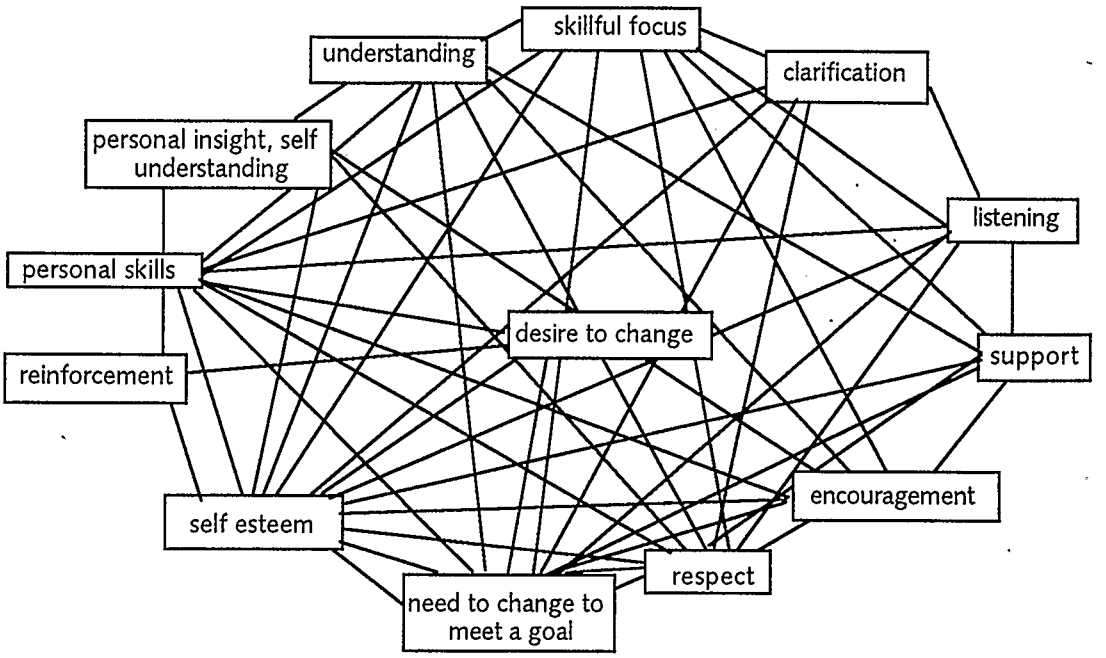
Question 1. Striking visual differences were apparent between participant 5's pre and posttest maps (see Figure 9). CMT 1.a was overly-integrated, so integrated that it lacked differentiation. In contrast, CMT 1.b appeared well-integrated. Also, there were no clusters in CMT 1.a, another indication of an undifferentiated cognitive schema before training, while three clusters appeared in CMT 1.b.

This participant produced the most extensive pretest map in the study. The concepts generated, however, reflected a novice interpretation of general counselling concepts. However, the concept "self-esteem", an important client variable found in experienced counsellors' cognitive maps (Cummings et al., 1990) was present. Several concepts in the posttest map reflected an understanding and integration of the skill training course content: "goal setting", "counsellor attitude", "skillful focus", "problem solving", "cooperative relationship" and "skill acquisition". It appeared that "desire to change" might have been included in the cluster "Client Characteristics" instead of "Counselling Relationship".

Quantitative indices verified the visual changes (see Table 31). Conceptual diversity increased, while the other measures decreased. Overall, these changes resulted in a less integrated and more differentiated map at posttest.

Centrality scores at pretest indicated that "self-esteem" was the most central concept in participant 5's thinking. In the follow-up interview, this participant indicated that this concept did not reflect the most important aspect of client change in her thinking. In fact, this participant felt constrained by the task at pretest. Her intention at the time was to have equal centrality scores for all concepts in the map. In describing the map, she stated that the "desire to change" brings the client to counselling, "self-esteem" is necessary for the client to change, but regardless of these differences, all concepts in the map were of equal importance.

In the posttest, "problem-solving" showed the highest centrality score with "skill acquisition" and "goal setting" next (see Table 32). In the follow-up interview, this



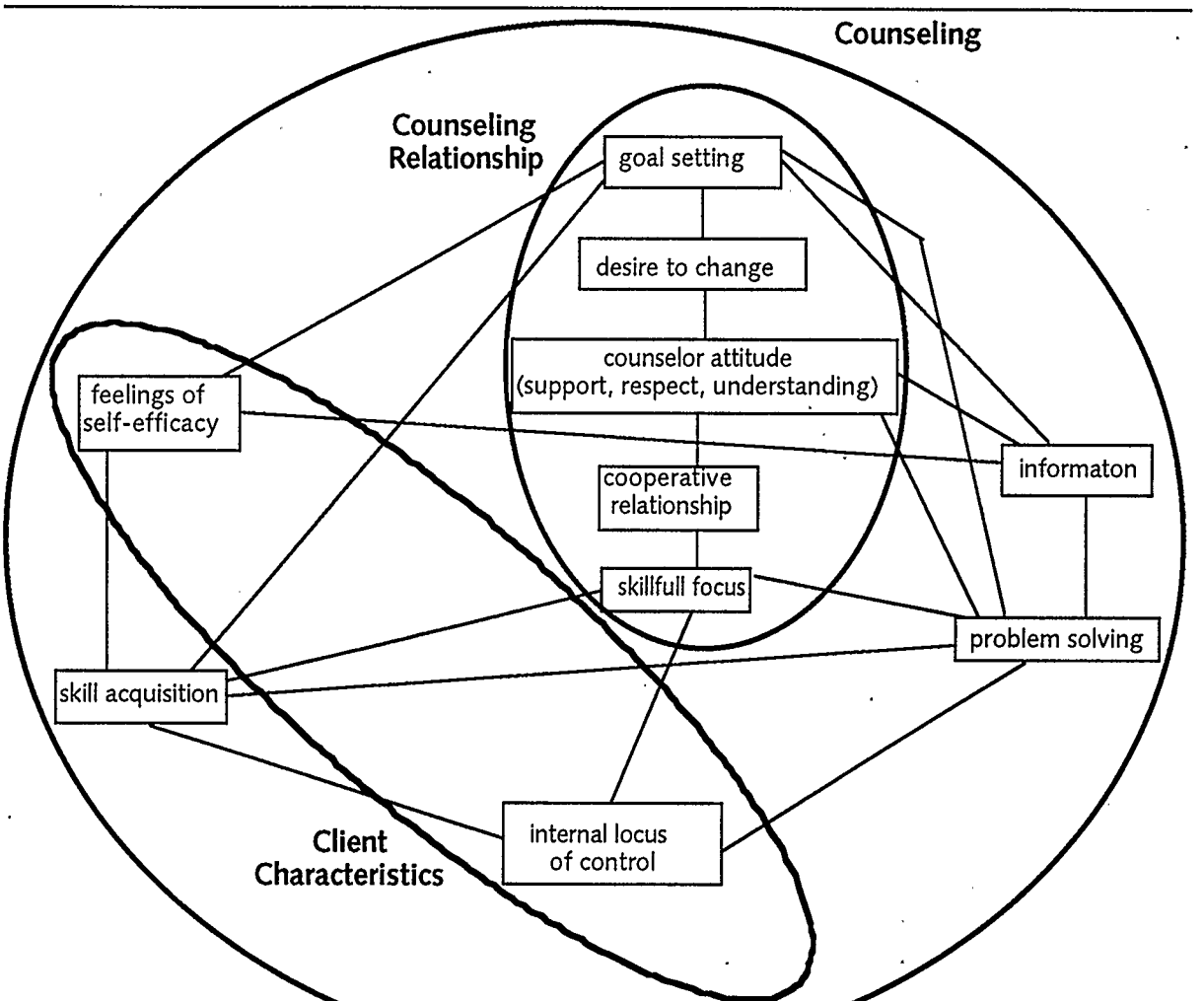


Figure 9. Cognitive maps for probe question 1 at pre-test (top) and post-test (bottom) for participant 5.

Table 31

Quantitative Data for Question 1

Index	Pretest	Posttest	Change
Extent	13.00	10.00	-3.00
Conceptual Interconnection	49.00	19.00	-30.00
Conceptual Integration	3.77	1.90	-1.87
Conceptual Diversity	0.00	3.00	+3.00

participant stated that instead of these concepts, "desire for change" had emerged as most central in her thinking.

Question 2. Figure 10 evidenced similar changes to those for question 1. The pretest map was overly-integrated, while the posttest map was more diverse, organized, and hierarchical. CMT 2.a had one unnamed cluster in the centre of the agglomeration of concepts, while CMT 2.b had three clusters, namely "Counsellor", "Counsellor-client", and "Underlying Necessity".

Quantitative changes were even more dramatic than those seen for question 1. Only conceptual diversity increased. However, the reduction in the conceptual interconnection and conceptual integration scores represented positive changes in this participant's maps (see Table 33).

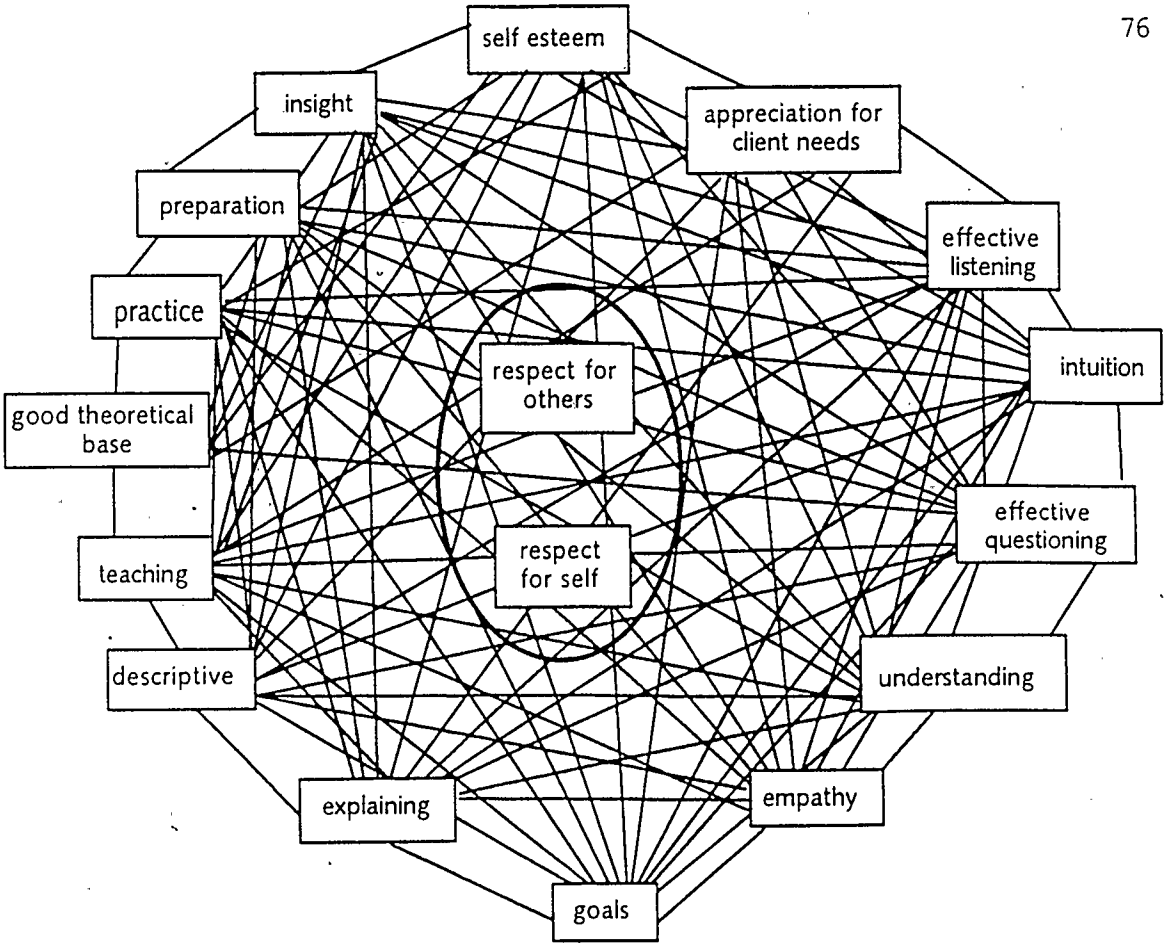
Despite the obvious visual differences, some similarities between the pre and posttest maps existed. Several concept labels remained identical across testing periods. These were "insight", "empathy", "good theoretical base", "understanding", "respect for others", "respect for self" and "appreciation for client needs". Also, the concept labels "respect for others" and "respect for self" remained clustered alone together across tests. "Effective questioning" and "effective listening" at pretest were combined in the single concept "well-developed effective skills (listening, questioning, etc.)" at posttest.

All concepts in the pretest map had high centrality scores, with five concepts sharing the highest score. In contrast, only one concept emerged in the posttest map as a key concept, "professionalism" (see Table 34). In the follow-up interview it was clear that these concepts were not reflective of her thinking. Rather, in both the pre and posttest maps, "respect for self" and "respect for others" should have been the key concepts, as these were seen by the participant as the underlying facilitative counsellor characteristics.

Table 32

Centrality Scores for Question 1

Cluster/concept labels	Pretest
Unclustered concepts	
Desire to change	4
Skillful focus	9
Clarification	6
Listening	7
Support	7
Encouragement	8
Respect	9
Need to change to meet a goal	11
Self-esteem	12
Reinforcement	3
Personal skills	11
Personal insight, self-understanding	5
Understanding	8
	100
	Posttest
Counselling	
Goal setting	5
Information	4
Problem-solving	6
Skill acquisition	5
Nested within Counselling	
Counselling Relationship	
Desire to change	2
Counsellor attitude (support, respect, understanding)	4
Cooperative relationship	2
Skillful focus	4
Client Characteristics	
Feelings of self-efficacy	3
Internal locus of control	3
	38
Change in Total Centrality Score	-62



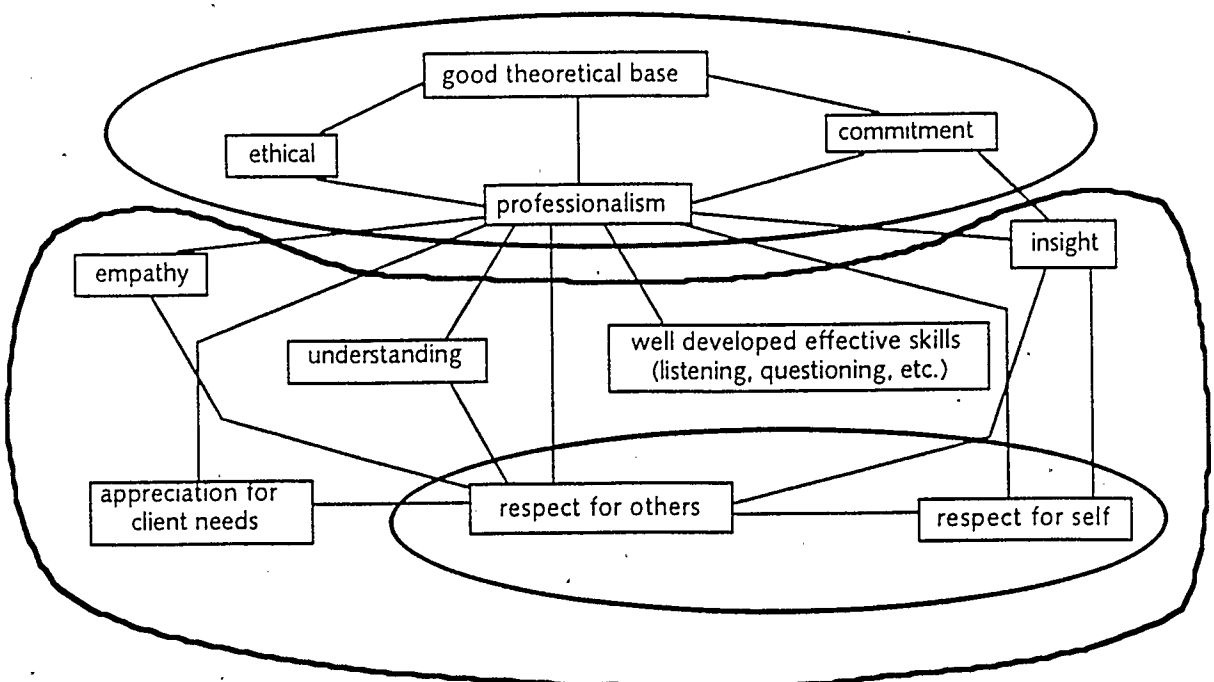


Figure 10. Cognitive maps for probe question 2 at pre-test (top) and post-test (bottom) for participant 5.

Table 33

Quantitative Data for Question 2

Index	Pretest	Posttest	Change
Extent	17.00	11.00	-6.00
Conceptual Interconnection	95.00	19.00	-76.00
Conceptual Integration	5.59	1.73	-3.86
Conceptual Diversity	1.00	3.00	+2.00

Questions 1 and 2 pretest. Pretest maps were visually almost identical in structure. Two concept labels were identical across the two questions, namely, "self-esteem" and "understanding", and two were similar, "listening"/"effective listening", "goals"/"need to change to meet a goal". This indicated undifferentiated cognitive schemata for the two questions despite accurate sorting for Task 3.

Questions 1 and 2 posttest. The posttest maps reflected greater differentiation between probe questions. The only concept labels that resembled each other at posttest were: "counsellor attitude (support, respect, understanding)" and "understanding". A further indication of this differentiation was in the cluster labels. While the cluster label "Counselling Relationship" in CMT 1.b was analagous to CMT 2.b's "Counsellor-client", CMT 1.b's "Client Characteristics" and CMT 2.b's "Counsellor" denoted the distinctive focus between questions.

Summary. The presence of cluster labels indicated superordinate schemata at posttest that were absent at pretest. More differentiation and more appropriate integration between concepts was exhibited, representing a positive shift in conceptual schemata. Greater distinction between probe questions was apparent. Important conceptual changes that reflected training were the acquisition of the concepts "ethical" and "professionalism".

Participant 6

Table 35 summarizes the sorting results for participant 6's maps. The mean accuracy score was 53.8%, the lowest in the study.

For Task 1, the mean accuracy score was 47.5%, primarily due to the sorting of posttest maps as pretest maps. Using the criteria charts for Task 2, overall accuracy improved only slightly to 50%, although an accuracy decrement for CMT 1.b took place. The RA who sorted CMT 1.b correctly used its intentionality/planfulness/structure and

Table 34

Centrality Scores for Question 2

Cluster/concept labels	Pretest
Unnamed cluster	
Respect for others	0
Respect for self	0
Unclustered concepts	
Self-esteem	14
Appreciation for client needs	12
Effective listening	13
Intuition	12
Effective questioning	14
Understanding	13
Empathy	12
Goals	12
Explaining	13
Descriptive	13
Teaching	14
Good theoretical base	7
Practice	13
Preparation	14
Insight	14
	190
	Posttest
Counsellor	
Good theoretical base	3
Commitment	3
Professionalism	10
Ethical	2
Counsellor-client	
Empathy	2
Understanding	2
Well-developed effective skills (listening, questioning, etc.)	1
Insight	4
Appreciation for client needs	2
Nested within Counsellor-client	
Underlying Necessity	
Respect for others	6
Respect for self	3
	38
Change in Total Centrality Score	-152

Table 35

Sorting Accuracy of Participant 6's Maps

Task	CMT	Accuracy (%)	M
1	1.a	100.0	
	1.b	20.0	
	2.a	60.0	
	2.b	10.0	47.5
2	1.a	100.0	
	1.b	10.0	
	2.a	80.0	
	2.b	10.0	50.0
3	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	100.0
4	1.a	100.0	
	1.b	100.0	
	2.a	100.0	
	2.b	100.0	100.0
5	pre	50.0	
	post	0.0	25.0
6	4 maps	0.0	0.0
			53.8

counselling-as-outcome focus as clues. The RA who sorted CMT 2.b correctly noted its hierarchical nature, its conceptual interconnection, and the focus on skills and knowledge. Overall, the low sorting accuracy may be taken as an indication that this participant's conceptualizations did not differ markedly over time. RA's were able to distinguish between probe questions in Task 3, which provided an indication of little overlap in conceptualization of the two questions. The fact that 100% accuracy was attained for Task 4 indicated that some conceptual shifts occurred over time. In Task 5, pretest maps were correctly paired by one RA, while posttest maps were not paired accurately. This indicated more distinction between questions after training. Neither of the two RA's

completing Task 6 could match all four maps. This indicated some conceptual shifts after participation in the skill training course.

Question 1. Visually, the changes that appeared across testing periods were greater extensiveness of concepts, inclusion of all concepts in clusters, and the presence of nested clusters at posttest (see Figure 11).

Perhaps the most important difference between the maps was the change in concept and cluster labels. The dualistic conceptualization of counselling that appeared in CMT 1.a evidenced by the cluster labels "Good Thoughts" and "Bad Ideas, Thoughts, Emotions" evolved into an outcome-oriented conceptualization in CMT 1.b as evidenced by "Presenting Situation" and "Solution". In fact, CMT 1.b clustered six concepts under "Solution": "goal", "motivation", "plan", "skill", "reward", and "encouragement". This change indicated learning about key factors involved in client change (Martin & Hiebert, 1985).

Increases were seen in all the quantitative indices across testing periods for this question (see Table 36). This signified conceptual change.

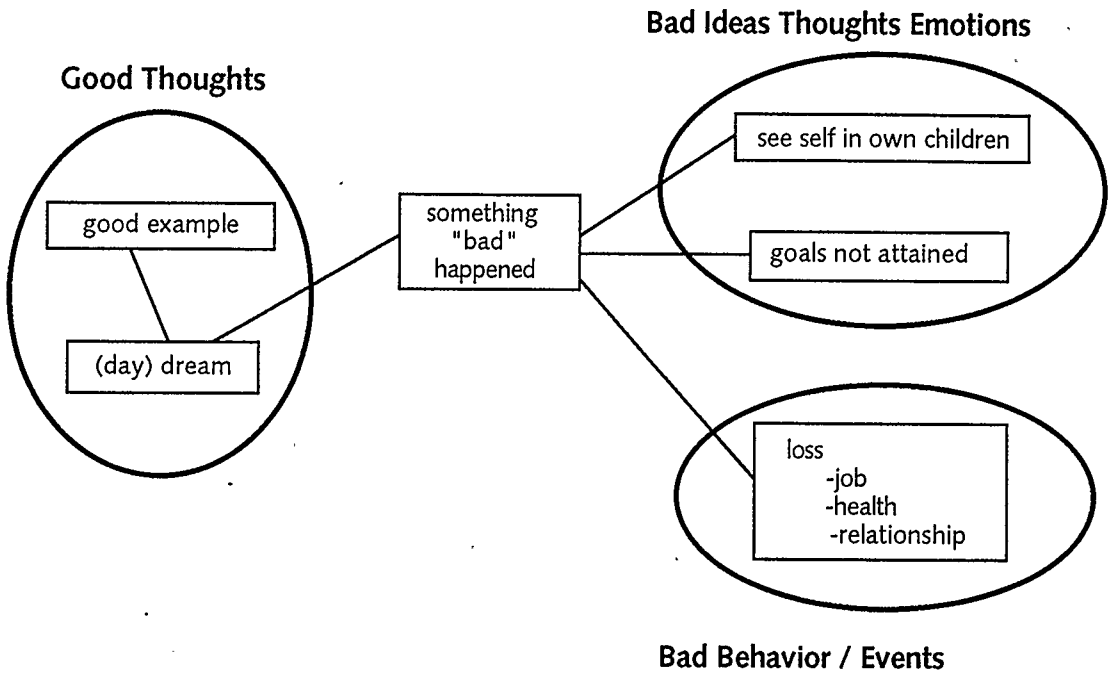
Table 36

Quantitative Data for Question 1

Index	Pretest	Posttest	Change
Extent	6.00	9.00	+3.00
Conceptual Interconnection	5.00	8.00	+3.00
Conceptual Integration	.83	.89	+.06
Conceptual Diversity	3.00	4.00	+1.00

CMT 1.a had one central concept "something 'bad' happened", while CMT 1.b showed two key concepts "goal" and "empathy" (see Table 37). The centrality of these concepts in the participant's thinking were confirmed at the follow-up interview. In discussing the maps with the participant, it appeared that the probe question led to a focus on the client and the motivation to seek counselling at pretest, while the posttest map shifted toward a focus on the counselor's role in bringing about a change in the client's "Presenting Situation".

Question 2. Very little visual difference was evidenced between pre and posttest (see Figure 12). Each map was a simple two-cluster structure with similar integration



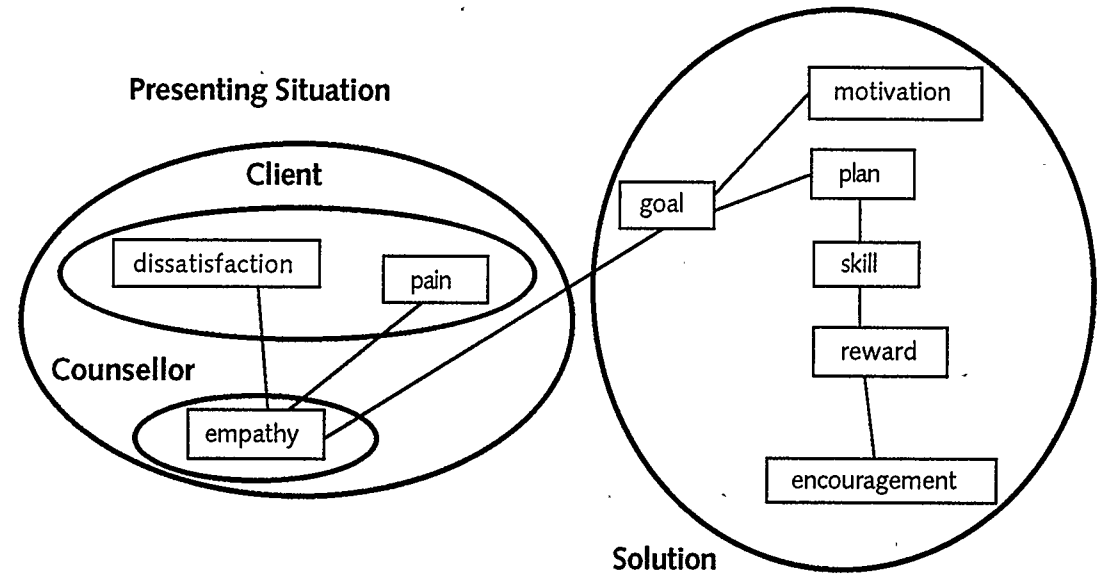


Figure 11. Cognitive maps for probe question 1 at pre-test (top) and post-test (bottom) for participant 6.

Table 37

Centrality Scores for Question 1

Cluster/concept labels	Pretest
Good Thoughts	
Good example	1
(Day)dream	2
Bad Ideas, Thoughts, Emotions	
See self in own children	1
Goals not attained	1
Bad Behavior/Events	
Loss - job, health, relationship	1
Unclustered concept	
Something "bad" happened	4
	10
	Posttest
Solution	
Goal	3
Motivation	1
Plan	2
Skill	2
Reward	2
Encouragement	1
Presenting Situation	
Nested within Presenting Situation	
Client	
Dissatisfaction	1
Pain	1
Counsellor	
Empathy	3
	16
Change in Total Centrality Score	+6

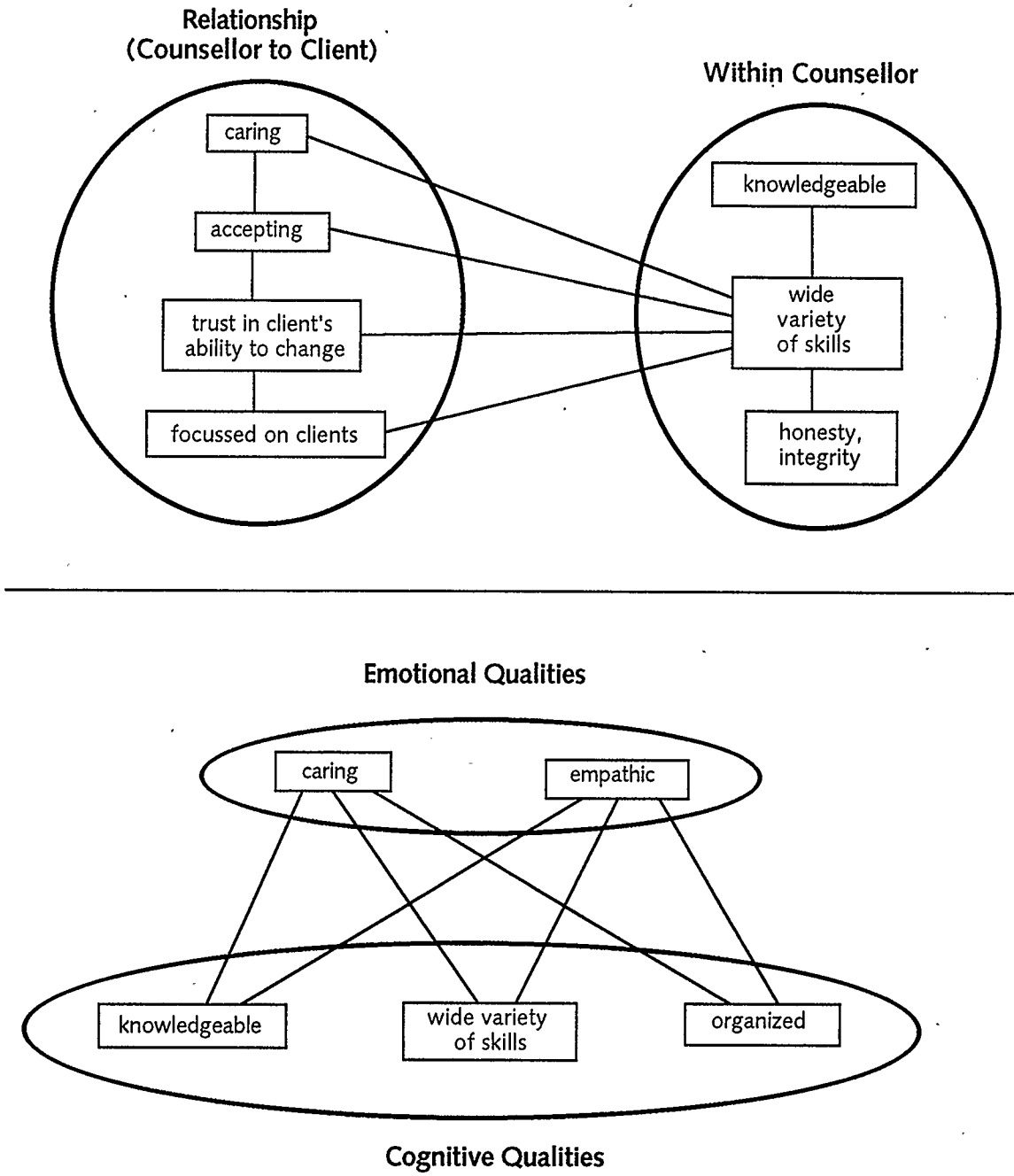


Figure 12. Cognitive maps for probe question 2 at pre-test (top) and post-test (bottom) for participant 6.

between concepts. At pretest, more within-cluster linkage was evident than at posttest. CMT 2.b evidenced a structural hierarchy, but not a conceptual one.

Concept labels signified little change. Out of five posttest concept labels, three were identical at pretest: "caring", "knowledgeable", and "wide variety of skills". Concepts about effective counsellor characteristics acquired during training were "organized" and "empathic". Cluster labels changed between pre and posttest, from a focus on characteristics "Within Counsellor" and "Relationship (Counsellor to Client)" to a focus on the counsellor's "Emotional Qualities" and "Cognitive Qualities". A third cluster, "Behavioral Qualitites" might have been expected in a map with this kind of focus and with the training emphasis.

Quantitatively, changes in the negative direction were found (see Table 38). These changes are opposite to those expected with training.

Table 38

Quantitative Data for Question 2

Index	Pretest	Posttest	Change
Extent	7.00	5.00	-2.00
Conceptual Interconnection	9.00	6.00	-3.00
Conceptual Integration	1.29	1.20	-.09
Conceptual Diversity	2.00	2.00	0.00

Overall, centrality scores decreased from pre to posttest. The concept "wide variety of skills" clearly emerged as a central concept at pretest, while "caring" and "empathic" had the highest centrality scores at posttest. However, the scores of the posttest central concepts were not much higher than those of the other concepts in the map (see Table 39). Participant 6 advised that the concept "wide variety of skills" did not represent an accurate reflection of the most important concept in her thinking at pretest. Similarly, she advised that at posttest, the "Emotional Qualities" cluster in which "caring" and "empathic" were contained, were no more central in her thinking about counsellor characteristics than the concepts within the "Cognitive Qualities" cluster.

Questions 1 and 2 pretest. At pretest, this participant distinguished between probe questions as no concepts or cluster labels overlapped across pretest maps. To further substantiate this distinction, little visual similarity existed.

Table 39

Centrality Scores for Question 2

Cluster/concept labels	Pretest
Relationship (Counsellor to Client)	
Caring	2
Accepting	3
Trust in client's ability to change	3
Focused on clients	2
Within Counsellor	
Knowledgeable	1
Wide variety of skills	6
Honest integrity	1
	18
	Posttest
Emotional Qualities	
Caring	3
Empathic	3
Cognitive Qualities	
Knowledgeable	2
Wide variety of skills	2
Organized	2
	12
Change in Total Centrality Score	-6

Questions 1 and 2 posttest. Some overlap in concepts was seen in the posttest maps with the labels "empathy/empathic" and "skill/wide variety of skills". Otherwise, there was very little similarity between posttest maps; CMT 1.b exhibited nested clusters, while CMT 2.b was hierarchical structurally.

Summary. Conceptual change was apparent across testing periods for question 1. All quantitative indices showed changes in the positive direction. Less change was evidenced between maps generated in response to probe question 2, particularly in the concept labels. The quantitative data decreased for all measures except conceptual

diversity which remained unchanged over time. The central concepts might have been expected to change in the opposite direction for this question, given the focus of training. That is, the pretest central concept was "wide variety of skills", while the posttest central concepts were "caring" and "empathic". This may partially explain the low accuracy in sorting Tasks 1 and 2.

Some newly acquired concepts were evident at posttest, particularly those within the "Solution" cluster for question 1. This represented a more positive view of counselling for this participant. A unique change for participant 6 was the acquisition of the concept "empathic" as a desirable counsellor characteristic.

Summary of Cognitive Mapping Task

Table 40 summarizes the changes observed in cognitive maps over time. The table is organized by participant and by probe question.

The first general level hypothesis, that greater organization would be apparent in posttest maps, was borne out. The following changes are cited as evidence of greater organization.

Several salient visual changes were seen in participants' cognitive maps over time. One of the most striking changes was the clustering of concepts. Across the six participants, 49 concepts were unclustered at pretest, whereas 0 concepts were unclustered at posttest. This indicated the acquisition of superordinate schemata by participants. Another obvious visual change was the emergence of nested clusters at posttest. There were no nested clusters at pretest, but at posttest ten clusters were nested within another cluster, and one map had two overlapping clusters. These changes were largely responsible for the greater organization apparent in posttest maps. More evidence supporting the first hypothesis comes from the cognitive mapping criteria charts. RA's placed a (+) beside "organization of maps" for 10 of the 12 posttest maps and a (-) beside 9 of the 12 pretest maps.

The second general level hypothesis was borne out, i.e., more posttest maps than pretest maps were hierarchical. While only one pretest map was structurally hierarchical, six posttest maps were, five structurally and one conceptually.

The specific level hypothesis held that certain specific conceptualizations would be demonstrated at posttest. Using the cognitive mapping criteria charts and examination of concept and cluster labels, the following categories of concepts increased at posttest: intentionality/planfulness/structure (from 3 to 8), counselling-as-outcome (from 2 to 6),

Table 40

Summary Changes in Cognitive Maps

Participant	Question	Pretest map	Posttest map
1	1	discrete clusters hierarchical complex disorganized presence of "self-esteem"	nested clusters non-hierarchical simple organized "self-esteem" dropped
	2	complex non-hierarchical disorganized process-focus "empathy" central	simple hierarchical organized outcome-focus "purposefulness" central
2	1	single cluster 3 concepts unclustered process-focus	overlapping clusters all concepts clustered outcome-focus
	2	single cluster non-hierarchical high integration of concepts low differentiation no strong central concept	3 clusters hierarchical low integration of concepts differentiation strong central concept
3	1	discrete clusters 5 concepts unclustered disorganized non-hierarchical advanced conceptualization	nested clusters all concepts clustered organized hierarchical acquisition of "change maintenance and transfer"
	2	non-hierarchical non-extensive not well-integrated	conceptually hierarchical more extensive more integrated acquisition of "ethical"

Table 40 (cont'd)

Summary Changes in Cognitive Maps

Participant	Question	Pretest map	Posttest map
4	1	single cluster non-integrated disorganized no central concept	nested clusters integrated organized strong central concept
	2	disorganized unclustered concepts	organized all concepts clustered more logical clustering
5	1	no clusters over-integrated undifferentiated presence of "self-esteem" process-focus 13 concepts unclustered	nested clusters well-integration differentiated "self-esteem" dropped outcome-focus all concepts clustered
	2	over-integrated non-hierarchical undifferentiated	well-integrated hierarchical differentiated
6	1	distinct clusters non-hierarchical disorganized dichotomous conceptualization	nested clusters hierarchical clear non-dichotomous acquisition of outcome orientation
	2	non-hierarchical	hierarchical acquisition of "empathic"

ethics/professionalism (from 0 to 4), knowledge/theory base (from 8 to 12), and problem definition (from 0 to 1).

Increases in the quantitative indices were hypothesized. Statistical analysis of the quantitative indices resulting from the CMT was performed. The results of the Hotelling's T^2 were not statistically significant. This may have been due to the small number of participants in the sample and large variability across participants. In fact, these two conditions are ideal for a Type II error. Group data is found in Table 41.

In the follow-up interviews, participants were asked whether the concepts with the highest centrality scores in their maps reflected the most important concepts in their thinking. Only two participants indicated that they did. One participant said the central concepts at both pre and posttest were one of two central concepts in her thinking. The other three participants indicated that the most central concepts in the maps did not reflect their thinking about the probe questions. Perhaps this calls into question the validity of the centrality index.

Another summary finding was that, as a group, these participants produced fewer overlapping concepts across probe questions at posttest than at pretest. This differentiation between related concepts represented a positive shift in conceptualization (Glaser, 1984). In some cases, the presence of identical concepts over time was interpreted as an emerging consistency in the participant's personal view of counselling (Cooper & Lewis, 1983; Cummings et al., 1990). This interpretation was based on the concept and cluster labels, the Personal Information Sheet, and follow-up interviews.

Counselling Skills and Conceptualizations

The following discussion relates changes in participants' counselling skills and conceptualizations over time. Changes are discussed for each participant.

Participant 1

The change in concept and cluster labels from pre to posttest signified a shift from a Rogerian conceptualization of counselling to a more cognitive-behavioral focus. The skill changes that most reflected this shift were the greater use of structuring skills, specifically the addition of an Overview and a Transition. Soliciting skills also changed in a way that promoted more active counsellor involvement (Hiebert & Noort, 1988). That is, there was a fourfold increase in Open Questions and a twofold increase in Declarative Probes. This participant also generated the concept "articulates thoughts clearly" as an effective counsellor characteristic at posttest. Perhaps the reduction in "Fused" utterances and the

Table 41

Group CMT Quantitative Data

Index	Participant	Question 1 Pre	Question 1 Post	Question 2 Pre	Question 2 Post
Extent	1	8	4	14	6
	2	10	4	10	12
	3	12	9	9	12
	4	9	10	12	11
	5	13	10	17	11
	6	6	9	7	5
Total		58	46	69	57
Conceptual Interconnection	1	12	6	19	7
	2	17	4	20	13
	3	12	11	11	17
	4	5	11	11	11
	5	49	19	95	19
	6	5	8	9	6
Total		100	59	165	73
Conceptual Integration	1	1.50	1.50	1.36	1.17
	2	1.70	1.00	2.00	1.08
	3	1.00	1.22	1.22	1.42
	4	.55	1.10	.92	1.00
	5	3.77	1.90	5.59	1.73
	6	.83	.88	1.29	1.20
Total		9.35	7.60	12.38	7.60
Conceptual Diversity	1	4	3	5	2
	2	1	2	1	3
	3	2	5	3	4
	4	1	4	2	3
	5	0	3	1	3
	6	3	4	2	2
Total		11	21	14	17

elimination of "Other" skills reflected this conception. The addition of reacting skills to this participant's repertoire may have corresponded with her posttest concept "instructive feedback".

Participant 2

This participant's cognitive maps indicated a dramatic change in conceptualization of both probe questions. As with participant 1, there seemed to be a shift from a Rogerian focus to an outcome-oriented conceptualization of counselling. With this much apparent change in the cognitive structure, one might expect a correspondingly large change in counselling skill. However, only small improvements in skill usage were noted. This may be partially explained by the fact that this participant entered the Counselling Program with a wide repertoire of counselling skills.

Participant 3

This participant had been introduced to the focus of the skill training course in her undergraduate studies. Her conceptualization of counselling upon entry into the Counselling Program reflected good understanding of factors involved in client change. Her counselling skills upon entry, however, did not reflect this. That is, the repertoire of skills exhibited was small (Overview, Transition, Summary, and Declarative Probe were absent), the proportion of "Fused" utterances to total skills was high (36.4%), and the proportion of "Other" skills was high (31.8%). A unique feature of her skill usage at pretest was the high proportion of reacting skills to total utterances (50%), an indication that some aspects of her undergraduate skill training had been assimilated. A further advance in cognitive schema was noted in her posttest cognitive maps, while a mixed pattern of change was noted for her counselling skills. Changes in skills and conceptualizations were related through the increase in the number of structuring and soliciting skills, a reflection of the increased emphasis on counsellor intentionality at posttest.

Participant 4

The acquisition of structuring skills and the notion of intentionality at posttest seemed to be related for this participant. Overall, skill usage became more balanced at posttest.

Participant 5

Large changes were seen for this participant both in skill usage and conceptualizations. Acquisition of structuring skills reflected the more purposeful focus of posttest maps. Elimination of Closed Questions and "Other/Uncodable" skills as well as a large reduction in "Fused" utterances represented a shift toward a more focused and open

interview. More differentiation between pre and posttest maps and between probe questions at posttest indicated a corresponding conceptual shift.

Participant 6

This participant's skill change was mixed as was her pattern of conceptual change (i.e., much change for probe question 1 and less for question 2). Participant 6 used fewer structuring skills at posttest than any of the other participants. The notion of intentionality was seen at posttest although these concepts had low centrality scores and consequently were not well-integrated with the rest of the map. Reacting skills changed by becoming more focused (i.e., three "Other Reacting" were eliminated, while the Reflects of Meaning were retained). This improvement in reacting skills may have been related to the acquisition of the concept "empathic".

Chapter Summary

Counselling Skills

The changes in counselling skills were much as hypothesized. Several statistically significant results were found.

Structuring skills. A great deal of emphasis in the prepracticum skill training course was placed on the importance of structuring skills in counselling. An Overview at the beginning of the session helps the client understand the session goals and be realistic about what can be accomplished (Martin & Hiebert, 1985). At pretest none of the participants began their interview with an Overview, but at posttest, four did. Transitions are an important structuring skill because they signal the client to a change in focus (Martin & Hiebert, 1985) and therefore more Transitions at posttest were expected. Lack of reliable change in Transitions may be partially explained by the focused interview questions or the length of the interview. Participants were taught to Summarize frequently, as Summaries help clients organize themes that have been brought out in the session (Martin & Hiebert, 1985). Statistical significance was reached for the change in the use of Summaries over time. Overall, these results indicated that participants learned to structure their sessions to provide a meaningful context for promoting client insight and facilitating client learning and change.

Soliciting skills. In the soliciting cluster, participants reliably decreased their use of Closed Questions which reflected learning about the purpose of soliciting skills, i.e., to promote open exploration and practise in the cognitive, behavioral, and affective domains (Martin & Hiebert, 1985). This is more likely when Closed Questions are kept to a minimum. Perhaps participants replaced Closed Questions with structuring or reacting

skills, or learned to rephrase naturally-occurring Closed Questions into more facilitative Open Questions. However, Open Questions did not reach statistical significance, perhaps due to the high number of Open Questions used at pretest. Declarative Probes provide an alternative to Open Questions and perform the same function as Open Questions. Participants increased their use of Declarative Probes over time, an indication that participants learned to vary their soliciting skills with training. Increased use of Declarative Probes may be another potential explanation for the nonsignificant finding for Open Questions. These changes indicated that novice counsellors learned to elicit client learning through appropriate use of soliciting skills.

Reacting skills. In this skill cluster, it was expected that use of Paraphrase of Verbal Content would decrease and Reflect of Meaning and Affect would increase over time. Changes in Paraphrase of Verbal Content did not reach statistical significance although decreased use occurred. The change in Reflects of Meaning reached statistical significance, probably due to the training emphasis on reacting to client information by going beyond a mere paraphrase of client statements. Reflects of Affect were expected to increase, but instead they decreased possibly because of the nature of the interview questions. This combination of change reflected more focused skill in providing feedback to the client and checking counsellor perceptions of client statements.

Participants also reduced the number of "Other"/"Uncodable" skills and "Fused" utterances significantly at posttest. These changes suggested a more intentional usage of skills and greater ability to produce facilitative utterances.

A more balanced use of skills across the three skill clusters was seen at posttest. All participants used one or more structuring skills, the number of soliciting skills decreased almost twofold, and the number of reacting skills increased by more than one-third.

The above skill changes conveyed greater clarity, focus, and intentionality in posttest counselling interviews. Microcounselling training was effective in helping novice counsellors communicate in ways that maximize opportunities for client growth and change.

Counsellor Conceptualizations

The CMT provided a glimpse into the nature of participants' conceptualizations about client change factors and characteristics of effective counsellors. In conjunction with participants' input, interpretations of the maps provided persuasive demonstration of conceptual change accompanying skill training.

Changes in conceptualization of the two probe questions were inferred from the CMT's. Overall, more change was evidenced for probe question 1 than 2 which means that participants diversified their thinking about client change factors over time. The increase in conceptual diversity score for question 1 reflects this change. Contrary to expectations, this was the only quantitative index that increased over time. Summary comments about changes in each of the quantitative measures follow.

Extent. On the basis of literature on cognitive structure and expert-novice studies, it was thought that participants would generate more concepts at posttest than at pretest. Looking at the data for both probe questions together, only one participant's extent score increased (by an index of 1), two remained the same, and three decreased.

Conceptual interconnection. The number of links between concepts was expected to increase. Over both probe questions, mixed results were found for this index (three decreased, two increased, and one remained constant). There was a relationship between changes in the extent and conceptual interconnection indices. Participants whose extent scores decreased also showed a decrease in conceptual interconnection. Those with a constant extent score showed an increase in conceptual interconnection, and the participant with an increased extent score showed no change in the interconnection index.

Conceptual integration. Mixed results were seen for this index. Over both probe questions, two participants' conceptual integration scores decreased and two participants' scores increased. One participant's conceptual integration score remained constant for probe question 1 and decreased for probe question 2. The remaining participant had an increase in this index for the first question and a decrease for the second question.

Conceptual diversity. Although not statistically significant, participants increased the number of clusters in their maps over time. Only one participant's conceptual diversity score decreased with training.

Counselling Skills and Conceptualizations

Several participants evidenced changes in both skills and conceptualizations. With such a small number of participants it is not possible to analyze the relationship between the quantitative changes in skills and conceptualizations in any meaningful way. However, several inferences were made about this relationship. Acquisition of core notions such as intentionality and counselling-as-outcome and shifts from a Rogerian to a cognitive-behavioral conceptualization of counselling were accompanied by the acquisition of structuring skills and a reduction in non-facilitative skills. The notion of empathy and of providing clients with feedback about their behaviors, thoughts, and feelings corresponded with an increase in, and more focused use of, reacting skills.

CHAPTER FIVE
DISCUSSION

The objective of this study was to investigate changes in counselling skills and cognitive structure accompanying counselling skill instruction. The relationship between counselling skills and counsellor conceptualizations was explored also. For discussion purposes, the results of this study are interpreted relative to current literature in the field. First, the counselling skill and CMT investigation results are discussed and interpreted. A brief discussion of the results in relation to trainee development is then given. Next is a discussion of the strengths and limitations of the study, followed by a critical evaluation. Finally, implications of the study and suggestions for future research in this area are presented.

Discussion and Interpretation of Results

Counselling Skills

Behavioral skill training in the prepracticum course in which participants took part consisted of explanation, modeling of skills, practice, feedback, and training for transfer (Martin & Hiebert, 1985). This combination of elements resulted in statistically reliable changes in two of the three categories of predicted change.

In the first category, "discrete" skills, training led to reliable improvement in six of the twelve skills. These changes were seen across the three skill clusters. The second category, proportion of certain skills/skill clusters to total utterances also showed statistically reliable change. A balanced usage of skills is desirable in counselling, and these participants demonstrated increased ability to select discrete skills from all three skill clusters in their interview sessions. The third category of change hypothesized that the frequency of structuring and reacting skills would increase. No significant change was noted. One potential explanation for this is that participants had attained a fairly high level of counselling skill prior to entering the Counselling Program. All participants received lay training in volunteer settings and were exposed to counselling skills in their undergraduate studies. Also, three participants completed an undergraduate course in which the same skill training model and textbook were used. Another indication of their counselling skill is the high number of structuring and reacting skills at pretest relative to what one might expect from novice counsellors.

Generally, the kinds of changes seen in participants' skills at posttest conveyed greater clarity, focus, and intentionality in the counselling interview. These changes were consistent with those reported in previous research (Guttman & Haase, 1972; Ivey, 1990;

Stone & Vance, 1976). Use of a multiple-component training module (Fuqua & Gade, 1982) and emphasis on intentionality in the counselling interview (Ivey, 1988) were factors in effecting changes in participants' counselling skills.

Counsellor Conceptualizations

Several indicators revealed changes in participants' cognitive maps over time. One indicator was the greater organization in posttest maps. A factor responsible for this organized appearance was the clustering of all concepts. This signified that participants acquired superordinate schemata about the probe questions over time. Nested and overlapping clusters emerged at posttest which enhanced the organized aspect of the maps. Another indication of change was that posttest maps were more hierarchical than pretest maps. These changes were expected due to findings in previous research in more well-structured domains than counselling (Glaser, 1984; Martin et al., 1989). From the present study and other CMT research, it appears that the cognitive structure of those engaged in less structured domains such as counselling may also change in these directions.

A third area of change in CMT's was found in the concept and cluster labels. All participants' maps revealed some novice conceptualizations of client change factors and/or counsellor characteristics at pretest. At posttest, all participants generated concept and cluster labels that signified an advance in their understanding of important counselling concepts. Several of these concepts were specifically emphasized in the skill training course: intentionality/planfulness/structure, knowledge/theory base, ethics/professionalism, counselling-as-outcome, and problem definition. A core notion in counselling that was not hypothesized but appeared in one posttest map was the importance of environmental factors to client change (Blocher, 1983; Cummings et al., 1990).

Statistical analysis of the CMT quantitative measures showed that participants did not generate more concepts, view more concepts as related, integrate them more, or diversify their thinking about the probe questions as expected. Potential explanations for each of these findings follow.

A possible interpretation for the lack of reliable change in the extensiveness of concepts is that the extent score at pretest was artificially inflated through the generation of many synonymous concepts. In contrast, synonymous concepts were consolidated in participants' thinking at posttest. Therefore, the decreased number of concepts can be viewed as a positive change for many participants. The use of fewer synonymous concepts at posttest showed more intentional selection of concepts from cognitive structure, a reflection of better understanding of concepts and their relatedness.

A possible reason for the non-significant finding in the conceptual interconnection index is related to the change in the extent index; that is, insofar as fewer concepts allow fewer possible links to be made, this finding was predictable. If fewer synonymous terms had been generated at pretest, the change in this index may at least have been in the hypothesized direction. Nevertheless, partial support for the hypothesis that greater linkage in concepts occurs with training was shown by the fact that participants with increased extent scores increased the number of links between concepts.

Although no reliable change resulted for the conceptual integration index, partial support for the hypothesis that cognitive schemata become more integrated with training was found. Two participants' conceptual integration score increased when extent scores over both questions remained constant and one participant's conceptual integration score for question 1 remained the same although her extent score was halved at posttest.

Changes in the diversity index were in the hypothesized direction. Five participants increased the number of clusters in posttest maps for probe question 1 and four increased the number of clusters for question 2. Class discussions about client change factors and effective counsellor characteristics may have helped participants diversify their conceptualizations.

Another change that was evident in CMT's over time was less conceptual overlap across probe questions. This differentiation between related concepts represented another positive shift in participants' conceptualizations.

Counselling Skills and Conceptualizations

Overall, changes were seen in both counselling skill and counsellor conceptualizations. Participants with the most dramatic change in counselling skill (participants 1 and 5) also evidenced considerable conceptual change. Both participants appeared to shift from a Rogerian conceptualization of counselling to a more cognitive-behavioral focus. In contrast, the two participants who showed a mixed pattern of skill change (participants 3 and 6) showed less conceptual change. However, participant 3 entered the Counselling Program with an advanced conceptualization of factors involved in effecting client change. The remaining two participants (participants 2 and 4) began the Counselling Program with relatively well-developed counselling skills and showed small improvements in skill. Participant 2 showed a dramatic change in conceptualization, while participant 4 showed little conceptual change.

Trainee Development

Trainee development appeared to be consistent with the literature in this area (Borders, 1989; Stoltenberg & Delworth, 1987). The participant whose pretest cognitive

map revealed a dualistic epistemological framework shifted to an outcome-focused conceptualization of counselling at posttest (Borders, 1989). Other participants' maps showed signs of theoretical commitment through consistency of concepts over time (Cooper & Lewis, 1983; Cummings et al., 1990).

Certain competencies were attained by this group of prepracticum students. "External expansion competencies" (Sansbury, 1982) demonstrated by these trainees were: basic listening, communication skills, assisting with self-exploration, and forming a general framework for interview direction and goals. Further, integration of skills and theory (Stoltenberg, 1981) was demonstrated by the relationship between acquisition of certain counselling skills and conceptualizations.

General Conclusions

The microcounselling approach led to improved counselling skill for this group of prepracticum students. This adds to the large body of literature that attests to its effectiveness. The CMT provided a glimpse into the nature of participants' conceptualizations about client change factors and characteristics of effective counsellors. Although reliable change in the quantitative indices was not observed, several indicators revealed changes in participants' conceptualizations. Maps were more organized and hierarachical at posttest. Acquisition of core concepts in counselling was noted and greater differentiation between probe questions occurred at posttest.

Implications of the Research

The importance of these findings is that training higher-order cognitive skills in conjunction with behavioral skill training may lead to cognitive structural changes. Most participants in this study entered with few well-developed counselling skills and with some novice conceptualizations of client change and counsellor characteristics. It appears that greater organization, hierarchical cognitive frameworks, and acquisition of concepts can be promoted with microcounselling training and programmed emphasis on core notions of counselling. Thus, attention to the cognitive structure of novice counsellors during behavioral skill training is warranted.

Strengths and Limitations

Strengths

The major strength of this study is that it utilized a naturally occurring counsellor education context. The pre and posttest sessions took place during actual classes. The videotaped counselling interviews and cognitive mapping tasks were presented as an

opportunity for self-observation and learning and were integrated into the course content. Therefore, minimal artificiality, if any, was present.

The study also addressed inter-rater reliability. Three independent raters coded the counselling videotapes, five raters sorted CMT's, and three raters counted CMT indices. Attention to this area increased reliability of results.

Another positive aspect of the study is that it advanced a recently developed procedure for researching cognitive structure. The value of the CMT in revealing conceptualizations is highlighted by the fact that the descriptions participants wrote about their personal view of counselling (see Appendices B and C) corroborated information available from cognitive maps. For example, at posttest, participant 3 described the client as "a member of a system" (see Figure 5 bottom), and participant 4 described counselling as "a purposeful, meaningful activity engaging two or more people in order to better understand and clearly identify a problem or desire for change, and then to pursue and achieve a desired outcome" (see Figure 7). Further corroboration was available in the follow-up interviews.

Another strength of this study was its use of multiple methods:

1. Personal Information Sheets were used (see Appendices B and C) to detect the congruence or lack thereof between written descriptions of participants' personal views of counselling and the CMT descriptions.
2. Research assistants were hired for sorting CMT's. Information derived from the sorting task results augmented the researcher's descriptions. One finding from the sorting tasks was that RA's intuition about the maps was as accurate as their ability to use cognitive mapping criteria in sorting. This indicates face validity of the CMT's visual representations.
3. Participants were interviewed about the researcher's descriptions of the CMT's and amendments to the descriptions made, thereby enhancing face validity through increased accuracy in interpretation of maps.
4. Information about the validity of the quantitative indices was also ascertained from the follow-up interviews.

Overall, careful planning, attention to detail, and sound research methods that incorporated appropriate reliability and validity checks for the quantitative and descriptive data, as well as the natural context of testing, led to interpretable results and conclusions.

Limitations

The primary limitation of this study is the small sample size. Lack of statistically significant results in several instances may be bias toward a Type II error. Besides having

consequences for possible Type II errors, the small sample precluded certain other statistical tests that could have been performed on a larger sample. Information that might have resulted from a MANOVA, for instance, is the difference in skill acquisition between high and low conceptually complex students. Also, the small sample size precluded more definite conclusions about the relationship between counselling skills and conceptualizations. Although the small sample reduces the power of the statistical tests, it makes the changes that were found quite compelling. In any case, generalizability of findings must be made with circumspection. The study was limited to prepracticum students, and therefore results cannot be considered applicable to students in other phases of master's level training or those in other stages of professional development.

Another limitation of this study might have resulted from the imposition of a time limit in the concept generation step of the CMT. The time limit might have penalized reflective thinkers.

Practise effects may have been responsible for some of the changes seen in cognitive maps. One participant felt restricted by the CMT at pretest but not at posttest and another indicated that she found generating concepts easier at posttest.

A cautionary note must be made about CMT research. That is, it is necessary to take considerable care in its administration. The task is new for participants and requires careful monitoring to ensure the resulting maps are codable. Administration and coding practise is recommended for those who have not used it before.

Critical Evaluation

In retrospect, certain changes in the administration and measurement of the cognitive mapping task might have yielded results more consistent with the existing literature. For example, the decreased extent scores on posttest CMT's that may have been due to the large number of synonymous concepts at pretest, could be handled in one of two ways: (1) after the concept generation step, participants could be asked to identify synonymous terms and choose only one before proceeding to the concept arrangement step, or (2) research assistants could identify synonymous terms and count only unrelated concepts in the extent score. Either of these suggestions would facilitate the comparison of concepts at different points in time.

In light of the substantial change in the number of unclustered concepts and the degree to which this occurrence enhanced the organized appearance of maps, it is reasonable to include an index of this indicator in future CMT research. It would be of interest to discover whether this change was replicated with another sample, and if only prepracticum students exhibit such a large number of unclustered concepts. A simple

index that measured the number of concepts not included in clusters or the proportion of clustered concepts to unclustered concepts could be used.

Perhaps the change in the number of unclustered concepts could be considered an index of integration. The measure utilized as an index of integration in this study and in previous CMT research assumed that linkage of concepts through the use of connecting lines was an indicator of integration. The ability to subsume concepts within superordinate clusters in a logical way, and to label the cluster with a suitable term also indicates a form of integration. Similarly, nested clusters and overlapping clusters might indicate integration of important concepts and an understanding of their interrelatedness.

The centrality index was not included in the statistical analysis as it is a multiple of the conceptual interconnection score. However, across both probe questions, large decreases in total centrality scores occurred for three participants. Smaller increases were seen for two participants, and one participant demonstrated no change. While the primary value of the centrality index is highlighting important concepts in participants' thinking, large changes in total centrality scores sometimes accompanies shifts to a more hierarchical organization of concepts (see Figures 4 and 10).

The centrality index was brought into question as a result of follow-up interviews. Only two participants indicated that the concepts with the highest centrality scores in their maps were the most central concepts in their thinking. Perhaps participants could be asked to place an asterisk on their maps beside the most central concept in their CMT's in order to ascertain more information about the validity of the index.

Suggestions for Additional Research

The findings of the study suggest certain directions for additional research. First, a longitudinal study of novice counsellors that followed participants from prepracticum to the practicum experience, or perhaps longer, would provide useful information about the development of both counselling skill and conceptualizations. It may not be until practicum that skills and conceptualizations of counselling become integrated. "A novice practitioner is often unable to make sense of problems of practice until he or she has had the opportunity to apply the conceptual understanding and inquiry skills developed in academic training and to modify them according to the requirements of practice" (Hoshmand & Polkinghorne, 1992, p. 58). The development of higher-order cognitive skills could be linked to increased facility with counselling skill as students progress through the various phases of training. Further, new understanding about retention of counselling skills learned in conjunction with higher-order skills might be advanced.

Perhaps the developmental stages of trainees could be linked more directly to CMT research. In this regard, the CMT may provide a vehicle for charting progress from dualistic thinking to theoretical commitment (Cooper & Lewis, 1983). It might also provide information for students and supervisors about content areas that need attention. For instance, lack of extensiveness of concepts in an area might be revealed in a visual representation.

Another direction for CMT research is to teach participants the cognitive mapping task before asking the probe questions. Practise in the task might improve validity of the various measures, particularly the centrality index. It is also important to conduct more research that attempts to operationalize the various dependent measures and/or identifies new ways of quantifying the CMT.

Summary

Martin (1984) advocated research to investigate counselling process in naturally occurring environments. Others (Benack, 1988; Borders et al., 1988; Hiebert & Noort, 1988; Holloway, 1988) suggested this is particularly important in attempting to identify the kinds of cognitive procedures and skill training sequences that facilitate maximum training effectiveness. This study was an attempt to address these concerns as well as provide information about the nature of change demonstrated by students in prepracticum contexts.

Participants demonstrated reliable increases in facilitative counselling skills with training. Although there were some differences across participants, in general, cognitive structure changed in the direction of increased organization, hierarchical structure, and concept acquisition. Therefore, in the process of skill training, participants integrated new learning with prior knowledge.

Counsellor training programs cannot continue to focus on skill training alone without acknowledging the importance of mediating cognitions. Combining traditional behavioral skill training with new information about cognitive functioning of counsellors may improve training endeavours. Going beyond skills-based training models to models that incorporate explicit cognitive training into the present curriculum may help prepare novice counsellors for effectiveness in their role as counselling psychologists.

REFERENCES

Anderson, J. R. (1990). Cognitive psychology and its implications (3rd ed.). New York: W.H. Freeman.

Ausubel, D. P., Novak, J. D., & Hanesian, H. (1978). Educational psychology: A cognitive view (2nd ed.). New York: Holt, Rinehart & Winston.

Baker, S. B., & Daniels, T. G. (1989). Integrating research on the microcounseling program: A meta-analysis. Journal of Counseling Psychology, 36, 213-222.

Bandura, A. (1977). Social learning theory. Englewood Cliffs, NJ: Prentice-Hall.

Barlow, D. H., Hayes, S. C., & Nelson, R. O. (1984). The scientist practitioner: Research and accountability in clinical and educational settings. New York: Pergamon.

Beck, A. (1970). Cognitive therapy: Nature and relation to behavior therapy. Behavior Therapy, 1, 184-200.

Belar, C. D., & Perry, N. W. (1992). National conference on scientist-practitioner education and training for the professional practice of psychology. American Psychologist, 47, 71-75.

Benack, S. (1988). Relativistic thought: A cognitive basis for empathy in counseling. Counselor Education and Supervision, 27, 216-232.

Bieri, J. (1955). Cognitive complexity-simplicity and predictive behavior. Journal of Abnormal and Social Psychology, 50, 263-268.

Bieri, J. (1961). Complexity-simplicity and predictive behavior. In D. W. Fiske & S. R. Maddi (Eds.), Functions of varied experience (pp. 355-379). Homewood, ILL: Dorsey.

Birk, J. M., & Brooks, L. (1986). Required skills and training needs of recent counseling psychology graduates. Journal of Counseling Psychology, 33, 320-325.

Blaas, C. D., & Heck, E. J. (1978). Selected process variables as a function of client type and cognitive complexity in beginning counselors. Journal of Counseling Psychology, 25, 257-263.

Blocher, D. H. (1983). Toward a cognitive developmental approach to counseling supervision. The Counseling Psychologist, 11, 27-34.

Blocher, D. H. (1987). The professional counselor. New York: MacMillan.

Borders, L. D. (1989). Developmental cognitions of first practicum supervisees. Journal of Counseling Psychology, 36, 163-169.

Borders, L. D., Fong-Beyette, M. L., & Cron, E. A. (1988). In-session cognitions of a counseling student: A case study. Counselor Education and Supervision, 28, 59-69.

Bouchard, M. A., Wright, J., Mathieu, M., Lalonde, F., Bergeron, G., & Toupin, J. (1980). Structured learning in teaching therapists social skills training: Acquisition, maintenance, and impact on client outcome. Journal of Consulting and Clinical Psychology, 48, 491-502.

Carkhuff, R. R. (1969). Helping and human relations, Volumes 1 and 2. New York: Holt, Rinehart & Winston.

Carkhuff, R. R. (1983). The art of helping. Amherst, MA: Human Resource Development Press.

Capra, F. (1988). The turning point: Science, society, and the rising culture. Toronto: Bantam.

Claiborn, C. D., & Dixon, D. N. (1982). The acquisition of conceptual skills: An exploratory study. Counselor Education and Supervision, 21, 274-281.

Comeau, N., & Hiebert, B. (1990). Conceptualizations of assertiveness trainees. Unpublished manuscript.

Cook, E. P., Berman, E., Genco, K., Repka, F., & Shrider, J. (1986). Essential characteristics of master's level counselors: Perceptions of agency administrators. Counselor Education and Supervision, 26, 146-152.

Cooper, T. D., & Lewis, J. A. (1983). The crisis of relativism: Helping counselors cope with diversity. Counselor Education and Supervision, 22, 290-295.

Cummings, A. L., Hallberg, E. T., Martin, J., Slemon, A., & Hiebert, B. (1990). Implications of counselor conceptualizations for counselor education. Counselor Education and Supervision, 30, 120-134.

Di Vesta, F. J. (1987). The cognitive movement and education. In J. A. Glover & R. R. Ronning (Eds.), Historical foundations of educational psychology (pp. 203-236). New York: Plenum.

Egan, G. (1990). The skilled helper: A systematic approach to effective helping (4th ed.). Belmont, CA: Wadsworth.

Fitzgerald, L. F., & Osipow, S. H. (1986). An occupational analysis of counseling psychology: How special is the specialty? American Psychologist, 41, 535-544.

Fuller, F., & Hill, C. E. (1985). Counselor and helpee perceptions of counselor intentions in relation to outcome in a single counseling session. Journal of Counseling Psychology, 32, 329-338.

Fuqua, D. R., & Gade, E. M. (1982). A critical reexamination of the practice component in counselor training. Counselor Education and Supervision, 21, 282-294.

Fuqua, D. R., Johnson, A. W., Anderson, M. W., & Newman, J. L. (1984). Cognitive methods in counselor training. Counselor Educaton and Supervision, 24, 85-95.

Gagné, R. M. (1977). The conditions of learning (2nd ed.). New York: Holt, Rinehart & Winston.

Gelso, C. J., Betz, N. E., Friedlander, M. L., Helms, J. E., Hill, C. E., Patton, M. J., Super, D. E., & Wampold, B. E. (1988). Research in counseling psychology: Prospects and recommendations. The Counseling Psychologist, 16, 385-406.

Gelso, C. J., Raphael, R., Black, S. M., Rardin, D., & Skalkos, O. (1983). Research training in counseling psychology: Some preliminary data. Journal of Counseling Psychology, 30, 611-614.

Glaser, R. (1984). Education and thinking: The role of knowledge. American Psychologist, 39, 93-104.

Goldberg, A. D. (1974). Conceptual system as a predisposition toward therapeutic communication. Journal of Counseling Psychology, 21, 364-368.

Goldfried, M. R. (1984). Training the clinician as scientist-professional. Professional Psychology: Research and Practice, 15, 477-481.

Guttman, M. A. J., & Haase, R. F. (1972). Generalization of microcounselling skills from training period to actual counselling setting. Counsellor Education and Supervision, 12, 98-108.

Hale, C. L., & Delia, J. G. (1976). Cognitive complexity and social perspective-taking. Communication Monographs, 43, 195-203.

Haring-Hidore, M., & Vacc, N. A. (1988). The scientist-practitioner model in training entry-level counselors. Journal of Counseling and Development, 66, 286-287.

Hayden, D. C. (1987). Counselor and client responses to hypothesis-testing strategies. Journal of Counseling Psychology, 34, 149-156.

Hayden, D. C. (1988). Should we lock the door for fear of spooks, pixies, or elves? Reply to Fitzgerald. Journal of Counseling Psychology, 35, 353-354.

Heppner, P. P., & Heesacker, M. (1982). Interpersonal influence process in real-life counseling: Investigating client perceptions, counselor experience level, and counselor power over time. Journal of Counseling Psychology, 29, 215-223.

Hiebert, B. (1987). Exploring changes in cognitive structure of counselling practicum students. Alberta Psychology, 16, 3-7.

Hiebert, B. (1988). Modeling: An important aspect of counsellor education. In Counsellor Education--The Future, 3, 28-37, Guidance Centre, University of Toronto.

Hiebert, B. (1990). Counsellor education for career counsellors: Expanding the boundaries. Paper presented at the World Congress of the International and the Annual Meeting of the Canadian Guidance and Counselling Association, Montreal, August 1990.

Hiebert, B., & Noort, N. (1988). Changes in the conceptualizations and skills of counselling practicum students: A pilot investigation. EPRIG Research Report No. 88-1.

Hiebert, B., Simpson, L., & Uhlemann, M. R. (in press). In E. Paul (Ed.), Natcon 1992, Toronto: Ontario Institute for Studies in Education Press.

Hiebert, B., & Uhlemann, M. R. (in press). Counselling psychology: Development, identity, and issues. In K. S. Dobson & D. Dobson (Eds.), Professional psychology in Canada. Toronto: Hogrefe & Huber.

Hill, C. E., Carter, J. A., & O'Farrell, M. K. (1983). A case study of the process and outcome of time-limited counseling. Journal of Counseling Psychology, 30, 3-18.

Hill, C. E., Charles, D., & Reed, K. G. (1981). A longitudinal analysis of changes in counseling skills during doctoral training in counseling psychology. Journal of Counseling Psychology, 28, 428-436.

Hill, C. E., Helms, J. E., Spiegel, S. B., & Tichenor, V. (1988). Development of a system for categorizing client reactions to therapist interventions. Journal of Counseling Psychology, 35, 27-36.

Hillerbrand, E. (1989). Cognitive differences between experts and novices: Implications for group supervision. Journal of Counseling and Development, 67, 293-296.

Hillerbrand, E., & Claiborn, C. D. (1990). Examining reasoning skill differences between expert and novice counselors. Journal of Counseling and Development, 68, 684-691.

Holloway, E. L. (1988). Instruction beyond the facilitative conditions: A response to Biggs. Counselor Education and Supervision, 27, 252-258.

Holloway, E. L., & Wolleat, P. L. (1980). Relationship of counselor conceptual level to clinical hypothesis formation. Journal of Counseling Psychology, 27, 539-545.

Hoshmand, L. T., & Polkinghorne, D. E. (1992). Redefining the science-practice relationship and professional training. American Psychologist, 47, 55-66.

Horvath, A. O., Marx, R. W., & Kamann, A. M. (1990). Thinking about thinking in therapy: An examination of clients' understanding of their therapists' intentions. Journal of Consulting and Clinical Psychology, 5, 614-621.

Howell, J. M., & Highlen, P. S. (1981). Effects of client affective self-disclosure and counselor experience on counselor verbal behavior and perceptions. Journal of Counseling Psychology, 28, 386-398.

Ivey, A. E. (1971). Microcounseling: Innovations in interviewing training. Springfield, Ill: Charles C. Thomas.

Ivey, A. E. (1983). Intentional interviewing and counseling. Monterey, CA: Brooks.

Ivey, A. E. (1988). Intentional interviewing and counseling (2nd ed.) Monterey, CA: Brooks/Cole. (2nd ed.)

Ivey, A. E. (1990). Systematic counselor/therapist training: "Training as treatment" and directions for the future. The Counseling Psychologist, 18, 428-435.

Johnson, W. C., Jr., & Heppner, P. P. (1989). On reasoning and cognitive demands in counseling: Implications for counselor training. Journal of Counseling and Development, 67, 428-429.

Kagan, N. (1975). Influencing human interaction: Eleven years with IPR. Canadian Counsellor, 75, 74-97.

Kaplan, D. M. (1983). Current trends in practicum supervision research. Counsellor Education and Supervision, 22, 215-226.

Kelly, K. R., & Stone, G. L. (1989). Effects of counselor action skills on cognition. Counselor Education and Supervision, 28, 242-252.

Klahr, D., & Wallace, J. D. (1976). Cognitive development: An information processing view. Hillsdale, NJ: Lawrence Erlbaum.

Lazarus, R. S. (1984). On the primacy of cognition. American Psychologist, 39, 124-129.

Loganbill, C., Hardy, E., & Delworth, U. (1982). Supervision: A conceptual model. The Counseling Psychologist, 10, 3-42.

Lopez, F. G. (1985). Brief therapy: A model for early counselor training. Counselor Education and Supervision, 24, 307-316.

Magoon, T. M., & Holland, J. L. (1984). Research training and supervision. In S. D. Brown & R. W. Lent (Eds.), Handbook of counseling psychology (pp. 682-715). New York: Wiley-Interscience.

Mallinckrodt, B. & Nelson, M. L. (1991). Counselor training level and the formation of the psychotherapeutic working alliance. Journal of Counseling Psychology, 38, 133-138.

Martin, J. (1984). The cognitive mediational paradigm for research on counseling. Journal of Counseling Psychology, 31, 558-571.

Martin, J. (1985). Toward an information processing theory of client change in counseling. Counselor Education and Supervision, 25, 107-121.

Martin, J. (1987). Cognitive change in clients: cognitive-mediational models. Counselor Education and Supervision, 26, 193-203.

Martin, J. (1989). A rationale and proposal for cognitive-mediational research on counseling and psychotherapy. The Counseling Psychologist, 17, 111-135.

Martin, J. (1990). Confusions in psychological skills training. Journal of Counseling and Development, 68, 402-407.

Martin, J., & Hiebert, B. A. (1985). Instructional counseling: A method for counselors. Pittsburgh: University of Pittsburgh Press.

Martin, J., Martin, W., Meyer, M., & Slemon, A. (1986). Empirical investigation of the cognitive mediational paradigm for research on counseling. Journal of Counseling Psychology, 33, 115-123.

Martin, J., Martin, W., & Slemon, A. G. (1989). Cognitive-mediational models of action-act sequences in counseling. Journal of Counseling Psychology, 36, 8-16.

Martin, J., Slemon, A., Hiebert, B., Hallberg, E. T., & Cummings, A. L. (1989). Conceptualizations of novice and experienced counselors. Journal of Counseling Psychology, 36, 395-400.

McNeill, B. W., Stoltenberg, C. D., & Pierce, R. A. (1985). Supervisees' perceptions of their development: A test of the counselor complexity model. Journal of Counseling Psychology, 32, 630-633.

Meara, N. M. (1987). Taking the lead in issues of education and training. The Counseling Psychologist, 15, 275-279.

Meara, N. M., Schmidt, L. D., Carrington, C. H., Davis, K. L., Dixon, D. N., Fretz, B. R., Myers, R. A., Ridley, C. R., & Suinn, R. M. (1988). Training and accreditation in counselling psychology. The Counseling Psychologist, 16, 366-384.

Meichenbaum, D. (1977). Cognitive-behavior modification: An integrated approach. New York: Plenum.

Newman, J. L., & Scott, T. B. (1988). The construct problem in measuring counseling performance. Counselor Education and Supervision, 28, 71-79.

Patterson, L. E. (1988). The function of automaticity in counselor information processing. Counsellor Education and Supervision, 27, 195-202.

Perry, W. (1970). Forms of intellectual and ethical development in the college years. New York: Holt, Rinehart, & Winston.

Peters, G. A., Cormier, L. S., & Cormier, W. (1978). Effects of modeling, rehearsal, feedback, and remediation on acquisition of a counseling strategy. Journal of Counseling Psychology, 25, 231-237.

Pines, A. L. (1985). Toward a taxonomy of conceptual relations and the implications for the evaluation of cognitive structures. In L. H. T. West & A. L. Pines (Eds.), Cognitive structure and conceptual change (pp. 101-115). Orlando: Academic Press.

Richardson, B., & Stone, G. L. (1981). Effects of a cognitive adjunct procedure within a microtraining situation. Journal of Counseling Psychology, 28, 168-175.

Robinson, V., & Halliday, J. (1987). A critique of the microcounselling approach to problem understanding. British Journal of Guidance and Counselling, 15, 113-124.

Robinson, V. M. J., & Halliday, J. (1988). Relationship of counsellor reasoning and data collection to problem-analysis quality. British Journal of Guidance and Counselling, 16, 50-62.

Roffers, T., Cooper, B. A. B., & Sultanoff, S. M. (1988). Can counselor trainees apply their skills in actual client interviews? Journal of Counseling and Development, 66, 385-388.

Russell, R. K., Crimmings, A. M., & Lent, R. W. (1984). Counselor training and supervision: Theory and research. In S. D. Brown & R. W. Lent (Eds.), Handbook of counseling psychology (pp. 625-681). New York: Wiley-Interscience.

Sansbury, D. L. (1982). Developmental supervision from a skills perspective. The Counseling Psychologist, 10, 53-57.

Schmidt, J. J. (1984). Counselor intentionality: An emerging view of process and performance. Journal of Counseling Psychology, 31, 383-386.

Schroder, H. M., Driver, M. J., & Streufert, S. (1967). Human information processing. New York: Holt, Rinehart & Winston.

Shertzer, B. & Isaacson, L. (1980). Psychologists: Problems in professional identity. In J. M. Whiteley & B. R. Fretz (Eds.), The present and future of counseling psychology. Monterey, CA: Brooks/Cole.

Sternberg, R. J. (1985). What is an information processing approach to human abilities? In R. J. Sternberg (Ed.), Human abilities: An information processing approach, (pp. 1-4). New York: W. H. Freeman.

Stillman, S. M. (1980). Early training facilitative level as a predictor of practicum performance. Counselor Education and Supervision, 19, 173-176.

Stoltenberg, C. (1981). Approaching supervision from a developmental perspective: The counselor complexity model. Journal of Counseling Psychology, 28, 59-65.

Stoltenberg, C. D., & Delworth, U. (1987). Supervising counselors and therapists: A developmental approach. San Francisco: Jossey-Bass.

Stone, G. L. (1980). A cognitive-behavioral approach to counseling psychology: Implications for practice, research, and training. New York: Praeger.

Stone, G. L., & Kelly, K. R. (1983). Effects of helping skills on attitudes toward psychological counseling. Counselor Education and Supervision, 22, 207-214.

Stone, G. L., & Vance, A. (1976). Instruction, modeling, and rehearsal: Implications for training. Journal of Counseling Psychology, 23, 272-279.

Strohmer, D. C., Biggs, D. A., Haase, R. F., & Purcell, M. J. (1983). Training counselors to work with disabled clients: Cognitive and affective components. Counselor Education and Supervision, 23, 132-141.

Toffler, A. (1984). Science and change. In I. Prigogine, & I. Stengers, Order out of chaos: Man's new dialogue with nature, (pp. xi-xxvi). New York: Bantam.

Tracey, T. J., Hays, K. A., Malone, J., & Herman, B. (1988). Changes in counselor response as a function of experience. Journal of Counseling Psychology, 35, 119-126.

Truax, C. B., & Carkhuff, R. R. (1967). Toward effective counseling and psychotherapy: Training and practice. Chicago: Aldine.

Uhlemann, M. R., Lea, G. W., & Stone, G. L. (1976). Effect of instructions and modeling on trainees low in interpersonal-communication skills. Journal of Counseling Psychology, 23, 509-513.

Van Hesteren, F., Sawatzky, D. D., & Zingle, H. W. (1982). Conceptual complexity and the helping relationship. Canadian Counselor, 17, 4-13.

Vannoy, J. S. (1965). Generality of cognitive complexity-simplicity as a personality construct. Journal of Personality and Social Psychology, 2, 385-397.

Watkins, C. E., Jr. (1988). Contemporary issues in counseling psychology: A selected review. Professional Psychology: Research and Practice, 19, 441-448.

Watkins, C. E., Jr., Campbell, V. L., & McGregor, P. (1989). APA-affiliated master's-level counselors. The Counseling Psychologist, 17, 289-300.

Watkins, C. E., Jr., Lopez, F. G., Campbell, V. L., & Himmell, C. D. (1986). Contemporary counseling psychology: Results of a national survey. Journal of Counseling Psychology, 33, 301-309.

West, L. H. T., Fensham, P. J., & J. E. Garrard (1985). Describing the cognitive structures of learners following instruction in chemistry. In L. H. T. West & A. L. Pines (Eds.), Cognitive structure and conceptual change (pp. 29-48). Orlando: Academic Press.

Wexler, D. A. (1974). Self-actualization and cognitive processes. Journal of Consulting and Clinical Psychology, 42, 47-53.

White, R. T. (1985). Interview protocols and dimensions of cognitive structure. In L. H. T. West & A. L. Pines (Eds.), Cognitive structure and conceptual change (pp. 51-58). Orlando: Academic Press.

Worthington, E. J., Jr. (1987). Changes in supervision as counsellors and supervisors gain experience: A review. Professional Psychology: Research and Practice, 18, 189-208.

Zajonc, R. B. (1984). On the primacy of affect. American Psychologist, 39, 117-123.

APPENDIX A

Consent Form

I agree to participate in the research project entitled "Changes in Counselling Skills and Cognitive Structure of Counsellor Trainees". The investigator is Pamela Johnson, a graduate student in Counselling Psychology. The research is being conducted in partial fulfillment of her thesis requirement for a Master's Degree in Educational Psychology at the University of Calgary.

The aim of the research project is to investigate the changes in counselling skills and conceptualizations that occur during the course entitled "Introduction to Counselling Practice".

All testing will take place during regular classroom hours. The methods to be used are: (1) videotaping and subsequent coding of counselling skills and (2) a cognitive mapping technique that outlines conceptualizations of the counselling process. Pretesting will take place during the first week of the course and posttesting will occur in the last week of the course.

Participation in the research is not required for EDPS 601. All participation is voluntary and my grades will be unaffected by participation or non-participation. Confidentiality will be guaranteed by assigning numbers to each participant. Description of subjects will not identify individual counsellor trainees. I will be given the opportunity to express my interpretation of the results.

I understand the aims and methods of the research and also the fact that I have the right to withdraw at any time without penalty. The investigator also has the right to terminate my involvement.

_____ _____

Signature Date

APPENDIX B

Personal Information Sheet - First Testing Session

NAME: _____

DATE OF BIRTH: _____

GENDER: _____

RELEVANT COUNSELLING EXPERIENCE:

Nature and duration of your duties:

_____

_____

_____

Counselling courses/training already completed (Please list):

_____

_____

_____

If you completed EDPS 419, what textbook(s) did you use?

_____

What courses are you presently taking? (Please list):

_____

_____

_____

DESCRIBE YOUR PERSONAL VIEW OF COUNSELLING:

_____

_____

_____

_____

_____

_____

APPENDIX C

Personal Information Sheet - Second Testing Session

NAME: _____

RELEVANT COUNSELLING EXPERIENCE:

Nature and duration of your duties:

_____

_____

_____

_____

Counselling courses/training already completed (Please list):

_____

_____

_____

What courses will you complete this semester? (Please list):

_____

_____

_____

DESCRIBE YOUR PERSONAL VIEW OF COUNSELLING:

_____

_____

_____

_____

_____

_____

_____

APPENDIX D

Skill Coding Grid

Skill	1	2	3	4	5	6	7	8	9	10	11
STRUCTURING											
Overview											
Transition											
Summary											
Other											
SOLICITING											
Open Question											
Closed Question											
Declarative Probe											
Other											
REACTING											
Paraphrase V.C.											
Reflect of Meaning											
Reflect of Affect											
Other											
Uncodable											

APPENDIX E

Skill Definitions

Structuring Skills

Overviews:	introduce and set realistic expectations for the session
Transitions:	signify a change in focus or topic
Summaries:	summarize previous (i.e., more than just the most recent) client statements

Soliciting Skills

Open Questions:	facilitate open exploration and typically begin with "who, what, when, where, why, or how"
Closed Questions:	can be answered with a "yes or no"
Declarative Probes:	solicits that begin with a declarative sentence stem such as "describe, tell"

Reacting Skills

Paraphrases of Verbal Content:	counsellor utterance that paraphrases the most recent client statement
Reflects of Meaning:	reflection of the most recent client statement that contains an inference of its meaning
Reflects of Affect:	reflection of the most recent client statement that contains an inference about its affect

"Other"	used when counsellor utterances could not be identified as a particular discrete skill, but were distinguishable by skill cluster
"Fused"	two or more utterances made by the counsellor without the client responding in between
"Uncodable"	utterances that do not fit into any category

APPENDIX F

Participants' Descriptions of Changes in Cognitive Maps and Ratings of Researcher's Descriptions

1. Please describe the differences between your pre and posttest cognitive maps for probe question 1: "What happens during counselling to help clients change?"

2. Please describe the differences between your pre and posttest cognitive maps for probe question 2: "What are the characteristics of an effective counsellor?"

3. Looking at your pretest maps, what concepts would you like to have retained?

4. Do you agree that the concepts with the highest centrality scores are the most central concepts in your thinking?

5. Please read the descriptions written by the researcher about your maps. On a 4-point scale (1 = very poor accuracy to 4 = high accuracy), please rate the accuracy of the description.

   Probe Question 1: _____

   Probe Question 2: _____

APPENDIX G

Criteria Chart

Use the following chart to indicate criteria you felt were most helpful in your sorting task. Place a (+) if the descriptor was present and a (-) if it was absent or minimal.

(+/-)	Descriptor
	General level:
_____	organization of map
_____	hierarchical map
_____	linearity of map
_____	extensiveness (# of concepts)
_____	interconnection (# of lines)
_____	integration (# lines/# concepts)
_____	diversity (# clusters)
_____	centrality (# lines emanating from concepts)
	Specific concept level:
_____	intentionality/planfulness/structure
_____	knowledge/theory base
_____	communication skills
_____	hypothesis testing
_____	problem definition
_____	ethics/professionalism
_____	centrality of key concepts
_____	counselling-as-outcome
_____	counselling-as-process

Did you use any additional criteria in your sorting tasks that are not listed? If so, please describe.

_____

_____

_____

_____

_____

_____

APPENDIX H

Counselling Skills Raw Data

	Participant											
	1	2	3	4	5	6	1	2	3	4	5	6
	pretest						posttest					
Discrete Skills												
Structuring												
Overview	0	0	0	0	0	0	1	1	1	0	1	0
Transition	0	1	0	0	0	0	1	0	2	0	0	0
Summary	2	1	0	0	0	0	2	1	2	2	2	1
"Other"	2	0	1	0	0	1	0	1	0	0	0	0
Soliciting												
Open Question	1	3	5	4	5	8	4	7	6	6	1	6
Closed Question	8	3	5	8	10	9	0	0	2	1	0	2
Declarative Probe	1	1	0	0	0	0	2	2	1	1	1	1
"Other"	0	0	0	0	1	0	0	1	0	0	0	2
Reacting												
Paraphrase V.C.	0	3	1	2	2	1	1	3	1	2	0	0
Reflect Meaning	0	2	1	4	3	1	4	4	3	5	4	5
Reflect Affect	0	0	3	0	0	0	1	0	0	0	0	0
"Other"	0	0	6	1	4	3	0	0	0	0	0	0
"Uncodable" Skills	0	0	0	0	1	0	0	0	0	0	0	0
"Fused" Skills	8	5	8	8	10	9	2	4	7	0	2	2
Skills Proportionate to Total Skills												
Structuring/Total	.29	.14	.05	.00	.00	.04	.25	.15	.28	.12	.33	.06
Open Qstn./Total	.07	.21	.23	.21	.19	.35	.25	.35	.33	.35	.11	.35
Closed Qstn./Total	.57	.21	.23	.42	.38	.39	.00	.00	.11	.06	.00	.12
Ref.Aff.&Mn./Total	.00	.14	.18	.21	.12	.04	.31	.20	.17	.29	.44	.29
Other & Uncd/Total	.14	.00	.32	.05	.23	.17	.00	.10	.00	.00	.00	.12
"Fused"/Total	.57	.36	.36	.42	.38	.39	.13	.20	.39	.00	.22	.12
Skill Clusters												
Structuring	4	2	1	0	0	1	4	3	5	2	3	1
Soliciting	10	7	10	12	16	17	6	10	9	8	2	11
Reacting	0	5	11	7	9	5	6	7	4	7	4	5