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IMPLICIT THEORIES HELD BY ADULTS ABOUT EVERYDAY PROBLEM SOLVING

by

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Thesis submitted
to the School of Graduate Studies
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for the degree of Master of Arts (Education)

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I would like to extend my appreciation to my thesis advisor, Dr. Richard Rancourt, for his continuing support and encouragement. Special thanks must also go to Dr. Jean-Paul Dionne for his expertise and guidance in the field of problem solving throughout the entire thesis.

The essence of the material garnered herein lies in the openness and enthusiasm of the individual participants. Their warmth and confidence was certainly the highlight of the experience and is found throughout the protocol content. My appreciation of them as people and their exchange is ongoing.

The generosity of St. Timothy's Presbyterian Church in donating excellent interview facilities was a significant contribution to the research undertaken.

I welcome the opportunity to mention my gratitude to my husband, John, for his unfailing support and editorial expertise.

Although there is an increasing emphasis in the literature and in instructional material on problem solving, it is important to canvass the needs of the target population, especially when it involves adults. It is an accepted reality that individuals bring a predisposition to the learning context, comprised of knowledge base, attitudes, beliefs, and metacognitive abilities. The domain of everyday problem solving has its own intrinsic variables which affect individuals in their problem solving processes.

The present study was designed to elicit the mental models or implicit theories held by adults about everyday problem solving. Twenty-four adults, age 25-60, from a wide range of educational and occupational orientations, were interviewed in pairs. Research questions were posed to draw forth the type of information which would allow the researcher to identify the content of these mental models.

The integrated framework on Induction proposed by Holland, Holyoak, Nisbett, and Thagard (1986) was adopted as a conceptual framework for the study, by virtue of its use for ill-defined problems and its application to social science research.

The interviews were taped and transcribed verbatim. These verbal protocols constituted the data for the study. The research objectives were addressed through two distinct vantages; firstly, through a content analysis of the specific responses to the interview questions, and secondly, through the frequency of responses obtained from the application of a coding grid developed for the purposes of the study.

The study establishes the existence of mental models or implicit theories held by adults about everyday problem solving. The results identified the predominance of the interpersonal and emotional factors salient to this genre of problem solving. Individual differences, communication and problem identification were highlighted as the most significant and difficult areas upon which success was contingent. Degrees of self-confidence and habitual usage of a system or method were seen to be significant factors, often correlated with experience and education.

Participants were canvassed regarding areas they felt adults would require help with in their everyday problem solving, including specific course suggestions.

CHAPTER 1

REVIEW OF THE LITERATURE

Introduction

It is a commonly accepted notion that individuals bring a set of knowledge, beliefs, attitudes, and abilities to the problems they encounter, which predisposes the manner in which they will respond. Often these subjective elements lead the solver to choose idiosyncratic and unpredictable alternatives in resolving problems. There seems to be a general consensus, implicit and explicit, that the operational methods utilized in problem solving are a type of knowledge that one must acquire to cope in modern society (Chipman,1985). Current research has given enhanced credibility to these subjective elements. This propensity to associate theory with elements from the learners' personal reality, lends itself to exciting new approaches and opportunities for research.

A human being is confronted with a problem when a task or situation arises which leaves the individual uncertain as to how to proceed (Simon,1978). Regardless of one's placement on the continuum of success, life is a problematic experience for most of the human race, irrespective of

colour, creed, or intellectual endowment. The information upon which the present study is based comes from individuals who, like most of the adult population, have experienced a wide range of 'problems' with which they have had to cope. It is important to preface the remaining discussion with an understanding of the depth of experience and difficulty these men and women have known. This information stems from discussions with the researcher previous to or following the interviews. Some of these adults have had to cope with poverty, various parenting and marital issues, businesses going bankrupt, episodes of counselling, as well as various degrees of socio-economic success or lack of same. Two individuals have had young children die within recent years; one participant has severe congenital deformities; another the protracted illness and subsequent death of a spouse last year; four have been struggling with dramatic problems with their teenage children; one an unexpected pregnancy out of wed-lock, to mention a few.

This study was conducted to identify and explore the mental models or implicit theories held by such adults about the everyday problem solving processes of self and others. Parameters were drawn from these implicit theories, and analysed for the purposes of gaining insight into participants' views and awarenesses.

Review of the Literature

The literature on problem solving is extensive. For the purposes of the present research, a review of the literature is focused on that pertaining to everyday problem solving, and the approaches of researchers in their quest to unravel and reveal laypersons' implicit theories pertaining to the processes involved. Throughout the ensuing discussion, the terms 'implicit theories' and 'mental models' are used interchangeably. It is the goal of the present research to help uncover the form and content of people's implicit theories.

Neisser emphasizes the contextual element of appropriate intellectual behavior. "Intelligent behavior in real settings often involves actions that satisfy a variety of motives at once - practical and interpersonal ones, for example - because opportunities to satisfy them appear simultaneously. It is often accompanied by emotions and feelings, which is appropriate in situations that involve other people..." (Neisser,1976,p.136)

Creative thought and problem solving are evident even in such seemingly mundane situations as making tea (Cavanaugh,1985 p.147). Adults make decisions daily on the basis of what they believe, how they feel, their level of

motivation, their insight into their own knowledge base and the operative situational variables. Much of the considerable body of research by Pressley (1989) and his colleagues is predicated on the assumption that individuals hold general beliefs about the factors which affect their performance and determine their own competence. Cornelius & Caspi (1987) found that the adults sampled did share similar views of effective and ineffective solutions to the practical problems presented, irrespective of formal training in psychology, age, or gender. They found that performance on the Everyday Problem-Solving Inventory and Verbal Ability Test increased with age and that the level of education was unrelated to everyday problem solving ability.

Alexander & Langer (1990) contend that cognitive growth in adults is particular and conditional depending upon the pragmatics and context of their lives. Adults bring a particular predisposition to the learning situation which differs qualitatively from children. The prior knowledge, experience, habitual responses, broader life context, differing motivational and attributional orientations, history of success or failure, personality, stress, social and cognitive factors, locus-of-control, fear-of-failure etc. which they bring to the problem space can all result in endlessly confounding variables within the learning context.

In addition, Holyoak (1990) suggests that the motivational factor of concern for the future is fundamental to the goal formation and maintenance necessary for successful problem solving. This concern for the future is evident to a much greater degree within the adult population. Not only do maturational factors influence the adult, as distinct from the child, but the application of the cognitive processes differ qualitatively. Adult problem solving is often more purpose generated than that of a younger person. Their emotional and practical committment to the outcome may be far greater. Clancey (1987) confirms that problem activity is constrained by a social-context and that the problems themselves must explain and predict events in the world for the purpose of planning higher-goal attainment.

The effective management of information and resources necessary for the achievement of a targeted goal is enabled by a group of abilities referred to as metacognition. These processes involve the predicting, checking, monitoring, reality testing, coordination and control of deliberate attempts to learn or solve problems. These functions are broken into specific operations by Brown (1978,p.82) into abilities to:

1. predict the system's capacity limitations
2. be aware of its repertoire of heuristic routines and their appropriate domain of utility
3. identify and characterize the problem at hand
4. plan and schedule appropriate problem solving strategies
5. monitor and supervise the effectiveness of those routines it employs
6. dynamically evaluate these operations in the face of success or failure so that termination of strategic activities can be strategically timed.

Metacognition occurs during or through metacognitive knowledge,metacognitive experiences, goals (or tasks), and actions or strategies. Metacognitive knowledge is essentially knowledge or beliefs about what factors or variables act or interact in such fashions as to affect the course and outcome of cognitive endeavors (Flavell,1979). These variables involve those of person, task and their interactions. Whether intentionally or unintentionally activated, metacognitive knowledge has an influence on cognitive processes in problem solving without it necessarily entering consciousness. Once it has done so then it becomes a metacognitive experience (Flavell,1979). It is the challenge of the present research to attempt to uncover and illuminate the findings of such complex thought processes about which the participants may have little conscious awareness. Most of the considerable body of research in this area has been with children, with a focus on three categories: knowledge about one's thinking processes, control or self-regulation, and beliefs and

intuitions (Schoenfeld,1987). As has been the case with research in other areas of cognitive development,research in metacognition has been dominated by concepts and techniques developed for use with children and adolescents. Yussen (1985)postulates that although there are definitely similarities in cognitive development during childhood and adulthood, the existent differences may warrant further scrutiny.

Sustained problem solving activity requires metacognitive skills for success, whether in business, financial management, parental responsibility, sports endeavours etc. This facility involves the workable formulation of a problem, establishment of priorities (goals and sub-goals),strategy development and deployment, flexible accommodation of new or changing variables, and the constant evaluation of progress until the desired goal is attained (de Bono, 1985). The literature offers an abundance of material on this monitoring process under the various umbrellas of strategic thinking, executive control processes, reflective thinking (Flavell, 1979; Brown, 1978; Baron, 1981; Borkowski, 1985).

Executive functions or metacognitive skills and awareness do increase with age and experience (Garner & Alexander, 1989). Flavell (1985) states that metacognitive

knowledge is similar to other types of knowledge in that it is abstracted from years of experience in the "domain" of thinking. Individuals of all ages often fail to monitor their performance and their cognitions in actual situations (Garner & Alexander, 1989).

Individuals frequently do not make use of what they already know or have mastered by making biased judgments in favor of pet theories,attending to superficial or irrelevant cues and based on erroneous heuristics. Instead of being abstracted and transferred, knowledge often remains contextually welded and strategies known to the individual are often not deployed autonomously. Knowledge acquired in the process of schooling is frequently not utilized by the solver when faced with daily informal problems(Salomon and Globerson,1987).

The Domain of Everyday Problem Solving

Researchers in cognition and educators have been struggling with the dilemma of how to adapt theories and research paradigms from laboratory work on cognitive change to everyday problem solving (Cavanaugh et al,1985). Part of this exploration is a resurgence of interest in individual's perceptions of their own cognitive functioning, driven by the acknowledgment that people's performance is

determined not only by their actual skills, but also by their understanding of the salient cognitive demands of the situation, in conjunction with their expectations about possible outcomes of their behaviors in such situations (Hultsch, Dixon,and Hertzog,1985).

This renewed interest in the informal problem solving which constitutes the bulk of adult's experience has become a distinct area of research in the cognitive sciences. This domain of everyday problem solving necessitates research outside the scope of formal education and what little has been done is focused on the adult population almost exclusively.

Many solutions to problems in everyday life are chosen on the basis of emotions,values, beliefs, insights, 'feelings-of-knowing', or may even be merely impulsive responses rather than predictable, logical progressions though identifiable stages. Heuristics known, and indeed often applied by the individual, may be thrown aside at any time in favor of these subjective elements. These factors complicate the problem solving process in real life and are undeniable confounding variables in the research into these processes.

In his study of practical or everyday intelligence, Sternberg (1985) delineates the differences between the

problems people face in real life contexts and the types of problems which are posed in critical thinking programs.

1. In the everyday world,the first and sometimes most difficult step in problem solving is the recognition that a problem exists.

2. In everyday problem solving, it is often harder to figure out just what the problem is than to figure out how to solve it.

3. Everyday problems tend to be ill-structured.

4. In everyday problem solving, it is not usually clear just what information will be needed to solve a given problem, nor is it always clear where the requisite information can be found.

5. The solutions to everyday problems depend on and interact with the contexts in which the problems are presented.

6. Everyday problems generally have no one 'right' solution, and even the criteria for what constitutes a 'best' solution are often not clear.

7. The solutions of everyday problems depend at least as much on informal knowledge as on formal knowledge.

8. Solutions to important everyday problems have consequences that matter.

9. Everyday problems often occur in groups.

10. Everyday problems can be complicated,messy,and stubbornly persistent.

Sternberg's findings support the view that people have definitive opinions of what constitutes a person with practical problem solving ability. It is someone who: "reasons logically and well, identifies connections among ideas, sees all aspects of a problem, keeps an open mind, responds

thoughtfully to other's ideas, sizes up situations well, gets to the heart of the problems, interprets information accurately, makes good decisions, goes to original sources of basic information, poses problems in an optimal way, is a good source of ideas, perceives implied assumptions and conclusions, listens to all sides of an argument, and deals with problems resourcefully." (Sternberg,1985,p.58)

It is surprising that research into the solving of everyday problems with adult populations is so sparse. What has been done generally falls into areas of gerontology,memory, general intelligence, or mathematics. A truly seminal work in this area of exposing implicit theories lies in the much alluded to study by Sternberg et al(1981), in which laypersons were canvased in three fashions about their views on intelligence. Blank paper and questionnaires were used to gather data. The research was clear in uncovering that people did in fact have well-established implicit theories on intelligence, including problem solving, which were compatible with those of experts in the field.

Williams, Denney, and Schadler (1983) addressed their research to the perceptions of elderly people about the cognitive functions of memory and problem solving. Their queries were directed toward a gerontological, developmental view. Their findings revealed that subjects believed their

memory declined with age,but that their problem solving abilities actually increased. Using verbal protocol methodology, specific questions were posed, with a limited choice of three proposed responses. Similarly, Hultsch, Dixon, and Hertzog (1985) delivered questionnaires to laypersons to study peoples' perceptions of their own memories. They found memory perceptions to be multi-dimensional, encompassing belief, affective, and knowledge components. Cavanaugh et al (1985) present a most interesting discussion of cognitive research and everyday problem solving, but again in a gerontological perspective. Their interest lies in the cognitive processes themselves, rather than the individual's mental models of problem solving. Cornelius and Caspi (1987) used a quantitative approach to study the relationship between traditional cognitive ability and everyday problem solving competence, or practical intelligence. They presented problems from six domains, giving options of possible solutions. They allowed subjects to choose several answers to written problems dealing with everyday problem solving in adulthood and old age. They do caution that although their scores reveal the extent to which a person may display sound judgement in solving practical problems, this does not assure how the participant will respond in an actual situation. They were able to confirm

previous findings which indicate that everyday problem solving performance does increase with age.

As a final note, the findings of Schoenfeld (1985) are a distinct asset to this particular type of inquiry. His viewing of the metacognitive processes involved in problem solving in the area of mathematics is accomplished with isomorphic problems using verbal protocols. He predicates his remarks with the observation that virtually "none of the students who entered my problem-solving classes are aware that they can practice their thinking skills and get better at them. Yet self-awareness is a crucial aspect of metacognition, for awareness of one's intellectual behavior is a prerequisite for working to change it" (p.199). Schoenfeld's discussion is pragmatic in its intent, as he explores the beliefs, attitudes, and mental models of his students.

Conceptual Framework

An understanding of how people solve problems, indeed even how they think they solve problems, does not come out of a single problem solving theory. Rather individuals solve problems in highly unique fashions, depending on the nature

of the problem, the solver's repertoire of experience with the subject matter,and a myriad of other subjective variables.

To study this eclectic processing, researchers propose information processing frameworks. The advantage of an information processing approach,for understanding human cognition, lies in it's reasonably broad framework, allowing the consideration of these processes to benefit from a variety of general theoretical points of view (Voss,1989).

Over the past two decades, the major representative of the information processing approach lies in the unified framework of cognitive sciences. Four major competing frameworks for the study of problem solving activities are SOAR, ACT*, PDP,and Induction. All support a problem solving approach to human cognition, highlighting a goal-directed process of working through an initial state to a goal state. SOAR (Laird,Newell & Rosenbloom,1987) and ACT* (Anderson,1983) rely heavily on procedural and declarative knowledge. PDP, Parallel Distributed Processing (Rumelhart,McClelland and the PDP Research Group,1986) more strongly reflects a constructivist approach. The more flexible framework of Induction proposed by (Holland, Holyoak, Nisbett, and Thagard, 1986) is more suitable for educational applications. It includes all forms of knowledge

as it is modified through usage. ACT* and SOAR have been used exclusively in Science,PDP has been used in both Science and Language, Induction has been used in Science, Language and the Social Sciences, and is being currently used in several Ph.D. researches at this time.

The most fitting framework for the present research lies in its accommodation to the type of information sought. Contrary to the class of well-defined problems often found in the literature, the genre of problems facing daily living are invariably ill-defined. These ill-structured problems are the stuff of everyday living and the bane of many individuals. The extent to which a problem is ill-defined is contingent upon the knowledge of the problem solver (Holyoak,1984). Problems are considered ill-defined when the representations of one of the more basic components (the goal, the initial state,operators,and constraints) are incomplete (Holyoak,1990).Herbert Simon (1978) suggests that with ill-structured problems, the criterion for goal attainment is more complex and less evident. In fact, it is definitional that an ill-defined problem is one in which the solver is required to contribute to the definition of the problem from his/her own repertoire of resources (Hayes,1981). As the information necessary to solve the problem is not fully contained within the problem space,

there are no simple paths for solution. Action must be taken within an atmosphere of uncertainty.

The present research requires as flexible and open a framework as possible. The lack of theoretical basis necessitates a pragmatic, interdisciplinary approach to capture the most *weltanchauung* view. The unified framework of Induction offered by Holland, Holyoak,Nisbett, and Thagard (1986) outlines an integrative, inductive approach to problem solving.Their approach has been adopted by virtue of its use with both sciences and social sciences, and its suitability for ill-defined problems.Integral to this framework is the notion that exceptions and variabilities are a constant in human experience. With Piaget (1972) and Vygotsky (1978), these authors view the learner as an active agent in the learning environment, continually modifying existing knowledge to accommodate new learning.

Induction refers to "all inferential processes that expand knowledge in the face of uncertainty" (Holland et al,p.1). Induction then, is the study of how knowledge is modified through its use. Their approach is not a theory, but rather a *systematic set of principles*, which may be expressed as a rule-based classifier system; allowing for limited parallel processing of rules, for testing their effectiveness, and for generating new rules on the basis of

experience. Constraints are necessary elements, or parameters within which effective choices are made. As induction is fundamentally context dependent, knowledge is ever being modified through its usage. This process is directed by problem-solving activity which provides feedback on the success or failure of predictions. Certain kinds of *trigger* conditions produce certain kinds of induction,focusing what might otherwise become a random search through an inexhaustible problem space. This feedback is a process whereby humans learn from experience. Of primary interest to these authors are the real life, ill-defined problems which require parallel processing of multiple components of knowledge. The problem representation is altered depending on the complementary or competitive nature of this knowledge.

Individuals formulate categories as they generate goal-relevant inferences. The relevance and validity of what the learner brings to the problem environment will either enhance or retard this inductive process. The use of declarative knowledge (required factual information),procedural knowledge ('how' to perform the task or implement the solution) (Anderson,1990), and conditional knowledge ('when' to apply which procedure)(Marzano,1987),are foundational to this framework, thus accommodating all of thought processing, collecting and analysing information and forming conclusions.

This perspective is a suitable vehicle for the understanding of the mental models or implicit theories which form the body of the present study.

Holyoak (1984) specifies that the activity of problem finding, defining, and refining resurrects old knowledge in such a way as to generate new possibilities, via the construction of mental models. Such models are a psychological representation of a given environment and its expected behavior. Some components of the model will correspond directly to the components of what is being modelled, a correspondence based on causal relevance between the problem and the model which remains consistent despite state changes. Examples of these components might be affective or interpersonal variables, problem constraints, executive control functions,or expertise. This mental model is then used to predict the results of possible changes in the external environment. Depending upon the nature of the problem and the problem-solver, model construction may be through morphisms, homomorphisms, isomorphisms, analogies, metaphors, and schemas. Induction then, is the process whereby mental models are generated and the components of which are revised. An individual has a problem when his/her existing mental representations fail to offer useful predictions about what might happen next in the

'environment'. The conditional element (if...then) of induction can be understood and articulated in such a way that learners and teachers may become active agents in the identification and remediation of difficulties with these processes.

Mental models form hierarchal structures to accommodate prior knowledge, deficiencies of prior knowledge, constraints, and new learning by the experience of feedback.Default hierarchies are those which provide a range of adequacies to fall back on which allow the individual alternatives under uncertain, or perhaps contradictory conditions. These conditions of uncertainty are assumed to be normal elements of the intricacy of thought required to respond to the complexity of decision making.A model may lack the necessary experience or level of detail to accommodate an exception,or produce a useful level of expectation. Rules, then, compete on the basis of match, strength, specificity, and support.

Individuals naturally tend to use rules at the lowest level of the hierarchy, those which are most specific. Higher levels are used by default when the more specific one does not apply. People are also prone to error, in the physical realm by perception, in the cognitive and social realm by conception. They will be biased in favour of inadequate default hierarchies, even in the face of

disconfirming evidence. Despite this tendency for individuals to distort new rules in favour of old ones, it becomes the role of education to introduce new rules to compete with the existing ones.

The relevance of these findings and their embodiment within the inductive network is aptly stated in the findings of Siegler (1983a, 1983b) that "what students learn is a function of what they already know." The strong prior intuitions brought to the learning situation are vital components to the process. Although this is often a silent factor, it may indeed be the most important condition for learning predisposition. In order to facilitate learning, one must begin where the student is at, assuming prior intuitions. New rules can be introduced to compete with the old rules. Holland et al.(1986) even suggest that one approaches the student's metacognitive awareness of this prior knowledge by having learners take a guided look at these predispositions so that they may be more conscious partners in their learning. For the students who have difficulty inducing the preferred rules, the educator may assist in a comparison and evaluation of the options.

In order to begin remediation, the educator is advised to ascertain exactly where the learner is at in his/her thinking, including the social tenets of his/her predisposition

to learning. This element of 'readiness' is integral to the views of Vygotsky, which are highly compatible with the conceptual Framework of Induction adopted in this research.

Vygotsky 1978) was concerned with cognitive development within a socio-cultural context. He believed that the social environment is the source of the individual's concepts, ideas, facts, skills, and attitudes. The culture in general, and the social context in particular define which stimuli are selected and attended to. It is within this unique socio-cultural patterning of events that the individual comes to internalize particular aspects of the environment. Vygotsky believed that all psychological processes are fundamentally social in origin, manifest in the shared interaction of individuals. His notion of the *zone of proximal development* has had increasing influence. When the learner is working independently, it is possible to ascertain his or her actual developmental level. A zone of potential development exists,beyond the level at which the student is able to function autonomously, within a level at which the student can function with assistance. When instruction is given within an 'environment' of competence and nurture, a superior teacher may correctly identify the level at which the learner is working on his/her own, and to provide the appropriate environment and tutelage to allow work within the

zone of proximal development. This mastery of increasingly complex learning is facilitated when the instructor provides the opportunity for the learner to reach beyond what he/she could do on his/her own. Through this social interaction,the social learning becomes internalized, and the student is enriched and capable of yet more complex learning.

When dealing with adults, it is appropriate to build upon the existing base of prior learning and experience, by assisting the learner in identifying and describing his/her own level of understanding and educational requirements.

The paucity of the research into the area of everyday problem solving highlights the original nature of the present study. It is unique to the literature to attempt to uncover the mental models of individuals representative of the general population in this domain.

Mental models or implicit theories already exist in peoples' minds (Sternberg, 1981). They require that the researcher discover them, by eliciting the form and content through a sensitive and flexible methodology. As no adequate theory exists to facilitate the formulation of predictions, the present research is of an exploratory nature, and must of necessity rely on research objectives.

Research Objectives

The objective of the study in question is to gain insight into the mental models or implicit theories of everyday problem solving held by adults. From the review of the literature and a pilot study, consultation with experts in the field, and collaboration with laypersons, questions were devised to illicit the desired information. This research addresses the following queries:

1. Do adults overtly think about their problem solving processes?
2. How aware are they of these processes?
3. What are the common parameters of these implicit theories?
4. What do adults feel are the major issues facing others in their everyday problem solving?
5. What would adults like help with in their problem solving?
6. What suggestions would they offer for course content of educational courses or workshops in problem solving?

The flexibility of the Induction Framework allows the responses to the queries to directly address the research objectives of uncovering the implicit theories or mental models of adults about everyday problem solving processes.

CHAPTER 2

METHODOLOGY

The study of the mental models or implicit theories of adults about everyday problem solving, necessitated an open and flexible methodology, which would not only generate the desired information but would render it as transparent as possible. The type of information desired is that of metacognitive knowledge which is challenging to capture, particularly with individuals who are unaccustomed to thinking or describing themselves in this way.

From the corpus of information obtained by the interviews, it was the expectation that parameters of these mental models would emerge, allowing the construction of a coding grid suitable for rendering these ideas as transparent as possible for the purposes of analysis. The coding grid provides a vocabulary for the purposes of discussion of the content of the material obtained in the study.

The objectives of the research required a two-fold research design. A preliminary pilot study was conducted to establish a suitable interview format which would be broad enough to allow the participants adequate amplitude and personal comfort to express themselves in their own ways, while focused enough to draw out the implicit theories which

they may or may not be familiar with discussing. Due to the highly exploratory nature of the present research, the pilot study allowed the flexibility to change and adapt the format, on the basis of the feedback received and the material derived. The pilot study was also intended to identify such parameters as would be useful in describing the content of mental models. Four interviews were conducted with six adults for these purposes.

The main study, guided by the findings of the pilot research, was conducted with pairs of adults, using a consistent format, and a sample of twenty-four, between the ages of twenty-five and sixty. The lower limit of twenty-five was set to insure the participants were old enough to have had some experience with the types of problems in question. The upper limit was established to reduce the possibility of confounding gerontological factors which may be particular to post-sixty adults.

In both studies,individuals were encouraged to be informal and conversational in their dialogue. Care was taken to establish an atmosphere of congeniality and acceptance, to encourage the participants to speak freely about their views. An initial preamble was conducted by the researcher to frame the subject and help the participants to focus their responses. Questions were then posed to draw forth the

required information. Individuals were explicitly queried about whether or not they had given much thought to this subject at all. They were asked to describe their views on everyday problem solving in general, their perceptions of how they and others tend to go about solving the problems which life presents to them. Questions were directed to uncover where they thought difficulties often arise, and what specific areas they thought adults might like help with in their problems solving processes. Finally, participants were asked to suggest content for a hypothetical course or workshop in everyday problem solving. The latter was an auxiliary way of focusing the discussion on the processes involved.

Each interview was recorded continuously from the initial question. The preambles were not taped to allow the individuals time to accommodate themselves to the situation and feel more relaxed.

In light of the research objectives, Verbal Protocol Analysis was used as an effective methodology (Schoenfeld, 1985; Rowe,1985; Williams,1983). Ericsson and Simon (1984) suggest verbal reports as a rich source of data for the study of cognitive processes, capable of providing indices to infer mental representations. They argue that the process of verbalization does not interfere or inhibit these thought processes.

This methodology necessitated the verbatim transcription of the interviews, which content was later coded. Responses were grouped into categories by virtue of content comparison. A coding grid was established, on the basis of these categories, to describe this content and to identify common parameters among the mental models of the participants. A second level of analysis was added to directly address the research questions from the responses to the interview questions. This allows the participants maximum amplitude to speak for themselves, in their own ways. The complementary nature of these two levels of analysis intended to make as transparent as possible the depth and content of the participants' awareness about everyday problem solving, from the level of pragmatic strategy usage to the more abstract metacognitive knowledge.

Population

The target population for these two studies was comprised of representative adults from the general population who would have some degree of interest in the subject matter but little formal familiarity with problem solving as a discipline. Volunteers for the study were solicited by means of notices posted in public places, in

particular,several churches, a library,two community centers,and grocery stores. Best results were attained by word of mouth.

The sessions were held in a room of a centrally located local church. The church in question was generous in it's donation of space and availability of times during which participants could be seen. Due to the schedules of the participants, many people were only available during the evenings; some only on weekends.

The researcher committed herself to presenting a debriefing session on practical problem solving techniques,after the data was collected, as a way to thank the participants in a useful manner.

Pilot Study

Introduction

A preliminary pilot study was undertaken with two objectives in mind. The first was to experiment with interview format, in an effort to ascertain the most advantageous design and atmosphere possible to elicit these mental models of everyday problem solving through the process of verbalization. The second objective was to uncover the preliminary parameters which would most adequately describe the content of these implicit theories. The data, which was coded,analysed, and tabled, was derived from the interviews with the participating adults.

Sample

The sample for the pilot study was taken from the general public. For the purposes of this preliminary investigation, it was not expected that the participants would necessarily be representative of the population at large. The emphasis here was on the interview format and the accessibility of the mental models in question. Participants were drawn from people known to the researcher,albeit on a peripheral level, and who showed an interest in the study or the idea of problem solving and a predisposition to engage in

the process.

Six adults were interviewed; two singly, with two pair interviews. Of the six individuals involved,three were male, three female. Demographic data was collected to ascertain categories of age, education, gender, and profession. They were all in their thirties or forties. There was a fairly wide range of education and professional experience.

Procedure

Each participant was asked to sign consent forms acknowledging confidentiality and to give permission for the use of anonymous excerpts of their comments to be included in text by the researcher (see Appendix E).

The interviews were conducted at the convenience of the participants. The setting was informal, quiet, and certainly conducive to conversation. There was no effort made to match the two pairs in any way.

The entire sessions lasted sixty to seventy-five minutes,with the actual interviews lasting forty-five to sixty minutes. The researcher tried several styles of preamble to note the level of comfort of the participants. Each interview was tape recorded and later transcribed

verbatim for protocol content-analysis.

Interview

As the interviewees did not know each other previous to this encounter, introductions and general conversation was important to establish a basic level of social comfort. It was obvious that the participants were uncomfortable with the idea of being part of an academic study and required a reassuring environment within which to converse.

The format of the sessions was gradually improved after each interview to reflect the degree of success in attaining the desired quality of information. Initially, the first three subjects were given practice scenarios of innocuous problems to solve and asked for their suggested solutions. They were then asked to generate two or more examples of problems from their personal experience and to verbalize the ways they were handled. Questions were posed to draw out their implicit theories of problem solving, their views of what adults tend to have difficulty with in this realm, and suggestions for course content to be used in educational settings to help people with their everyday problem solving. (see Format #1 in Appendix A)

Participants four and five were given the practise scenarios, but not asked to generate personal incidents. The

questions posed were of a more explicit nature, in an attempt to gain more abstract comments. (see Format #2 in Appendix A)

Participant six was only asked to express her views on problem solving through general questions. (see Format #3 in Appendix A).

Interpretation and Results

Once established, the use of the think-aloud verbal protocol method was effective in retaining the comments of the interviewees. Asking people to generate their own problem to discuss appeared to direct the individual more toward thinking of specific problems and their characteristics. This considerably inhibited a more abstract discussion of the processes involved.

When comparing the transcripts from the individual versus pair interviews, it was found by the researcher, during the pilot study,and confirmed by such others as (Schoenfeld,1985)that the use of pairs allows time for reflection on the part of each person, often leading to embellishment,rebuttal, or clarification of their views. Pairs seem more relaxed, and therefore less intimidated by the interview process. It was also felt that the interaction stimulates greater verbalization.Perhaps most significant for the purposes of this particular study, the researcher was

interested to see if the pairs interaction facilitated fuller discussion of the abstract level rather than the tendency for a singular subject to become limited within the discussion of specific problems. Although only an observation,this appeared to be the case.

A coding grid was devised on the basis of the protocol information (see Appendix B). Three levels were used to define parameters, categories, and sub-categories. Five types of parameters were identified, those of:

1. constraints on the problem solving process, albeit of time,the actual problem itself, ownership of the problem, or the situational or contextual variables.

2. affective variables which affect the solving process, whether by facilitating or inhibiting, in general or in specific fashions.

3. interpersonal variables,including communication or intervention,for both personal or common benefit.

4. executive control functions involving understanding, priorizing,clarifying or focusing,evaluating of complexity of the problem,and the use of some form of systematic approach.

5. expertise whether derived from prior knowledge, practise or experience, training, or education.

The four protocols were coded on the basis of the grid; results were tabulated on the frequency of responses, both

within protocol and between protocols by frequency tabulations. Narrative highlights were extracted from each participant to glean the essence of their dominant themes. Whenever such highlights are referenced, a subsequent notation indicates the protocol number, followed by the line number of the text in question (eg. "depending what the problem is.." (3:66)).

The findings were illuminating in their confirmation of the fact that adults do indeed have implicit theories about their problem solving processes and that mental models are highly influential in their own lives and in their expectation of the competence of others. Although participants may or may not have identified what they think about these issues, they were each able to generate a considerable body of opinion and conviction about their views. In fact, once the participants realized that the purpose of the interview was to canvas their opinions about something they have a feel for, they were quite delighted to chat about these views.

Frequency was used as an indicator of trends. For example, (refer to Appendix C),of the 273 coded elements of the protocols, 32 of those were regarding the inhibiting nature of the affective orientation in the problem solving process, 28 were stressing the necessity of a facilitating

emotional orientation, and 28 were in support of the issue of understanding the problem itself. These three top-frequency categories are representative of the narrative emphasis expressed by the participants.

Central themes emerged from the pilot study as a whole. Perhaps the most strongly emphasized was that of the preponderance of joint ownership of most of the problems which evidence themselves in daily living. Communicating with others for the solution is said to be the most frequent genre of problem situation. Thus, many of the salient variables lie outside the jurisdiction of the individual themselves.

> "What I'm doing in a more daily way,whether it be with business people,or associates,or with my family... is having a consultation with the parties involved." (3:73-77)

An equally dominant theme was that of the profound effect of the affective orientation toward the problem. Participants so often alluded to the impact of emotion on the process.They were in accord as to the debilitating affects of inhibiting emotional orientations.

> "there's an emotional element to that complication. I think a lot of what makes people complicate things, is something you alluded to earlier. Perhaps not being capable of achieving that state of calm before they analyze something and going into it in a fairly excited fashion,because often a problem can be an emotional stress factor and if they aren't even aware of that,I think its very hard for them to be objective. I think its very human to approach things emotionally, the vast majority of people do (3:119-129)

Establishing the appropriate priorities, and identifying what the problem actually was emerged as common to all protocols.

> "in my everyday living, I am very aware of priorities. I have a certain amount of time to do things, and I know I have deadlines on certain things and other things I don't have deadlines on. I am very good at organizing my day in terms of saying, well, I have to meet this deadline, so this is what I have to do first, regardless of whether I want to do it or not. (4:55-63)

In response to the query regarding course content suggestions for a workshop on problem solving, participants recommend role-playing (two subjects), verbalization of problems with both the giving and receiving of advice (five subjects),and case studies (three subjects) with contextually relevant subject matter(five subjects). They would like help with determining the relative magnitude of the problem(two subjects),the steps to follow (three subjects), assistance in setting goals and objectives and establishing a plan of action(two subjects). The participants were vocal on their belief that the most important way to more effective problem solving was to help young children learn these life skills.

Limitations of the Pilot Study

The individuals who participated in the study were not representative of the general population, due in part to the

methods of contact, the extremely small sample,and the limited age distribution.

By virtue of the exploratory nature of the research, there is a certain inconsistency in the data collected due to the continually changing format. Although effective in structuring further research, there is an intrinsic limitation in the material presented herein.

The pilot study proved to be useful as a preliminary phase in the research into identifying mental models of everyday problem solving processes. The findings were formative in structuring the interview format and establishing a coded vocabulary with which to discuss the emerging parameters. The results led to a more direct and explicit approach in the interview questions used in the main study and highlighted the need for a more inductive coding grid for the analysis of the material obtained. The reader will note the continuity of content and methodology between the pilot study and the main study, to follow.

Main Study

Introduction

The purpose of the subsequent study was to conduct further exploration of adult's mental models of everyday problem solving, using the interview format developed in the pilot study with a larger, more representative sample. A new coding grid was developed to more adequately and inductively describe the information obtained by this sample.

Sample

The sample consisted of twenty-four adults between the ages of twenty-five and sixty from the general population. These participants consisted of twelve male and twelve female volunteers, who were contacted through public notice,word of mouth,or invitation. Some individuals were solicited by virtue of complementary age, education, or occupational level to ensure that a variety of each was included. Given the size of the sample, the methods of selection were deemed to be more appropriate than random selection by virtue of the need to reflect a potentially large variety of responses. People of less education and occupational exposure may be less likely to volunteer for

such a study than more highly educated individuals with a broader scope of professional experience. Similarly, problem solving as a domain may have certain connotations with the general public which could prohibit certain individuals from feeling that they would either enjoy the process or have a worthy contribution to make.

The full educational range included grade eleven to post-graduate university degrees; occupational endeavors included such variety as professional engineers, full-time mothers and homemakers, nurses, mechanics, business owner-operators, a real estate agent,fencing instructor, musician,designer,and government employees in various capacities.

Due to the highly exploratory nature of the present research, the study was best accommodated within a reasonable cultural homogeneity to avoid the confounding variables inherent in a wider or cross-cultural sample. A selection criterion was used, which resulted in the participants being from as "Canadian" a context as possible. All were English speaking, although four were French-Canadian, one Scottish, one English, one Polish. All had spent sufficient time in the Ottawa area to be considered indigenous in a broad sense.

TABLE 1 DEMOGRAPHIC INFORMATION

1. Sex: Male (12) Female (12)

2. Age:

23-30 (4)	41-45 (5)	56-60 (1)
31-35 (3)	46-50 (4)	
36-40 (6)	51-55 (1)	

3. Knowledge Accessing Modes:

Mode	Total	Male	Female
Rational	(6)	(2)	(4)
Empirical	(9)	(5)	(4)
Noetic	(6)	(4)	(2)
Flat	(3)	(1)	(2)
Totals	24	12	12

4. Education / Profession

1.	ERN	B.Eng., MBA / Engineer
2.	REN	B.Sc.(Eng), MBA / Operational Research
3.	ENR	B.Sc.(Eng) / Homemaker,Mother
4.	REN	B.Bus Admin / Tax Analyst
5.	REN	Gr.11 (Misc.evening courses / Homemaker,Mother
6.	ENR	Gr.12 (1 yr. nursing) / Mother
7.	ENR	Gr.12 (some business courses) /Manager Gas Bar
8.	ERN	B.Phys.Ed.,B.Ed. / Teacher
9.	FLAT	Nursing Degree / Mother
10.	ENR	M.A., Ct ESL / Mother
11.	REN	B.Sc.Nursing / Homemaker, Mother
12.	ENR	Gr.12,Commercial Course/ Mother,Sports Instructor
13.	ERN	Gr. 12,2yr.Technical School/Mechanical Maintenance
14.	ERN	High School / Owner/Operator -Auto maintenance
15.	NER	Algonquin / Designer
16.	REN	High School / Mechanic
17.	FLAT	B.A.(Music) / Professional Musician
18.	ERN	B.A.(Classics) / Environmental Co-ordinator
19.	NER	B.A.(Arts),B.Music / Teacher, Mother
20.	NER	High School, some university / Homemaker, Mother
21.	NRE	B.A.,B.S.W. / Social Worker, Mother
22.	NER	B.Sc., B.Ed. / Teacher
23.	NER	Gr.12/ Manager Arts Supply Bus.,Owner Antique Bus.
24.	REN	B.A.,M.Sc. / Real Estate Agent

Procedure

The interviews were held in the same room at the local church as those in the pilot study. This location had proven central and highly satisfactory, as most people knew where it was. During the initial contact, usually by phone, every effort was made by the researcher to be chatty and casual about the nature of the procedure, in an effort to dissuade any anxiety about being part of an academic study. This process is foreign to many and has been known to discourage participation.

Previous to the commencement of the actual interview, each participant signed a letter of permission for the use of extracts from the protocols and acknowledgement of the confidentiality assured to their comments (see Appendix D). Participants also completed a questionnaire on basic demographic information (see Table 1).

The individuals were seen in pairs, as the pilot study demonstrated this to be the most advantageous type of interview for the purposes of the study. An effort was made by the researcher to match the pairs on the basis of some common denominator, whether of gender, compatibility of education, occupation,or general life experience. The care taken to do this proved highly significant to the initial

level of comfort attained in the discussions. The pairs did indeed have commonalities which enriched their sense of mutual identification and openness. As these elements became increasingly evident during the conversations, the participants were more self-revealing and mutually supportive. It was observed that this was important to the quality of information attained.

Although some difficulties presented themselves in the interview schedules, most people took the matter very seriously and conscientiously. Whenever re-scheduling was necessitated, the participants were accommodating.

An initial preamble to the interview consisted of introductions, a sharing of a few biographical details to foster rapport and a general discussion of the work undertaken by the researcher to stimulate interest. It was evidenced during the pilot study that it was essential to make explicit that the study was on the processes of problem solving rather than a focus on individual problems of the participants. Likewise, it was observed that the individuals needed to understand that the domain of problems to be discussed was that of 'everyday' problems, lest they focus too specifically on work or technical problems, including stereotypical ideas that problem solving was a logistical or

mathematical exercise.

To insure the sample of the study was as representative of the various modes of knowing of the selected population as possible, each participant was given the Knowledge Accessing Modes Inventory (K.A.M.I.) (Rancourt,1986). The instrument was administered to identify the dominant knowledge accessing mode of the individual (see Table 1). This inventory has been developed to isolate the dominant preferred information processing mode used by a given individual (Rancourt, 1983). Three possible modes are identified and scored for a gradient of dominance: 1) The *noetic knowledge accessing mode* (N)characterizes an adherence to personal or subjective experience preference for collecting information. These individuals have a tendency to be intuitive, creative, and metaphorical by nature. The symbolic language captures the valid knowledge. 2) The *empirical knowledge accessing mode* (E) of relating to knowledge is through sensory perception and inductive reasoning. These individuals prefer to be activity oriented. The observation becomes the valid basis for knowledge.

3) The *rational knowledge accessing mode* (R) characterizes a

propensity toward conceptual activity and theoretical information, and tend to operate in a deductive manner in assessing the information. Logic is the valid tool for knowledge.

The K.A.M.I. consists of twenty forced choice statements. The instrument requires the subject to rank order three possible responses of preference for each incomplete statement. The instrument is easy to administer, quick to score, and reliable. The K.A.M.I. has shown test re-test reliability (Spearman) of 0.87 for the noetic scale, 0.71 for the empirical scale and 0.81 for the rational scale (Rabb,1989). A scored K.A.M.I. gives order of dominance of accessing modes. Those modes differentiated by six or more points are thought to indicate a distinct preference. There are those individuals who do not show this differentiation. Their scores are said to be *flat*. A person with a flat score has a tendency to switch modalities as required by the situation. This person does not then have a dominant mode of knowledge accessing.

Interview

It was the experience of the researcher during the pilot study that the most effective method of assisting individuals to share their implicit theories was through very

direct questions in a simple interview format. The most influential element appeared to be the creation of an informal, relaxed,and accepting environment for discussion. Participants were most comfortable in expressing their views in response to the interview questions when they felt at ease and more conversational with the experimenter. As most individuals are hesitant to become involved in academic research, the environment created was significantly influential during this study.

The administration of the *Knowledge Accessing Modes Inventory* proved to be advantageous to the interview process itself. It was noticeable that completing the items before starting the actual interview was extremely useful in focusing their attention on their ways of thinking and initiated an atmosphere of introspection. When contrasted to the pilot study, this proved to be beneficial to the individuals themselves and the quality of the information obtained.

It is important to reiterate the diversity among the participants in regard to their personal experience with everyday problem solving. Some of these adults have survived extremely challenging and often debilitating childhoods. Several individuals were younger and had not the extent of personal responsibilities and difficulties of those older

participants. The contrast is evident in the lives of three younger adults who have yet to face personal crisis, the taxing burdens of home ownership or financial committment, when compared with others who are in extreme financial or professional difficulty or one mother who watched her five year old daughter killed before her eyes in a freak accident. It is apparent from reading the protocols that there is a great variance in psychological insight and self-awareness. These elements are certainly not contingent upon age but rather personal disposition and many other subjective variables.

It is apparent both to the researcher and to the participants that discussion of the processes of problem solving in an everyday or personal context are not those to which they have experience,an available vocabulary, or a suitable conceptual basis. Also to be noted, was a lack of conviction on the part of some respondents about what they were saying due to the novelty of verbalizing about this somewhat abstract subject matter. Thus, by virtue of these constraints, it is therefore essential that the interview environment be as unconditionally accepting as possible, both in terms of the presentation and expectations of the researcher, and the atmosphere created between the interviewees.

The researcher found the participants to be honest and prone to self-disclosure. Often the dialogue was touching, as they shared many vulnerabilities; degrees of personal self-confidence, interpersonal conflict,and histories of success or lack of same in handling these dilemmas. The very nature of everyday problem solving is personal.The skills and approaches utilized by each of us are fundamental to our outlook on life and are derivative of the sum total of our experiences and learning. Gaining an understanding of these processes generates personal evaluation and reflection. As one participant so aptly said:

> In an amateur kind of way,I often use it (her knowledge of how others problem solve)to understand new people that I meet, not saying that my parameters are correct,new people and how they,maybe if they have hang-ups you can understand why they function in a certain way, just as I go around, its a way of categorizing people in one sense,it doesn't close them in , its just that you maybe understand why they can't suddenly change their mind and do something different or that kind of thing. (5:33-41)

Although some were trepidous about participating in the study, without exception the interviewees expressed enthusiasm and a heightened interest in the subject of problem solving following their sessions. They seemed delighted to be listened to and to have their opinions valued. Many attested to the fact that it was a subject

worthy of greater deliberation and the intention to do so. They appeared to find their own responses interesting and illuminating, often alluding to the content in terms of increased self-awareness. Lively discussions often followed the formal interviews on the subject of problem solving and its importance. The follow-up comments given to the researcher seemed introspective in nature and conducive to personal growth in relation to their understanding of their own thinking processes. While the debriefing workshop to be given by the researcher for the volunteers generated only mild interest initially, following the sessions there was an notable augmentation of enthusiasm and committment to attend, often asking if children, spouses, or friends might also be invited. It was exciting to see such change in their attitudes toward this essential skill and toward their own sense of themselves as problem solvers.

Preparation of Data for Analysis

Twenty-four participants were interviewed in pairs and asked to verbalize their views about everyday problem solving processes. The twelve males and twelve females were from diverse backgrounds and had varying levels of comfort in discussing the subject matter. Most were hesitant about their understanding of the subject and their own awareness of their

processes. As much as possible, each interview was uniform in format and questions posed by the researcher. There was a high degree of variation in abilities to articulate this type of information. Prompting was required by the researcher as well as intermittent assistance in staying with the 'process' type of information as opposed to becoming side-tracked by the exploration of particular anecdotes of specific problems or situations. Although some individuals were more verbal by nature than others, this did not appear to be highly influential in the actual quality of material found in the protocols. A sample protocol may be found in Appendix F, to gain a flavor of the type of dialogue derived from the protocols.

The interviews were audio-taped and transcribed verbatim. The ensuing section discusses the process whereby the material was broken into episodes and coded for content and analysis.

The interviews were begun by asking participants if they had in fact given much thought to problem solving processes before. Sixty-three percent (15 individuals) said they had not, the remaining thirty-three percent (9 individuals) said they had. It became apparent during the interviews that among the assenting individuals, many later attested to the fact that they had given little or no thought

to this type of problem solving, that being of the more subjective, often interpersonal genre. One such example would be "I do, more in an academic way"...which was followed several comments later,when asked the question again..."Its just that I really haven't thought about it as such" (5:13,20-21). When including these type of qualifiers, it becomes evident that this is not a subject upon which people tend to deliberate on a conscious level.

Organization of Protocols

Two distinct but complementary methods of analysis were applied to the content of the protocols. Firstly, highlights from the answers to each research question were analysed and reported directly to pull verbatim components of the mental models from the data collected. Secondly, a coding grid was developed to describe the elements common to the protocols.

To provide a vocabulary for the analysis of the content of the protocols, the data was broken into sections known as 'episodes'. Each episode was thought to have a common theme or idea intended by the interviewee. Among the twelve protocols, there were a total of 873 episodes identified; the lowest number in a protocol was 47 and the highest was 109; the average being 73 episodes per protocol. These sections

may be a only few words or be quite lengthy.

Bearing in mind that so few people had ever discussed this subject before, none in this context, they often had to struggle for the vocabulary with which to express their views.

Development of Coding Grid

In order to develop a vocabulary to describe the content for the purposes of analysis, a coding grid was required to group the episodes into common elements. Due to the highly abstract and broad nature of the material obtained, the most significant difficulty in this exercise was the inevitable interdependence of the variables brought forth in the discussions.

It was not the purpose of the present study to develop a taxonomy but rather to identify a collection of categories, referred to as the coding grid,derived inductively from the content of the protocols themselves, expressed in the vernacular of the dialogues wherever possible.

Some degree of inference is inevitable with such highly subjective material; the application of this particular methodology is subject to various types of biases. These biases do exist and it is the function of the methodology to reduce their effect.The first type is experienced in the

partitioning of the protocols into episodes. The second type may occur in assigning codes to the episodes when applying either reference or broad category codes.

In order to address the first type of bias, that of partitioning the dialogue into episodes, two coders worked independently and then consulted on the results. To minimize the second bias,that of possible inference in assigning codes to the episodes,two independent coders were asked to code episodes. These coders were not required to partition the transcripts, these had already been formed. They were asked to recognize a code rather than produce one, to minimize the potential for disagreement and inference.

It is the nature of such discussions that one participant may omit expressing an opinion, feeling that it may be redundant to the comment of the other. This effect is minimized by reporting the results in pairs, thus using each protocol as a singular unit of analysis.

Identification of Parameters

The review of the literature was unable to provide assistance in the development of the coding grid due to the original nature of the study. The categories were arrived at inductively from the content of the protocols, in consultation with experts in the field of cognitive sciences and this type of methodology.

The coding grid provided three levels for the purpose of analysis: those of reference categories, broad categories, and qualifying statements. An initial category division was made to reflect the nature of the reference made by the individuals within each episode. Eight categories were formed for those episodes referring to: the problem, people, talking and feeling, education and experience, approach, method, process,context. Broad categories, as defined below, were identified to describe the episodes: belief (B),affect (Af), heuristics (H), strategy (S), communication (Co),and context (C). Forty-five qualifying statements were then used to describe the content of each of these categories (Table 2).

Broad Categories

1. Beliefs (B)

Beliefs and intuitions are defined by Schoenfeld (1987) as an important aspect of metacognition. People's views are not necessarily founded on an objective reality basis but rather on interpretations of what they perceive from their experience.

2. Affect (Af)

The term refers to elements concerned with emotion.

3. Heuristic (H)

For the purposes of this study the term heuristic refers to 'a rule of thumb', or a tendency to respond in a certain way toward a task or problem.

TABLE 2 CONTENT EXAMPLES OF PARAMETERS OF PAIRS INTERVIEWS

QUALIFYING STATEMENT	INTERVIEW SAMPLE
	STATEMENTS REFERRING TO PROBLEMS
problem solving is difficult	(B) it's hard (10:104)
	(Af) I have a really hard time getting down to the specific problem, taking that abstract discomfort..(11:81-83)
	(H) I have a hard time solving my own problems (8:122)
problem solving is constant/ p don't go away and may even increase	(B) Well, we do it all the time (6:3)
	(Af) People bring their problems...they cart them around with them (1:90-91)
	(H) it never stops, I get this problem solving..I do that all day long (7:12-13)
	(S) ..even what you want for breakfast...its never ending (1:146-148)
some are solvable/some are not	(B) there are problems that you really can't solve (2:577)
	(H) learning when to differentiate between when to let it go and when to just accept it (10:471-472)
problems get solved eventually	(B) Somehow you overcome it..(5:122)
	(H) I just sort of let it happen..it will come, it will be there (2:121-125)
	(S) either I'll usually find time to deal with it or its not an issue anymore, or its over or something (10:75-76)
	STATEMENTS REFERRING TO PEOPLE
individual differences (& personality) are determinants	(B) I think everyone has different methods of solving problems (4:22)
	(Af) picking and picking and if ...something you have to learn to adjust to (7:471)
	(H) if it's your personality, its hard to change that (8:256)
	(S) how problems ..can be addressed by several different modes of action (9:382-383)
	(Co) you can present several alternatives and let them be the judge (9:409)

TABLE 2 (cont'd) CONTENT EXAMPLES OF PARAMETERS OF PAIRS INTERVIEWS

QUALIFYING STATEMENT	INTERVIEW SAMPLE
people are encapsulated	(B) ..far too fixed in the way they they approach things, their biases get in the way (1:54-56)
	(Af) people are just too stubborn! (9:301)
	(H) the ability to be creative and flexibility, to not be so rigid in your thinking (10:354-355)
people need help with problem solving	(B) teachers and parents...to learn how to solve a problem to begin with... they could help younger kids (4:283-285)
	(Af) Well if you had somebody to tell you that..you probably end half the anxiety (7:341-343)
	(H) In your mind that you could maybe be given pointers on how to come to a decision(8:202-203)
	(S) a person who can't maybe get themselves together, they don't know where to start...helping them (6:182-183)
	(Co) some people really need to discuss a problem, help them carefully manage.. (2:693-695)
most problems are interpersonal	(B) Most problems are people problems really (1:65)
	(Co) problem solving is not only one person..working together(4:272-275)
people problems are different; more difficult;technical/work/ practical problem are easier	(B) People problems are the tough ones (1:83-84)
	(H) I handle problems quite differently at work than I do at home (11:187-189)
STATEMENTS REFERRING TO TALKING AND FEELING	
communication (& language of) is difficult	(B) I have trouble expressing certain feelings (11:245)
	(Af) ..don't be afraid to communicate (2:542-543)
	(Co) a lot of people have trouble communicating (2:184)
communication is important	(Af) sit down and talk about them instead of raising our voices (4:88-89)
	(H) talking group problem solving. I can see that being a way to motivate a child (12:373-374)

TABLE 2 (cont'd) CONTENT EXAMPLES OF PARAMETERS OF PAIRS INTERVIEWS

QUALIFYING STATEMENT	INTERVIEW SAMPLE
	(S) you can say what you want,say what you believe,without offending anyone (10:227-228)
	(Co) You have to make the time to talk (1:130)
listening is important	(B) I think most people want to be listened to (5:334)
	(Af) it makes them feel worthy of being listened to (3:446-447)
	(H) dealing with a person problem, I tend to sit back and listen (2:49-50)
	(S) I don't listen, it has been pointed out to me (4:237-238)
	(Co) the listening aspect is probably the most important to teach someone in problem solving (3:422-423)
degree of honesty/trust is important	(B) you have to pick and choose who's going to help you out (5:323)
	(Af) don't be afraid to communicate...or be honest about stuff that's going on (2:542-545)
	(H) I'll be as truthful as possible (7:117)
	(S) I could have ended a lot of arguing by being a little dishonest (7:169)
	(Co) depends on...the relationship you have with other people as to whether or not they trust you as a confidant (2:477-479)
3rd party intervention is useful	(B) You can get an honest opinion from them..its a third party, its good (2:195-197)
	(H) Usually, then I seek outside advice (3:106)
	(S) with some outside help, sometimes a phone call away (7:64)
	(Co) she gives such tremendously practical advice (10:377-378)
support is important	(B) They are there to support you and that's what a family is supposed to do. (2:209-210)
	(Af) gives me a large circle of friends which in turn feeds me (3:285)
	(H) if people ask for advice, the least you can do is try to put yourself in their position (3:33-34)
	(Co) if you are dealing with people who are talking about problems, you can help them...(6:232-233)

TABLE 2 (cont'd) CONTENT EXAMPLES OF PARAMETERS OF PAIRS INTERVIEWS

QUALIFYING STATEMENT	INTERVIEW SAMPLE
emotions are confounding	(B) they're so angry with themselves...the basic problem is never solved or even worked to. (3:213-214)
	(Af) sometimes that's very uncomfortable and that creates tension, and could create a problem that wasn't there before (2:536-537)
	(H) you try to keep anxiety to a minimum (7:301)
self-confidence is important	(B) the biggest key to problem solving is people having the confidence to do it (12:410-411)
	(Af) I'm very self-confident and I feel probably that I am best able to solve any situation (3:107-108)
	(H) to have an inventory of strengths..(6:288-289)
	(Co) we can talk..its up to you to do what's right (10:46-47)
positive attitude/fun/calm helps	(B) people are too negative ...and it scares them (11:385)
	(Af) try to relax (5:119)
	(H) I try to remain calm, number one (12:8)
	(Co) ...with more input from everyone (10:556)
STATEMENTS REFERRING TO EXPERIENCE AND EDUCATION	
childhood experiences are important	(B) as you grow up and you practice ways of problem solving, it makes you a better adult (2:408-409)
	(H) people resort to their previous experience,their upbringing (11:235-236)
	(S) my mom taught me how...I learned a lot that way (10:452-454)
	(Co) kids will come to me with their problems (11:116)
many problems stem from childhood	(B) Growing up has a lot to do with the problems you have (4:189-190)
	(H) My father drank, I don't drink (7:261)
	(S) I have difficulty concentrating...I find its because of my childhood things (7:236-243)

TABLE 2 (cont'd) CONTENT EXAMPLES OF PARAMETERS OF PAIRS INTERVIEWS

QUALIFYING STATEMENT	INTERVIEW SAMPLE
previous experience (& practice) is significant (case studies etc.)	(B) a lot depends on how successful you've been in the past at solving problems (3:100-101)
	(Af) what seems to cure it is experience (7:312)
	(H) I trained in a field where you do a lot of task analysis and problem solving (6:10)
	(S) the history of how the problem had been resolved .. and more than one example (12:349-351)
	(Co) I've learned through experience that if you are going to discuss, you make sure you have every-thing well prepared before you go and talk (2:427-430)
education & experience enhances self-confidence & effectiveness	(B) education has made us good problem solvers whether or not we think we are (2:191)
education & knowledge base	(B) you have a real problem then your knowledge can always kick in (7:33)
significant	
	(H) you pull from your previous experience, you pull from what you've heard or read (11:34-35)
	(S) we go back to the theory part of it and get the old books out (7:48)
STATEMENTS REFERRING TO APPROACH	
gain or loose perspective/ objectivity	(B) you become so into yourself..you don't see the big picture (2:306-307)
	(Af) there's a problem not recognizing something in themselves that makes them totally blind..(9:180-182)
	(H) I have a hard time...to put it all in perspective (8:210-211)
	(S) that ability to stand back and observe yourself in the third person(10:154)
	(Co) discuss somebody elses situation and how they coped with the same problem (5:431-432)
simplify	(B) most people tend to ..blow things out of proportion (12:110-111)
	(H) usually I try to simplify it and get to the core. (12:106-107)
	(S) I try to keep it simple (2:16)

TABLE 2 (cont'd) CONTENT EXAMPLES OF PARAMETERS OF PAIRS INTERVIEWS

QUALIFYING STATEMENT	INTERVIEW SAMPLE
takes time	(Af) then they are taking the time to really identify what the problem is... without that emotional reactive element there (11:473-475)
	(H) taking the time to see how it can be resolved (3:67)
	(S) I never get to maintain concentration for any length of time (10:501-502)
takes effort/intent/motivation	(3) They become committed and your problem is solved (1:77-78)
	(Af) it takes a lot of energy..(2:275)
	(H) everyone of us has something to bring....(6:276)
	(S) I go through those things at times...all of them (11:300)
	(Co) at least they had something in common to talk about (7:225)
significance of problem	(B) it all depends on how important it is and who it affects (1:32-33)
	(Af) Sometimes you make a mountain out of a mole hill..you are having a bad day (6:120-123)
	(H) ..to identify problems worth solving (2:558)
	(S) ...what's a small wee problem (7:477)
take emotional distance	(Af) emotions and all that stuff get far too involved (9:273)
	(H) to learn to maintain some kind of emotional distance or detachment (10:161)
	(S) I try to separate the action from the child (11:396)
take appropriate degree of responsibility/control	(B) there are things not within our control (10:467)
	(Af) knowing that it's going to upset somebody or make it difficult (8:114)
	(H) they are so fed up that they are giving the problem to you (2:520)
personal insight & openness/ flexibility/philosophy	(B) people would have to be able to learn a lot about themselves..how they function (5:407-408)
	(Af) ..a real good understanding of yourself, basically you will be able to solve problems with yourself and with other people (4:368-370)
	(H) its a way of categorizing people in one sense (5:38)

TABLE 2 (cont'd) CONTENT EXAMPLES OF PARAMETERS OF PAIRS INTERVIEWS

QUALIFYING STATEMENT	INTERVIEW SAMPLE
	(S) look to your intuition...how do I get my intuition to work (9:376)
	(Co) they don't have to say anything..you can start communicating with them that way (2:243-245)
set realistic expectations/ goals/priorities	(H) you just have to set them (goals) achievable to to get what you want (1:199-200)
	(S) putting yourself under a time limit (8:306)
	STATEMENTS REFERRING TO PROCESS
confront problem	(B) in fact when you actually take the plunge and get on with it, it's easier than you thought usually (5:304-305)
	(Af) how was I going to force myself to do it (5:29)
	(H) then you are able to deal with it one way or the other (7:347)
	(S) you sort of have to attack it (8:13)
	(Co) you should say to her, I don't like it (7:494)
not confront problem	(Af) by putting up that wall it has created a great many problems (4:350-351)
	(H) I tend to avoid a direct confrontation (1:21-22)
	(S) I try to find the path of least resistance (1:35)
problem identification	(B) as soon as I have identified it then I can deal with it (11:88-89)
(& definition)important	(Af) that's not an emotional problem, its a very practical problem (9:267-268)
	(H) as soon as they can identify the problem, then they can really solve it (4:72-73)
	(S) first define what the problem is (3:43)
	(Co) I didn't realize I had a problem until she talked to me (4:111)
problem identification is difficult	(B) a lot of people don't know what the actual problem is to begin with (3:161)
	(Af) there's a problem and they really don't know what it is,they just don't feel right (2:145-147)
	(H) Often times you don't know what the problem is (1:134)
	(S) I identify the problem...but I don't know, I don't ...(4:34)

TABLE 2 (cont'd) CONTENT EXAMPLES OF PARAMETERS OF PAIRS INTERVIEWS

QUALIFYING STATEMENT	INTERVIEW SAMPLE
acknowledge problem	(B) most of the time you don't realize that you have a problem (7:191-192)
	(H) I can't a lot of times accept the problem (4:161)
	(S) first of all they have to recognize that ...(9:52)
problem breakdown into smaller units	(H) some people tend to look at the big problem without breaking it down into what really are the issues (11:289)
	(S) you try to break down the problem into little problems..it seems to work sometimes (2:140-143)
analyse /explore problem	(B) (analyses)..a lot of times it keeps you out of
	(H) another way may be far more intuitive and may require you to get outside the system(9:388-389)
	(S) listing all the different things (11:9)
over-analysis (may cause confusion)	(B) once you over-analyze it, it mixes you up (7:136-137)
explore & evaluate alternatives (including from outside resources	(H) you should look at all the angles (8:56)
	(S) sort of run through different scenarios and try and figure out exactly which one I can use.(2:21-23)
	(Co) you only know that by discussing that with other people and getting different opinions of different things (8:336-338)
prevention/anticipation important	(B) I'm doing inventory...if I don't bother the chances of them being lost are a lot greater that's my philosophy! (5:286-294)
	(H) perhaps by prevention it wouldn't have been an accident (12:326)
	(S) if he could foresee the consequences of his actions...even for five minutes (9:194-195)
STATEMENTS REFERRING TO CONTEXT	
relative (.....it depends)	Depending on the situation...depending on who it is and what happened
	(Af) It depends on you, if you are tired or having a bad day...(6:107)
	(S) I probably have a technique for problem solving...they vary depending on the situation.(1:29-32)

4. Strategy (S)

The term strategy is used in its most general sense to indicate "processes (or sequences of processes) that, when matched to the requirements of tasks, facilitate performance" (Pressley et al., 1989).

5. Communication (CO)

Talking or listening to others for the purpose of enhancing the problem solving process is referred to as part of communication.

6. Context (C)

The category of context is intended to indicate references to situational variables as determinants in the problem solving process.

The combination of the three levels of the coding grid allows for a vocabulary to identify the common parameters of the mental models of the participants. This, in conjunction with the content analysis of the responses to the interview questions renders the data as transparent as possible.

CHAPTER 3

RESULTS AND INTERPRETATION

The research questions presented in the present study are articulated through two distinct vantages; firstly, the material is described through the specific responses to the interview questions, and secondly, through the frequency of responses applied to the coding grid for the purposes of analysis. The narrative presented in the first case, allows the twenty-four individuals to speak in their own words. The frequency responses allow the pairs to speak as one voice.

Responses to Interview Questions

The nature of the information found in the interview protocols is such that the essence is often diffuse and embedded in dialogue fraught with analogy and allusion to previous comments. As previously mentioned the experience of discussing problem solving itself may be novel to the participant. Redundancy is a constant and important element often used by the individual as a vehicle for emphasis. It was found that the challenge of introspection required to answer the interview questions naturally leads to a high level of self-referential remarks and contexts. Thus, answers

to the questions are often presented in a subjective context, regardless of the connotation of the question. It becomes difficult to assess the intent of these remarks in the sense that many of the responses intended to apply to adults in general may be personalized in expression. While responding to one question, a participant may be continuing a train of thought initiated previously. For the reader,to gain insight into the meaning behind the comments, it becomes *a priori* that the individuals be allowed to speak for themselves.

The narrative provides an excellent complement to the frequency description. The essence of these comments are often predicated by such indicators as: "I think the most important thing is..", "this is really the key" and such. The extraction of these excerpts may require more insight on the part of the researcher to ferret out the essence of each participant, but this can almost invariably be justified by the quotes themselves.

The ensuing section is designed to give a representative sampling of the verbatim responses to the questions. Any redundancy found by the reader will serve as emphasis that these comments are common to others. Analogical references are eliminated where possible as they are often lengthy and require greater contextual inclusion for appreciation. For the purposes of fluidity and continuity, the author has taken

the liberty of drawing responses from throughout the protocol which pertain to the question, rather than the responses made immediately following it. Effort has been made to present the individual's comments to reflect the intent of the speaker. Some licence has been taken with punctuation to make the dialogue more flowing.('S_n' refers to the Subject, number 'n',where n ranges from one to twenty-four.

Responses to the First Interview Question

Question: What is your understanding of the process people use to solve problems in their everyday lives?

Responses: (see Table 3)

The respondents made a clear distinction between the types of problems they encountered in their work environments, practical or technical problems, and everyday problems. They identified that the two former types are distinct in their more well-defined natures and the resources available to enhance solution. Their concern lay with the latter genre of problem. They felt that the everyday problems were ill-defined, more difficult, and invariably involved other people. Although defined as most significant, participants said they rarely thought about the process involved and tended not to use any method, unlike the work and practical problems. Their propensity was to use instinct, intuition, or emotional orientation to solve these problems. They suggested that many

of the problems themselves originated in childhood experiences, as did their habitual ways or solving them. Many suggested that one must be motivated or the problems remained unresolved. To generalize, the individuals felt that an important element was realizing that a problem did in fact exist. Once acknowledged, the primary difficulty lay in the identification of the problem, its source. The participants were of accord that in the issue of problem identification, the emotional element was the most confounding variable, often leading to confusion, distraction, and further complication. They found that if problems were not resolved on an ongoing basis, they had a tendency to become compounded and convoluted. Every pair mentioned with emphasis that individual differences were a constant and that the process of attack and resolution were highly idiosyncratic. It was often mentioned that people have a tendency to become encapsulated within a certain view or 'tunnel vision' which was a seriously limiting factor in the resolution process.

Once a problem was identified, it was important to take the time necessary to solve it. Many verbalized a process of identification, analysis, exploration, implementation, and reflection. Although many seemed familiar with this structure, few seemed to actually use it. Their tendency was much more *ad hoc* and instinctual.

The most pronounced elements of interest and concern to these respondents lay in the interpersonal and communication requirements of everyday problem solving. They felt that the skills of talking and listening surrounding these problems were the most significant determinants of success, to the point of saying that when communication is inadequate a solution cannot be reached. The emphasis lay on the extreme difficulty intrinsic to the emotional component of everyday problems and the arduous and many times impossible task of separating out the emotional factors to gain objective perspective.

Proficiency at everyday problem solving was highly correlated to personal confidence, which itself was often contingent upon past experience and education.

TABLE 3 EXCERPTS FROM VERBAL PROTOCOLS PERTAINING TO THE FIRST RESEARCH QUESTION ON UNDERSTANDING THE PROCESS PEOPLE USE TO SOLVE PROBLEMS

Subject	Excerpt
Understanding of the process people use to solve problems in their everyday lives	
S1	sometimes you can't be lazy, you just have to attack a problem and get it solved
S2	trying to get the right framework to view a particular problem. If you start off with a problem and you look at it in different ways from different angles, you can probably find one angle at which it appears quite simple.
S3	sometimes what you see on the surface isn't the real problem sometimes with people problems ...people problems are not the same at all. And how you solve them is very different ...they start talking about it and talking about it they solve the problem just because they needed to get it off their chest...you learn that,from social interaction,the older you get the better you get at it ...you see very small things that are real non-issues as major problems,which is a real danger, you become so into yourself,and into that little world that you don't see the big picture
S4	I try to keep it simple, figure out what's wrong..try to analyse what different types of solutions can do it and... what I've come up with that might be possible solutions and pick the best one, sort of run through different scenarios and try and figure out ...which one will give me the best result. It may not be the way other people would like to see the problem solved but it gives me the best result,thats what I'll use...The education has made us good problem solvers whether or not we think we are...it just becomes intrinsic that we become good problem solvers and the further, the better educated we get, the easier it becomes to solve a problem...a big key,is to talk about it,if you talk about it then even if you are talking about something that really isn't the problem,the problem will come out, and somehow you can solve it. I think if communication breaks down then thats the end, you won't be able to solve...

Table 3 (continued)

Subject	Excerpt
S5	Problem solving is a process..first define what the problem is,and be clear, exactly what the problem is before you react in any way,and look at possible solutions and assist those solutions to find out which one best fits the circumstances and then try that and if that doesn't succeed,start the process over again...a lot depends on how successful you've been in the past at solving problems,that might determine the method you use.
S6	look at the root of the problem, depending what the problem is,taking the time to see how it can be resolved..getting down to the basic problem
S7	you have to solve them right away...not let them build up, cause if you do that it seems that at one point in time it all falls on you ...if you don't want to solve a problem, you won't identify it, you won't recognize there is a problem and you get defensive about it and say no, I don't want to talk about it and you walk away and that's the wrong thing to do...if you notice the way your parents ..or anyone in authority over you..solve problems, you will either pick up the bad habits or the good habits of problem solving. I think one of the major things about problem solving is to be able to listen to somebody else talking, to be able to realize what they are saying, to be able to understand and take the risk, anything you find, to find out where the problem lies.
S8	There's no right answer, for one person it's easier, for another person it's complicated..everyone has different methods to solving problems. I have no particular view on this problem solving. I think you are always learning about solving problems. You have to want to solve the problem. Priorities are important..solving your problems will help everybody else.
S9	In my own everyday things... you aren't really working out how you do things, unless you sit back and analyse it...discussing things will sometimes show you a path out of it or feeling that you are not alone in it...you problem solve there within yourself,looking out.Its what you use all the time and yet you learn it by the seat of your pants if you like,you just learn it, life teaches you.

Table 3 (continued)

Subject	Excerpt
S10	when I think of problem solving I think of my academic studies or even of children but how you look at the topic or an area of research and how you go about that and that's a very analytical sort of thing.I think on an everyday basis, people just aren't conscious of it.Sometimes people intellectualize problems too much...your experience is going to Affect you.If you know you can get through difficult situations its much easier to figure out how you are going to do it
S11	it presents to you so its how you see it,sometimes you see a problem that maybe isn't there as much for the other person....defining the problem from your point of view and from their point of view and then looking at ways that will alleviate the situation,either make you feel more comfortable with it or help them if its a problem they have ...you don't think about this everyday.. it depends on you, if you are tired or having a bad day or something and sometimes you don't analyse it at all.its your backgrounds and the way you were brought up and your experiences in life and what's happened to you, what's gone on in you life that you react to certain things more and its more stressful than something else
S12	Most everyday problems are not really that dramatic, you can always figure out a way to solve it very fast ..for an important problem..you certainly have to go through the pros and cons of dealing with it, dealing with the consequences too.
S13	the hard problem is communicating your knowledge...everybody is different, we all come from different backgrounds..they had problems when they were kids and I think it all stems from when they were kids..and it affects your problem solving.
S14	If they have got a problem, I always thought they went, not by the knowledge they really have but by their instincts... think that problem solving comes automatically if you know what you are doing. If you don't then you have got to seek outside help..
S15	I'll go through a process but I don't think I've ever put a lot of thought into it..maybe its your personality...sometimes its good to talk and sometimes its good to sort it out yourself...you go through a process of elimination basically

Table 3 (continued)

Subject	Excerpt
S16	you sort of attack it or go to the source of whatever it is...and go from there...going through a process of elimination...you come to automatic conclusions sometimes... you should look at all the angles and I find most people don't do that...
S17	its whether there is or is not a problem, what is a problem for some is not a problem for others...its only a problem if you want to change...its an overall plan first...then you have the structure...sort of using things you've already got...it starts out intuitive and then you have to fix it,so that its more acceptable or more balanced or just better...the whole idea of making models...the more comprehensive your model, the wider your point of view is then the more you are able to see a clearer path of solving the problem...unfortunately,we have discovered a few things along the way that the model doesn't cover so we have to expand our model to include all this new information...as many sources of information as possible, information doesn't mean book information
S18	people have a certain 'reality tunnel', a certain focus and perception of the world and what's important and what's not, and no amount of coercion can get somebody to shift from that mind set...I think we are interpreting 'problem' as a negative thing whereas it might be more neutral than that...you don't realize that your brain is doing that,you just sort of do it ...I think that education is the key to all that and just exposing yourself to other views and even cultures...You have to be receptive
S19	first figuring out that you have one
S20	problem solving to a great extent is problem prevention...personal problem are always there
S21	a lot of it is gut feeling...you pull from your previous experience,you pull from what you've heard or read...their upbringing

Table 3 (continued)

Subject	Excerpt
S22	as an adult, you no longer go through those initial steps in a conscious way and you sort of jump into the problem and you haven't done all those little steps,you no longer do them methodically and that can sort of mess you up at times because you are trying to solve it without getting enough of your background...when you face up to it, it feels much, much better...there are biases...
S23	frankly, most problems aren't really problems
S24	I've seen a correlation between the ..degree to which they approach things emotionally, and the degree of education they have...the balance between an emotional approach and a very practical, methodical approach...between your experience and your emotional input and drive,so I see that as an important part of successful problem solving

Responses to the Second Interview Question

Question: How do you tend to approach a problem or difficulty?

Responses: (see Table 4)

The participants admitted to solving problems differently at home than they do at work. The *modus operandi* of most of the respondents was procrastination, denial, and avoidance. Many live in the hopes that their problems will go away, if ignored. Most found the emotions of stress, confusion, insecurity, and anxiety to be often debilitating in the problem resolution process. Those who were able to remain calm and obtain a degree of objectivity or perspective felt more confident to work through the problem. Those who began by simplifying the problem as much as possible seemed noticeably more effective as problem solvers.

There was a great need to talk about the problems with others, to receive support, reassurance, and input. Problem identification was consistently mentioned as the major difficulty. Once identified, they felt more confident in proceeding toward a solution.

TABLE 4 EXCERPTS FROM VERBAL PROTOCOLS PERTAINING TO THE SECOND RESEARCH QUESTION ON HOW ONE TENDS TO APPROACH A PROBLEM OR DIFFICULTY

Subject	Excerpt
	Tendencies in Approaching a Problem or Difficulty
S1	I tend to avoid a direct confrontation ...thats how I get through life,is problem avoidance,as opposed to problem solving.
S3	I don't get to the point on a problem..I ask what the problem is and every time you try to break down the problem into little problems and once you have a bunch of little problems you find little solutions which solve the big problem
S4	I find that I answer my own question or I will solve it just by being able to talk about it with somebody because I can verbalize it instead of thinking about it...I've never sat down and figured out a lot of why I solve problems,I just sort of let it happen...I don't want to create a problem where there isn't one.
S5	defining the problem,accepting the responsibility for following through..I work through the solution myself,but when it gets up too intense emotional or feelings I like outside help. I think the fact that I don't become anxious about a lot of problems and feel I can take my time solving them and work on them and feel very comfortable stepping in and helping other people
S6	I just needed the reassurance of another person that the situation could be resolved. I do try to remain very calm and cool about it...if you become more excited..to no advantage except frustration.I may be dying inside but it seems to work.
S7	I always grab the problem.. I've had trouble identifying my problems..to start to figure out and find the problem out here and start to solve them...we sit down and talk about them instead of raising our voices..if we don't realize we have a problem, one or the other of us will tell the other..and then we identify it from there. I created a lot of problems.. because I was not confident in myself at all.
S8	I identify the problem and then think of the best solution, one at a time...I've never thought about it..I don't solve them right away...I can't a lot of times accept the problem and take the time. I'll just go on and not say anything

Table 4 (continued)

Subject	Excerpt
S9	In the house I either retreat or scream at everybody, maybe I don't scream but I think I'm screaming at everybody
S10	I'm more likely to create problems than to solve them What I like to do is plunge into something and worry about the problems as they come along.I tend to ignore as many problems as I feel are safe to ignore because they are too time consuming. Procrastination,putting things off until they are absolutely critical and maybe sometimes not being able to talk about them, not wanting to show that I have problems where I have them..I blank out possibilities completely.
S11	I probably over-analyse some things but I do a fair amount of reading and I look back on how I've dealt with a particular problem...so you go back and you change some of the steps. You want someone to talk to and have them reflect back what you are saying and you need some support for what you are doing,or maybe they have an idea that really hadn't crossed your mind at all.
S13	I have difficulty concentrating...so problem solving is pretty hard...I find its because of my childhood...I get anxious when I have a problem...try to keep that anxiety to a minimum..
S14	a lot of it is by instinct, by what I've learned from other people
S15	the problem is that I look at it through so many different ways...sometimes the more I think about it the more indecisive I get...tend to procrastinate...
S16	I try to logic it..to go through a process of elimination,I go from the most obvious and work my way down...a work problem and a personal problem. You don't tackle them the same way at all...I have a hard time solving my own problems.
S17	I do take a step back
S18	I have to make a mental inventory of how I go about solving this problem
S19	either I'll usually find time to deal with it or its not an issue anymore, or its over, or something

Table 4 (continued)

Subject	Excerpt
S20	I look at alternatives, the possibilities, the wishful thinking, the total impossibilities,basically narrow it down from there,and make due with what I've got...brainstorming... that's where my best solutions come from...personally I need to talk to myself constantly
S21	I like to talk things out...I don't fairly often do it in a methodical way,in terms of stopping and identifying what the problem is...I handle problems quite differently at work than I do at home...at home I'm much more emotionally involved...I tend to react quite emotionally rather than going through the objective...at work I can follow sort of a problem solving method just in my mind
S22	I know that as soon as I have identified it, I can deal with it...giving myself time to think of an answer...the initial response is to run away and for a certain period I tend not to face them...they will slowly creep back until you say...I have to identify it
S23	I try to remain calm number one and think of exactly what the problem is and come up with a solution...I tend not to get confused...I tend to simplify things
S24	I would be hard pressed to say I had a system...in the kinds of problems I'm solving most of the time...I'm consulting with other people...I think what I try to do is back away from it for a short time and to try to assess all the facts that I can come up with and sometimes that requires a little research

Responses to the Third Interview Question

Question: Where do you feel most people have difficulty in their problem solving processes?

Responses: (see Table 5)

Many respondents were of the conviction that people were too fixed, or biased in their approach to their problems. This rigidity was thought to limit one's ability to be aware of the existence of a problem.

They suggested that problem identification was extremely difficult due to an ineptitude at separating out the emotions and other non-essential variables. Everyday problems were thought by many to become compounded and often overwhelming, making it difficult to break the problem down into manageable units. These influencing factors were serious inhibitors to achieving the required detached or objective perspective for successful resolution. The respondents mentioned that most people do not use a method or system, but display a tendency to merely react. The participants felt that they and most others were victims of their denial and procrastination.

Two proclaimed significant areas of difficulty lay in self-confidence and communication skills. A paucity of either was seen to be detrimental to the resolution process.

TABLE 5 EXCERPTS FROM VERBAL PROTOCOLS PERTAINING TO THE THIRD RESEARCH QUESTION ON THE DIFFICULTY PEOPLE HAVE IN THEIR PROBLEM SOLVING PROCESSES

Subject	Excerpt
	Where Most People Have Difficulty in Their Problem Solving Processes
S1	everything you bring is an inhibitor, because you bring your own biases,your own values,your own norms,your own way of thinking basically,
S2	Oh, I think they're far too fixed in the way they approach things,their biases get in the way. They read a problem in a very blinkered way,they can only approach it from one direction.
S3	identifying the problem, first you have to know what the problem is,sometimes I think that people can't really see the problem for all the periphery...then sorting it out..often people don't know what's the problem,there's a lot of symptoms, especially with people problems...sometimes the problem feels overwhelming...they just don't feel right...sometimes there isn't a problem at all...a lot of people keep so busy that you need to make time to solve problems.
S4	I think a lot of people have trouble communicating,
S5	A lot of people don't know what the actual problem is to begin with...not very many people see themselves realistically...the problems tumbling one on top of the other
S6	people often don't see the basic sort of things they can do... Problem identification. When people get into crisis with a problem,it tends to manifest itself and become more than one problem and people simply don't know what the real problem is, things tend to build up and if they can't communicate well, they get so frustrated that things tend to go on from there and its blown out of proportion..they don't take the time to deal with it.
S7	Identifying that you have a problem to begin with is the biggest problem. I think there are a lot of people who have problems,have grown up to have problems that their parents had ...they don't know any other situations so they don't think its a problem,there's a problem when they don't realize there's a problem,the first thing to begin with they don't want to talk about it.

Table 5 (continued)

Subject	Excerpt
S8	to accept that they aren't perfect...they have so much going on that you can't take the time to sit down and solve the problem.
S9	I can't think that everyone has one ...one way of solving things,people solve things different ways
S11	defining the problem. Getting to the heart of what's really wrong or what really needs help.Sometimes you make a mountain out of a mole hill and vice versa, you haven't picked up on something that really is important and you put it off to something else. The language used in discussing problems can present problems on its own
S12	deciding on the right approach, how to deal with it...the first step is to recognize the problem, you know what I mean, there may be a problem there and you don't recognize it.Its just not visible to you until something happens.
S13	most of the time you don't realize that you have a problem... self-confidence, knowing how good you are at problem solving ...what seems to cure it is experience
S14	the problem is that you have to realize that you have a problem, once you have realized that it is simple to solve it.
S15	trying to please everyone...maybe not worrying about what other people think, just to stick with what is your gut feeling...Guilt can also effect your decision...sometimes when you feel everything is too much for you...when you find out that somebody else has a problem similar to you, or worse that you, you think its not so bad and you can continue on.
S16	most people don't use a system, they just react...My difficulty, it's coming to a solid decision and sticking with it and not changing your mind...maybe controlling your feelings...afraid of making a mistake..I have a problem to put it all into perspective ...people have problems and just sort of avoid it,totally blank it...I have a hard time expressing myself

Table 5 (continued)

Subject	Excerpt
S17	what part of the situation is causing the problem...not acknowledging that there's a problem, not recognizing something in themselves that makes them totally blind to a certain trait of their own...you get defensive...personal defence mechanisms...holding to a particular view for some people is more important than actually solving a problem that comes up...their particular views or advocacy or feelings... your status...if the people can transcend their own narrow view points...then the more likely they are to see a better way of solving a problem...perhaps its in identifying whether the problem is an emotional problem, a practical problem
S18	Maybe just not taking a broad enough view of the situation or not having the perspective or not noticing all the influencing factors...foresee the consequences...trying to get a more detached, objective view...any rational thinking or reasoning is going to get muddled by emotions and so you can't think straight is you are really upset, regardless of whether its justified or not...your self-importance or your self-image...if you sincerely want to solve this problem, you have to discount your personal stake ...in it...they can't recognize their own biases...People are just too stubborn!
S19	my problem is that I just let it go...when its emotions..its harder...it may be in the confidence to know that you can overcome it or work it out, that you have the strength to do it...I don't analyze how I deal with things but probably there's a pattern to it and I don't confront it and I don't have my own personal beliefs strong enough that I should be able to express it or have the confidence to express it, that's my problem, having the inner strength to realize that you can say what you want, say what you believe, without offending anyone.
S20	it may not be an issue anymore for the moment but down the line it comes back up again,if you haven't dealt with it... it's sort of a symptom of a larger problem...I find it really frustrating when I have problems getting past all the mental blocks,my personal limitations to get to the core of what... that bottom line...its self-doubt or lack of support...that ability to stand back and observe yourself in the third person ...to maintain some kind of emotional distance long enough for

Table 5 (continued)

Subject	Excerpt
	it not to get tangled up in shoulds and shouldn'ts and childhood programming...limiting oneself...doesn't always see all the possibilities or alternatives...some people don't even realize they have a problem, denial...not to be so rigid in your thinking...a lot of people have tunnel vision
S21	dealing with only aspects or not the specific problem itself but some of the superficial ones without dealing with the problem...going around in circles...its really hard to generate alternatives, options when you haven't identified what the real issue is...sometimes problems get to the point where they're multiplied...they get so large and its difficult to break it down into something that's manageable, understandable, specific enough that you can...look at options
S22	people are really poor at communicating...trouble expressing feelings...accepting of certain problems that you have no control over, and dealing with the ones you can deal with
S23	the biggest thing is that people complicate problems...to blow thing out of proportion
S24	perhaps the most difficult part is...to come up with a compromise...perhaps not being capable of achieving that state of calm before they analyse something...a big key...to try to divorce that emotion from the solution

Responses to the Fourth Interview Question

Question: What do you think most adults would like help with in their problem solving?

Responses: (see Table 6)

The area where most of the participants felt they and others would like assistance was in the domain of personal problems. They suggested help with communication and listening skills as perhaps the most productive. Assistance would be beneficial in dealing with the emotional variables associated with everyday problems, in gaining the confidence necessary to confront and discuss these dilemmas. Overcoming anxiety and defensiveness about problems was something they would like to improve. By more effectively communicating about their problems, these individuals thought they could be more receptive to alternative views on their difficulties.

Assistance could be rendered by giving people a place to start in their thinking, particularly toward gaining skill at the ever-present task of problem identification. The respondents wanted guidelines, practical steps for working through problems, and recognizing the salient factors.

TABLE 6 EXCERPTS FROM VERBAL PROTOCOLS PERTAINING TO THE FOURTH RESEARCH QUESTION ON THE HELP ADULTS NEED IN THEIR PROBLEM SOLVING

Subject	Excerpts
	Help Most Adults need in their Problem Solving
S1	Well,you have to give them a broader outlook towards it,
S2	a lot of people like to have some help in personal problems.
S3	the listening and talking, maybe they have gone through this in their brain for weeks or days or whatever and have a big headache trying to solve the problem,and they really need to do it verbally...now they really need to get it off their chest, also little bits of feedback so they can see the path they took was reasonably logical, somebody more objective, because obviously you are not necessarily objective yourself on a personal problem...giving them confidence...people really need to learn how to discuss a problem, help them carefully manage that discussion..especially if its a person who does get emotional or irrational...not to be defensive.
S4	just talking about it with someone who is willing to listen... learn how to communicate,don't be afraid to communicate,if you can't communicate even to yourself or be honest about stuff that's going on you are going to have a hard time solving problems..all the big problems will come to the forefront through communication...to identify problems worth solving,a lot of problems you have no control over.
S5	better listening skills
S6	better communication skills, better listening skills
S7	self-confidence..if you don't have confidence in yourself, it creates problems later on.
S8	school kids should be taught how to solve problems,and to be selective about how to learn and solve their own problems. Being able to get help,being able to have the courage to admit or be able to identify a problem
S9	They need someone to listen,not to give them solutions...I don't know what happens in the process of the problem but it seems to solve itself out,the other persons problems,I mean, someone who can listen and not come up with the answer.

Table 6 (continued)

Subject	Excerpt
S10	I think most people want to be listened to, I think most people have solutions but if you don't articulate it sometimes you don't know that you have the solution...trying to teach people to solve problems before they even arise
S11	helping sort out the priorities....giving them some small steps toward a larger thing...most people want almost an outline of how they might resolve this problem because obviously they haven't been able to find a process to work through that works...some kind of a guideline approach,
S12	giving them a point where they can start their thinking or their solving maybe they just don't know how to deal with it like,how do I start,what is my first step,so maybe thats a difficulty they have as well, once you get the ball rolling, it all falls into place ... You can only help them so far. You can't solve it for them,basically. Most people, depends on how they were brought up, most people have a good base...maybe they just lack the confidence and if you can just give them a little push in that way...maybe they forgot a few steps and if by boosting their confidence a little and saying you know... they have intuitions that help, you can say ..how do you feel, what's your basic thought on it..and maybe its right all the way, its already there and maybe its just not coming out,so by giving them a little boost like that it will all come to the surface and they will be able to deal with it.
S13	what they would like help with would be...to control the anxiety about problem solving
S14	go to a professional..to talk...who is straight forward...sort of calms you down...talk about it frankly
S15	to be more definite...Maybe a process to get there,to get to the decision...to talk to somebody...getting different opinions of different things...
S16	maybe controlling your feelings...and how to analyze a problem...somebody you can confide in...somebody neutral... people learn from talking to each other

Table 6 (continued)

Subject	Excerpt
S18	logic stuff, practical step by step stuff and how to think through a situation, how to recognize the factors
S19	sometimes you need a little help though, someone who sees it a little clearer...with just identifying the nature of the problem,to see how we really feel about it and what we are going to do about it...just a kind of guideline,where you act the same every time...a personal kind of thing that works for them
S20	people tend not to realize their own potential for creativity, that wasn't nurtured when they were young or whatever...being heard,a nurturing, supportive environment...someone else outside of yourself who sees things differently and it alters your perception of reality...a pattern...learning to differentiate between when to let it go and when not to,when to just accept it
S21	identifying what the problem is
S22	often you need a sounding board,or interaction with someone else to identify something like that and then the next thing is dealing with it...feel better about themselves...if you can get rid of that embarassment,you can deal with problems
S24	to analyse the steps they're taking in their minds

Responses to the Fifth Interview Question

Question: What suggestions would you have for a course or workshop on problem solving?

Responses: (see Table 7)

There was a lack of conviction that the required abilities could be taught in a course. Most respondents felt that problem solving was such a personal thing that it would be difficult to construct a course with suitable generalizability.

The participants wanted to learn how to deal with the emotional elements, to communicate clearly and effectively, to be more honest with self and others, and to listen better. They identified a need to increase one's self-confidence at problem solving. There were excellent suggestions made to this effect. They highlighted the utility of helping learners to identify the strengths and predispositions they could bring to a course in particular and to problem solving in general. The need for increased self-awareness was thought to be important. Suggestions were made to help people separate problems that could or should be solved from ones over which they had little or no control. Again problem identification was clearly an area in which these individuals wanted more help.

The request was made to teach people simple, generally applicable problem solving steps which would be meaningful to them in their everyday lives.

TABLE 7 EXCERPTS FROM VERBAL PROTOCOLS PERTAINING TO THE FIFTH RESEARCH QUESTION ON SUGGESTIONS FOR A COURSE OR WORKSHOP ON PROBLEM SOLVING

Subject	Excerpt
	Suggestion for a Course or Workshop on Problem Solving
S1	It depends on what your target audience is
S2	small groups and taking problems and taking different techniques and applying them to those problems, I don't know whether you video tape it or what you do and then play it back and see how people react.....you study personal ways in which you go about solving problems, what suits one person for one problem may not suit him for another, may not suit somebody else for the same one. Its a difficult thing to teach.
S5	to start off the group asking why they felt they needed this group, everyone comes with their own agenda ..a brain-storming session with what methods you have used that you found successful and we would probably work out something analyzing these different methods and which applications worked best.
S6	the listening aspect is probably the most important to teach someone in solving a problem and I don't know how you can teach that in a course ....maybe just basic confidence..to make the first part of the course very success based
S7	My suggestion would be to really get to the root of problem solving,to learn how to solve a problem to begin with...so they could go through like knowing these skills before they get into adulthood.
S8	make them understand that your way is not necessarily the way
S9	I think the people would have to be able to learn a lot about themselves..how they themselves function...so they can understand the kind of things that are coming out here in your questions because I don't remember in my life..that being emphasized in any course or any diploma thing I did.
S10	I think probably the most effective way of doing it would be to first of all present some problems and say how would you do this,look at what you've done,go back in a sort of intellectual way and see what's wrong about that or what's right about it

Table 7 (continued)

Subject	Excerpt
	...discuss somebody elses situation and how they coped with the same problem,so that you get a lot of information on one type of thing...pick out what's reasonable and why ...and then from that presumably you can come up with a little neat theory which is what you want..something meaningful...even if it makes you think about what you are doing or why
S11	facilitating communication, giving people an idea of how to voice their needs,number one, so that somebody else will really understand what their problem is...have an inventory of strengths and things you are bringing to the situation as opposed to looking at all the problems. It sort of changes the way you look at it,a challenge and you have got all these tools or strengths you bring to it as opposed to this 'problem' and you don't feel you have anything in your repertoire of experience to deal with it...first of all it would be to define where their problems are, what are they having trouble with
S12	everyone of us has something to bring,to any situation, it could be very little, it could be tons of experience but maybe thats a good way of starting...almost need to have specific groups where you are focusing on a particular issue that needs very specific things looked at and then going from there
S13	a course on how to be honest! That would solve everything!
S15	something you can go through in your head...lets start at step A and work from there and see if you can come to some sort of conclusion
S16	sort of a guideline to follow,like a method of solving, a method you can use in everyday problems and complicated problems
S17	maybe they should be more intuitive and trust their gut instinct...you have to be pretty straight forward, give them a nice formula, seven steps to problem solving
S18	maybe a whole bunch of different approaches,how problems can be addressed by several different modes of action...that would be useful, just to acknowledge that you can't solve every problem

Table 7 (continued)

Subject	Excerpt
S19	helping people identify their problems...if you had a group and you were doing problem solving...then have a discussion
S20	a short three step method to develop objectivity...key phrases
S21	teaching people how to move from this emotional state, or stop themselves and then move somehow into going through this process...break it down and identify what is the issue here
S22	breaking it down into three,identifying the problem, dealing with the problem,and then breaking those down into separate ways...examples, just taking some problems and going through how it was dealt with
S23	My advice is that they start with kids when they are about five years old and teach problem solving in schools...social learning and how we can just solve everyday problems...you should give them a confidence course first.
S24	increase that ability to anticipate a problem and therefore divert it...then be given the history of how the problem had been resolved...perhaps there were more than one example of attempts to solve the same problem...confidence is a good part of the whole process

Responses by Episode Frequency

The process of developing a coding grid for this genre of material is difficult. There is an inevitable degree of inference intrinsic to the analysis of such subjective information. Two independent judges were asked to apply the eight episodic reference codes to each protocol: problem, people, talking and feeling, education and experience, approach, method, process, and context. The agreement between the judges ranged on individual protocols from 57% to 64% to 77%, which indicates that the individual protocols have a wide range of transparency.

Frequencies were obtained for the three levels of analysis as an indicator of the emphasis found in the material. It is a necessary caution that the tabulation of frequencies in this particular type of research provides a limited amount of information and may lend itself to a bias in interpretation. It quickly became apparent that each individual tended to have perhaps three or four major themes around which his/her dialogue revolved. The level of redundancy of the individual could very easily skew any inference based on frequency. A more articulate and concise individual would be less likely to repeat himself or herself. Likewise,a person

with a more abstract and richer appreciation of the process involved might easily cover a wider range of elements in his/her discussion. For this reason, frequency counts were tabulated if a category was mentioned once per protocol(Table 8). Total frequencies, including redundancies are mentioned solely for the purpose of emphasis .

In conjunction with this caveat,it should be explicit that the coding grid must not obscure the essence of the dialogue. The trepidation of this kind of research lies in the ambiguity intrinsic in much of the information. It is a patient task to isolate components of mental models. They are complex by definition and idiosyncratic by nature.

The coding grid provides three levels of analysis, of increasing specificity. The most general level is described by eight reference categories,as introduced above,to situate the comments. The second level is that of broad categories of belief, affect, heuristic, strategy, and communication to provide parameters of the quality of the views of the pairs. The third level, that of forty-five qualifying statements, is intended to furnish a descriptive vocabulary for the common elements found in the dialogue. Episodes by reference categories (refer to Table 8)

TABLE 8 FREQUENCY OF EPISODES CLASSIFIED BY REFERENCE CATEGORIES AND BROAD CATEGORIES

Episode reference to:	N	%	B	Af	H	S	Co
problem	26	5%	15	2	7	2	--
people	64	12.7%	32	6	14	6	6
talking & feeling	115	23%	25	31	21	5	33
education & experience	45	9%	23	3	9	9	1
approach	107	21%	25	15	44	18	5
method	27	5.4%	11	2	12	2	--
process	110	22%	16	15	29	47	3
context	11	2%		1		1	
total	505		147	75	136	90	48
percentage			29%	15%	27%	18%	9.5%

Broad Categories:

B:belief; Af:affect; H:heuristic; S:strategy; Co:communication

1. Episodes referring to the problem

Five percent of the responses dealt with the issue of the problems themselves (see Table 8). The belief category was most pervasive.The most significant in this genre of comment was to the belief that problem solving is a constant in life, that problems don't go away, and that they may even increase.

2. Episodes referring to people

Comments referring to the interpersonal element in problem solving explicitly (12.7%),fall most entirely in the belief category. This theme does run throughout the other comments but slightly more indirectly, those of communication, third party intervention, childhood, to name a few.

3. Episodes referring to talking and feeling

Twenty-three percent of the comments, the highest category involved these subjective elements, with significant mention in all categories. This was the topic upon which the most redundancy revolved. The concern of the participants was evident throughout their dialogue.

4. Episodes referring to education and experience

Although only nine percent of the comments, mostly in the belief category, referenced these variables explicitly, the import was highlighted by the emphasis given to the remarks.

5. Episodes referring to approach

Distinct from an actual method, the individuals displayed a tendency to come at problem solving with a certain attitude and intent. Twenty-one percent made comments to this effect, most definitely in the heuristic category.

6. Episodes referring to method

Although infrequently mentioned (5.4%), the individuals held beliefs and heuristics on the subject. The flavour attested to the awareness of problem solving methods but that they were not in conscious or deliberate practice in daily living when faced with problems.

7. Episodes referring to process

Mention of these cognitive practices (22%) was highest in the strategy category as would be expected. There was a great variance in the quantity and quality of those used.

8. Episodes referring to context

As a separate category, nine episodes referred only to context without some qualification. The frequencies are not particularly helpful in the analysis of this variable, as the individuals did mention that much of their differentiation of ways of problem solving did indeed depend on what type of problem it was, most particularly a distinction between work and subjective problems.

Episodes by Broad Categories

A full reporting of the frequencies of these statements reflecting the broad categories is found in Table 9.

1. Beliefs (B)

A finding of the study was that these beliefs comprised the majority of the implicit theories of the participants.This element comprises a significant body of the predisposition the learner brings to the problem solving situation.

In eight out of twelve protocols, the belief element was most predominant.The nature of these beliefs was the permeating factor throughout the dialogues. The most unanimous accord (12) was on the belief that individual differences, including personality variables, is an enormous determinant in how people go about solving problems.

2. Affect (Af)

The emotional element in problem solving was mentioned continually,in fact all agreed (12) that this was a confounding variable in the solution process. Positive affective orientation received some attention, particularly the concepts of self-confidence and positive attitude, having fun and remaining calm, but not nearly to the extent of the mention of the inhibiting factors of emotion.

TABLE 9 FREQUENCY OF EPISODES CLASSIFIED BY BROAD CATEGORIES

QUALIFYING STATEMENT	B	Af	H	S	Co
PROBLEM:					
problem solving is difficult	4	1	1		
problem solving is constant/problems don't don't go away and may even increase	7	1	2	1	
some are solvable/some are not	2		2		
problems get solved eventually	2		2	1	
PEOPLE:					
individual differences (& personality) are determinants	12	2	3	1	1
people are encapsulated	3	1	3		
people need help with problem solving	7	3	3	5	3
most problems are interpersonal	3				1
people problems are different; more difficult;technical/practical/work problems are easier	7		5		1
TALKING AND FEELING:					
communication (& language of) is difficult	2	1			8
communication is important		1	3	1	11
listening is important	3	1	3	1	3
degree of honesty/trust is important	3	1	1	1	3
3rd party intervention is useful	2		2	2	2
support is important	4	4	2		4
emotions are confounding	3	12	5		
self-confidence is important	4	7	2		1
positive attitude/fun/calm helps	4	4	3		1
EDUCATION AND EXPERIENCE:					
childhood experiences are important	5		2	2	1
many problems stem from childhood	5		1	1	
previous experience (& practice) is significant	6	3	4	5	1
education & experience enhances self-confidence & effectiveness	3				
education & knowledge base significant	4		2	1	

Broad Categories:
B:belief; Af:affect; H:heuristic; S:strategy; Co:communication

TABLE 9 (continued)

QUALIFYING STATEMENT	B	Af	H	S	Co
APPROACH:					
gain or loose perspective/objectivity	2	2	5	3	3
simplify	2		2	2	
takes time		1	7	2	
takes effort/intent/motivation/ involvement/committment	7	2	7	4	1
significance of problem important	4	2	6	2	
take emotional distance		3	4	2	
take appropriate degree of responsibility/ control	4	3	6		
personal insight & openness/flexibility/ philosophy	6	2	3	1	1
set realistic expectations/goals/priorities			4	2	
METHOD:					
having/developing a method or system is beneficial	6		3	2	
not having or using a method/ad hoc/ intuition/instinct	5	2	9		
PROCESS:					
confront problem	2	5	3	6	1
not confront problem		6	3	6	1
problem identification (& definition) important	5	3	3	9	
problem identification is difficult	5	1	2	1	
acknowledge problem	2		3	2	
problem breakdown into smaller units			1	5	
analyse /explore problem	1		2	9	
over-analysis causes confusion			2		
explore & evaluate alternatives (including from outside resources)			4	9	1
prevention/anticipation important	1		2	2	
context.....it depends (9)		1		1	

Broad Categories:
B:belief; Af:affect; H:heuristic; S:strategy; Co:communication

3. Heuristic (H)

The strongest response was in the nature of not having or using a method or system but rather solving problems ad hoc, by instinct or intuition. Nine of the twelve protocols explicitly identified using an ad hoc system, intuition or instinct as their *modus operandi* in problem solving.

4. Strategy (S)

The three most common mentioning of strategy usage, in each case in nine out of twelve protocols, was the process of problem identification or definition ,analysis and exploration of the problem, and in exploring and evaluating alternatives.

5. Communication (Co)

The element of communication in the process of problem resolution was far more important in the views of the participants than the frequency counts would indicate. Eleven out of twelve protocols indicated that communication was important, and for many the most important element in problem solving; eight out of twelve expressed that communication and the language of communication was difficult.

6. Context (C)

As a broad statement, the idea of context for problem solving was so pervasive as to be frequently included throughout the other categories. The number of episodes mentioned as contextual which were not better included in

another category was in the end very small, 2% of the total episodes. Thus the frequency counts for this category are not a serious indicator of the import this had in the protocols. It was found that the category when isolated was not significant enough to have been designated separately.

Knowledge Accessing Modes

As previously noted, the administration of the K.A.M.I. previous to the interview was found to be an excellent stimulant to the participants in their thinking about themselves and their processes. In devising such studies, it is advisable to integrate such instruments as K.A.M.I. into the research design to sponsor greater introspection and verbalization, as observed elsewhere (Coombs,1987).

Due to insufficient size of sample cells, no statistical treatment was possible of the K.A.M.I. Of the twenty-four participants, six were of the rational mode, nine were of the empirical mode, six were of the noetic mode, and three were designated to have 'flat' profiles, not indicating a significant preference or knowledge accessing style. It is particularly interesting to note that when answering the initial question referring to previous thinking about the subject of everyday problem solving, there was a decided difference in the modes. Fifty percent of those subjects who had a dominant rational mode had given previous thought to the

idea of problem solving, twenty-two percent for the empirical mode, thirty-three percent for the noetic mode, and sixty-seven percent of those referred to as having a 'Flat' profile.

Limitations of the study

Any particular approach to the study of human cognition is likely to clarify some aspects and obscure or distort others. There may be biases inherent within the interview questions. The responses of the participants may have been mitigated by the interview process itself, the novelty of the subject, other particular predispositions to the experience. There are no doubt significant components of the mental models of these individuals which were not brought forward within the interview process.

The methodology itself provides some limits on the study of this subject matter, such as a lack of criteria or adequate explicit standards of procedure for the analysis of the content of this type of protocols. Despite this, however, the author still considers there were greater advantages than disadvantages to the methodology.

The interviews were conducted in pairs due to the aforementioned advantages. There are however, possible limitations to this choice. There exists the potential that the responses to a question by one partner may influence the

trajectory of the other's thoughts and verbalizations. These interpersonal dynamics are an inevitable consequence and must be taken into account in accessing the data attained.

Due to the subjective nature of the content of the material, the coding becomes a formidable task. There is an unavoidable level of inference intrinsic to this process, both on the part of the researcher and on the part of the independent coders enlisted.

CHAPTER 4

DISCUSSION AND CONCLUSIONS

A significant contribution of the present study rests on its utility as a vehicle through which the participating adults could express the fundamentally 'human' dimensions implicit in everyday problem solving. The interviewees took personal risks in their self-disclosures, which facilitated meaningful introspection and produced rich data from which to understand their mental models of everyday problem solving. These narratives evidenced that each individual has several themes around which his/her ideas revolve.These nuclei seem to be the barometers upon which the subjects viewed themselves and others as problem solvers.

Having rarely ever discussed this issue, participants had to struggle for vocabulary and content. The natural tendency seems to adhere more to the mundane level of problem specificity. Once participants were overtly directed to discuss process, they needed little assistance to maintain the dialogue. Each individual expressed self-referential interest in what he/she had been able to verbalize, and in an auxiliary way about the problem solving process itself.

One of the most interesting elements of the findings of

the present study lies in the omissions; the metacognitive awareness about everyday problem solving is clearly lacking. This is evident in the nature of the remarks made by the participants as well as in their admissions of a paucity of understanding and conscious perception about how they administer these problem solving processes, despite their importance as determinants to personal success and happiness. A case in point may be made on the basis that little self-monitoring was done during the interviews themselves.

The study establishes the existence of mental models held by adults about everyday problem solving. For many, these models are disjointed, fragile, and lacking in metacognitive perception. Time and again, these individuals remarked on how difficult it is for them to stand back from their problems and emotional entanglements to clearly identify the source problem. Some participants displayed what Brown (1978) classifies as 'secondary ignorance'. This may involve a lack of metacomprehension or a lack of understanding of what one does not know, or a lack of knowledge inference about what is possible to determine and what isn't. Unfortunately, the failure to acquire enriched metacognitive knowledge is to some extent the result of self-defeating beliefs (Borkowski et al,1987). This lack of confidence is a touching element throughout the confessions

made by most of the individuals questioned.

Another relevant omission lies in the sparse reference to personal philosophical,religious,or similar other theoretical orientations, which often, on a metacognitive level are the conceptual abstractions from which solutions are directed.

Many individuals admitted to practicing substantial degrees of denial and problem avoidance. As a criterion for significance, people expressed that if a problem went away or could be resolved without much effort they would consider it minor. Priority was ascribed if a problem was persistent or emotionally compelling.

Contrary to the beliefs of many educators, the individuals canvassed in the present study had little interest in the formal aspect of problem solving. Their quandaries and expressed needs were decisively within the subjectives realms of problem solving. Very few of the twenty-four adults interviewed said that they have given much thought to the problem solving process in general or to the specific ways in which they go about it in their personal lives. Fifty-eight percent of the individuals attested to using no method in their solving but relying on intuition or strictly ad hoc responses, contingent upon the situational variables and moods prevailing. They believed experience and

self-confidence to be *a priori* conditions of effective problem solving. There is a congruency to the message delivered by the participants. Their greatest concern in problem solving lies in the interpersonal dimension and its intrinsic complications. With almost total accord, they identify communication as the most important and most difficult element in any resolution process. They find the most confoundings variable to be the emotional entanglement within everyday problems and the inherent struggle to gain perspective and remain objective.

Within the cognitive process of problem stages, significant concern was expressed by the interviewees that problem identification was the most difficult part, often convoluted by childhood, emotional, and interpersonal factors. This appears to be often an illusive and overwhelming task for many, one in which they were decisive they would like help.

When asked to articulate their educational needs or suggestions for others', the message was remarkably clear. The demands of everyday problem solving, as expressed by these adults, are such that they are lacking in conviction that the required skills can be taught. They feel people need to learn how to identify their problems, have some simple

steps toward solution which are applicable to emotionally laden dilemmas. They want to learn to effectively express themselves to others and develop acute listening skills with which to hear the problems from the point of view of the people with whom they are involved. The participants described problem solving skills as applied to everyday contexts as ones they were never taught, but rather learned from experience, role models, or social interaction. They were emphatic that problem solving should be taught to young children and that it is a responsibility and opportunity incumbent to the educational system.

The findings of the present study are articulated through the conceptual framework of Holland et al(1986). These mental models are fundamental elements in human cognition. Faced with the novelty of having to verbalize their implicit theories of everyday problem solving, it is evident that the type of triggering conditions described by these authors are not being fully utilized by many people in their processing. The individuals seem to struggle to bring the knowledge, experience, and subjective intuitions together to enhance their metacognitive awareness of such an important body of skills as applied to problem solving. There seems a decided lack of integration of these variables, to the expressed disadvantage of the individuals

involved. The views expressed reiterate Vygotsky's contention that the social context in learning is highly influential and is important to the development of metacognitive skills. Unfortunately, there appears a significant discrepancy between the amount of learning these individuals have had in problem solving and the requirements of the genre of problems reality bombards them with. Although attention has been given to the importance of social modelling for children in the learning context, perhaps it is a necessary reminder to educators that the need continues to exist throughout the life span. Adults are perpetually facing novel situations in their lives and the expressed need exists for assistance in developing increasingly effective coping abilities in problem solving.

Educational Implications

> "Problem solving is a nearly ubiquitous human activity; it is doubtful whether anyone spends an hour of his life without doing at least a little of it."
> Simon (1978,p 272)

As is evident in any sampling of people, there is a wide range of cognitive abilities. These individual differences may be described as propensities rather than capabilities, and as such may be affected by values and expectations. Baron

(1981,p.291) suggests that propensities, "unlike capabilities are to some extent under voluntary control and are therefore more subject to influence through education".

It goes without saying that there is an explosion of research and instructional material on the development of cognitive processes. The past decade has identified problem solving as an important domain for study. The processes involved are deemed a basic life skill essential to productive living. People are evaluated continually by themselves and by others on their ability to be effective at problem solving in individual, intra-group and inter-group contexts. Problem solving has become a clearly established goal of contemporary education. Robert Sternberg (1985) reports that our modern western culture defines problem solving as one of the three streams of intellectual ability.

In an effort to service the educational needs of the adult population, it behooves the researcher to get in touch with how people view their problem solving and what they,in fact, would like assistance with. It is novel to the research in problem solving to ascertain and utilize the substantial body of experience and metacognitive awareness of the adult learner in this way.

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APPENDIX A

INTERVIEW FORMATS FOR PILOT STUDY

FORMAT #1

A. WARM-UP:
Explain procedure & expectations (stressing that the study is on process)
a) participants are to have continuous dialogue
b) experimenter will only intervene to encourage dialogue
c) the necessity of speaking loudly enough and clearly enough to preserve the content on tape

B. PRACTICE SCENARIOS:

1) You are walking through the woods. someone breaks a leg. How do you deal with this?

2) You are meeting a foreign visitor at the airport, but you do not know the person's flight number. How do you handle this?

C. PROBLEMS TO SOLVE:

1) Could you tell me how a problem was handled by you, a friend or relative?

2) What do you consider was effective or ineffective in the handling of the situation?

D. SEMI-STRUCTURED INTERVIEW:

1. How do you usually approach a problem or difficulty?

2. How do you usually proceed once a problem has been identified?

3. Where do you think most people have difficulty in their problem solving processes?

4. Are these difficulties you experience?

5. What do you think most adults would like help with in their problem solving?

6. a) What suggestions would you have for a course or a workshop on problem solving?

APPENDIX A (CONT'D)

INTERVIEW FORMATS FOR PILOT STUDY

FORMAT #2

A. WARM-UP:
Explain procedure & expectations (stressing that the study is on process)

a) participants are to have continuous dialogue
b) experimenter will only intervene to encourage dialogue
c) the necessity of speaking loudly enough and clearly enough to preserve the content on tape
d) be explicit about not trying to please the researcher, and that the more they say the better.

B. PRACTICE SCENARIOS:

1) You are walking through the woods. someone breaks a leg. How do you deal with this?

2) You are meeting a foreign visitor at the airport, but you do not know the person's flight number. How do you handle this?

C. INTERVIEW:

1. Have you given much thought to how people solve problems?

2. What is your understanding of the problem solving process?

3. How do you usually approach a problem or difficulty?

4. Where do you think that people have difficulty with problem solving?

5. Are these difficulties which you experience yourself?

6. What do you think that most people would like help with in their problem solving?

7. What suggestions would you have for a course or workshop on everyday problem solving?

APPENDIX A (CONT'D)

INTERVIEW FORMATS FOR PILOT STUDY

FORMAT #3

A. WARM-UP:
Explain procedure & expectations (stressing that the study is on process)

a) participants are to have continuous dialogue
b) experimenter will only intervene to encourage dialogue
c) the necessity of speaking loudly enough and clearly enough to preserve the content on tape
d) be explicit about not trying to please the researcher, and that the more they say the better.

B. INTERVIEW:

1. Have you given much thought to how people solve problems?

2. What is your understanding of the problem solving process?

3. How do you usually approach a problem or difficulty?

4. Where do you think that people have difficulty with problem solving?

5. Are these difficulties which you experience yourself?

6. What do you think that most people would like help with in their problem solving?

7. What suggestions would you have for a course or workshop on everyday problem solving?

APPENDIX B

CODING GRID FOR PILOT STUDY

PARAMETER	DEFINITION	CODE
Constraints	external factors which influence process	C:
time	effects of time on decisions	C:T
ongoing	continuous factors which need to be dealt with	C:T-on
amount	degree of urgency in situation	C:T-amt
solves problem	self-resolution through passage of time	C:T-sol
problem constraints	elements which determine the significance of problem	C:P
consequences	degree of severity of problem outcome	C:P-con
magnitude	size of problem	C:P-mag
problem ownership	degree of control over problem	C:O
self	full jurisdiction	C:O-s
and others	shared jurisdiction	C:P-o
context/situation	factors in the environment with affect solution	C:C/S
affective variables	emotional or attitudinal orientation	A:
facilitating	emotional or attitudinal elements which enhance	A:F
gaining perspective	emotional distance from problem	A:F-per
confidence	belief in ability	A:F-con
support	encouragement from others	A:F-sup
judgement/common sense	insight into process	A:F-jud
motivation	desire to succeed	A:F-mot
effort expended	energy exerted	A:F-eff
inhibiting	emotional or attitudinal elements which hinder	A:I
confusion	uncertainty about elements	A:I-conf
denial	unwillingness to address problem	A:I-den
stress	a feeling of pressure	A:I-str

APPENDIX B (cont'd) CODING GRID FOR PILOT STUDY

PARAMETER	DEFINITION	CODE
interpersonal variables	necessity of interacting with others	I:
communicating	talking with others	I:C
for personal benefit	seeking help through verbalization	I:C-per
for purposes of agreement	discussion for purposes of resolution	I:C-agr
conciliation	compromise with others	I:Com
intervention	seeking or receiving assistance with process	I:Int
executive control functions	cognitive processes which determine solution path	E:
understanding	being aware of the salient elements	E:U
problem identification	being aware of what the problem actually is	E:U-p
options available	knowing what the alternatives are	E:U-o
formulating a plan	knowing how to attack the problem	E:U-pl
priorizing	establishing relative importance of variables	E:P
clarifying /focusing	disregarding extraneous elements	E:Cl
evaluating complexity	determining degree of depth of problem	E:Comp
systematic approach	employing some form of structure toward solution	E:Sy
expertise	individual components which contribute to success	Ex:
prior knowledge	knowledge base of individual	Ex:Kn
practice / experience	familiarity with generic problem	Ex:Pr
training (practical)	instruction in applied context	Ex:Tr
training in the home	influence of home environment	Ex:Tr-h
professional	instruction within a discipline	Ex:Tr-pro
formal education	instruction in school environment	Ex:Ed

APPENDIX C	PARAMETER	CODE				
Constraints C:	time -ongoing	C:T-on	5			
	time -amount	C:T-amt	5	C:T	(12)	
	time -solution	C:T-sol	2			
	problem- consequences	C:P-con	8	C:P	(16)	
	problem- magnitude	C:P-mag	8			C:57
	ownership -self	C:O-s	7	C:O	(14)	
	ownership -and others	C:O-o	7			
	context/situation	C:C/S	15	C:C/S	(15)	
affective variables		A:	1			
	facilitating	A:F	1			
	gaining perspective	A:F-per	11			
	confidence	A:F-con	4	A:F	(28)	
	support	A:F-sup	3			
	judgement/common sense	A:F-jud	2			
	motivation	A:F-mot	4			A:60
	effort expended	A:F-eff	2			
	inhibiting	A:I	17			
	confusion	A:I-conf	3	A:I	(32)	
	denial	A:I-den	6			
	stress	A:I-str	6			
interpersonal variables		I:	3	I:	(3)	
	communicating	I:C	7			
	for personal benefit	I:C-per	5	I:C	(20)	I:33
	for purposes of agreement	I:C-agr	8			
	intervention	I:Int	10	Int:	(10)	
executive control functions B:	understanding	B:U	4			
	problem identification	B:U-p	12	B:U	(28)	
	options available	B:U-o	6			
	formulating a plan	B:U-pl	6			B:75
	priorizing	B:P	22	B:P	(22)	
	clarifying /focusing	B:Cl	8	B:P	(8)	
	evaluating complexity	B:Comp	8	B:Cl	(8)	
	systematic approach	B:Sy	9	B:Sy	(9)	
expertise Ex:	prior knowledge	Ex:Kn	2	Ex:Kn	(2)	
	practice / experience	Ex:Pr	16	Ex:Pr	(16)	
	training (practical)	Ex:Tr	11			Ex:48
	training in the home	Ex:Tr-h	5	Ex:Tr	(19)	
	professional	Ex:Tr-p	3			
	formal education	Ex:Ed	11	Ex:ed	(11)	

TOTAL NUMBER OF CODED RESPONSES: 273

APPENDIX D

LETTER OF PERMISSION

I, the undersigned, agree to participate in the research study on EVERYDAY PROBLEM SOLVING conducted by Margaret Herbert, from the University of Ottawa Faculty of Education.

I understand that my participation is entirely in confidence, that my name will not appear in the report. nor could my comments be traced back to me.

_____

DATE: _____

I, the undersigned, agree to allow anonymous exerts of my comments to be used in text by the researcher, Margaret Herbert.

_____

DATE: _____

APPENDIX E

PARTICIPANT INFORMATION

NAME: SEX: M F

ADDRESS:

PHONE:

AGE: A. (25-30) B. (31-35) C. (36-40) D. (41-45)
E. (46-50) F. (51-55) G. (56-60)

EDUCATION:

PROFESSION:

1. Have you taken any courses, or workshops in problem solving?

2. Have you read any books on problem solving?

APPENDIX F SAMPLE PROTOCOL

PROTOCOL TWO /SUBJECTS THREE AND FOUR

E	I'm interested to know if you have given much thought to how people solve problems ?	
S4	Not really, sometimes I wonder how they do it, but I don't think of it, not something I think of too much.	
S3	I sometimes think, not so much how other people solve problems, as how better I can solve a problem. Sometimes I think that I don't get to the point on a problem and recently when I was at the school on a career day, I said that engineers were problem solvers, I was thinking about could I solve, how would I go about solving some of the problems, maybe in my mind, how would I do it. I think about it that way sometimes.	
E	What is your understanding of the problem solving process?	
S4	You are presented with a problem and you have to solve it, really, when I do it, I try to keep it simple,	S: simplify
	---	
	figure out what's wrong, sit down and	S: p ident
	---	
	try to analyse what different types of solutions can do it and then go through the different , or what I've come up with that might be possible solutions and pick the best one, sort of run through different scenarios and try and figure out exactly which one I can use,	S: explore alternatives
	---	
	which one will give me the best result. It may not be the way other people would like to see the problem solved but it gives me the best result. thats what I'll use.	H: indiv diff
	---	
S3	I think I approach problems two different ways,I was thinking while you were saying that, thats how I approach problems around the house, like the kitchen's too small, how can I make it bigger,but then when I deal	C: relative
	---	
	with people, a lot of times when you are at home, its kid related problems, neighbour problems, friend problems,or people phone you up with a problem with their kid for help, what should I do? I think those are slightly different types of problems, you don't deal with them the same way as getting from Greenbank	B: pp > diff

	to here as quickly as possible, you sort of think of them as, to me anyway sometimes what you see on the surface isn't the real problem sometimes with people problems, where as its black and white sometimes with a problem, there's not enough light in a room and how can I make it brighter, put a sky light in there's different levels of problem solving there,	
	---	
	different solutions you could do, but with people sometimes I think that this person is acting rude to you, say, but maybe the problem isn't that they are a rude person	Af: confounding
	---	
	its other problems going on in that persons life that makes this just a manifestation. I think that people problems are not the same at all. And how you solve them is very different.	B: pp > diff
	---	
B	Do you find that?	

S4	Yes, I don't disagree with that, I tend to , well if I'm dealing with a person problem, I tend to sit back and listen a little more and see what's going on and either I shut up and say nothing because its not my place to say anything, or if I'm asked,	B: listen
	---	
	I give my two cents, whether its what they want to hear or they don't want to hear. If I've been asked I'll let them know what my opinion is.	Con: diff
	---	
S3	Sometimes don't you find, I know this with my friends,that when they have got a problem, they phone and say oh I've got this terrible problem, and they start talking about it and talking about it they solve the problem just because they needed to get it off their chest. A lot of people problem,get..just by talking if you listen and maybe now and again inject some questions to make them think about what their problems are	Con: MB

S4	I think being a good listener can help, a lot of the other person solve his problems sometimes when you have a problem, just talking about it with someone who is willing to listen, I find that I answer my own question or I will solve it just by being able to talk about it with somebody because I can verbalize it instead of thinking about it, I find that the verbalization brings out the answer a lot of times, because its there, usually it's there, its sitting in the jungle of different thoughts that are running around your head, so that will help too	Con: listening MB

S3 I was really thinking about this the other day because I was doing a bit of a people problem, thats kind of a gut thing thats something you learn over the years, when you are a kid dealing with people problems is something you can't do,often you learn that,from social interaction, the older you get the better you get at it often, if you learn from what you see and what you do. B: previous experience

---

S4 Yea, I agree with that but at the same point in time I've noticed that the way we solve problems is different than the way other cultures solve problems, its just the way, I was talking to my dad the other day about it too, we sort of agreed that our society is so generated on education where others are not necessarily that generated. B: indiv diff

---

The education has made us good problem solvers whether or not we think we are, generally we are because our educational background or are taught from an early age when we are going to school and school is a big problem for most of us, its a big problem a big puzzle so you learn, it just becomes intrinsic that we become good problem solvers and the further, the better educated we get, the easier it becomes to solve a problem. B: educ enhances

---

S3 Or maybe you're more analytical, like I have a lot of friends who are Chinese, for example, my best friend is of Chinese decent and its very much more, in their culture its more analytical and there's less of the social, how to describe it, when she has a problem, its very hard for her to handle people problems and social things because its something that was never important like, but give her a math problem or a computer problem, she's just so excited, but if its a child problem, feelings and social things are not the least important to her and her family, but thats more the way she was raised, she's much more analytical I find. B: indiv diff

---

S4 For us, I guess, we're more generalists because we are, I guess Anglo-Saxon or whatever you want to call it, for lack of a better term, we're more people oriented, its important for us to develop in the culture and develop as a group to be interactive, within the family, and outside the family and so I think that is one of the reasons we're are able to come up with solutions quite easily. B: personal philosophy

---

I've never sat down and figured out a lot of why I solve problems, I just sort of let it happen. I don't know if that's usual or if thats unusual but
I find it will come, it might take a day it mights take a week but depending on the complexity but it will come, it will be there. H: p get solved

---

B What do you think that most people have difficulty with in their problem solving?

S3 I think, identifying the problem, first you have to know what the problem is, sometimes I think that people can't really see the problem for all the periphery, and all the other stuff that clouds it, then sorting it out, I've noticed that often people don't know what's the problem,there's a lot of symptoms, especially with people problems, there are symptoms that have nothing, if you know what I mean B: p indent diff

---

B Yes I do

S3 So sometimes you have to find out what the problem is, which is true of anything, sometimes around the house when someone is bugging me, I ask what the problem is and every time you try to break down the problem into little problems and once you have a bunch of little problem you find little solutions which solve the big problem, it seems to work sometimes. I think that sometimes S: p breakdown

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the problem feels overwhelming for some people, If I'm talking to some of my friends, there's a problem and they don't really know what the problem is, they just don't feel right or there's a problem in the house, the husband is not talking to them, the kids are acting up, what is the problem, sometimes there isn't a problem, its just a mood thing and they think there must be some problem, maybe my husband doesn't love me anymore, its often just a mood thing that they are going through or something like that, sometimes there isn't a problem at all.Sometimes people look for problems and there is no problem, it that makes any sense.. Af: p indent diff

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B It does

S4 With my job,my job is a problem, its a job of problem solving and I do a lot of research and a lot of letter writing, I have to talk to a lot of people during the day, on the phone, so sometimes you get, or develop the knack of being able to read through what other people are saying to you and you know,

	I get to the point where I can tune them out to let them talk but I know what they are saying anyway so I know where to go from not paying attention to them and sometimes it backfires, but a lot of times it doesn't. Somewhere, someplace somebody will say something ,they may be saying oh this is the problem, but when you listen to them and you hear what's going on you know thats not the problem. For me	B: listening
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	a big key, is to talk about it, if you talk about it then even if you are talking about something that really isn't the problem, the problem will come out, and somehow you can solve it. I think if communication breaks down then thats the end, you won't be able to solve, if its interpersonal then you have to be able to communicate, if you can't communicate you're not going to solve anything. If it is a personal problem you want to deal within yourself then you have sort of figure out how you're going to do that by yourself and in a group the best thing is to communicate, whether its in writing or talking but I think communication is a big aspect of trying to solve problems.	Com: NB

B	Do you feel thats the thing people have trouble with...	

S4	I think a lot of people have trouble communicating, a lot of people don't feel comfortable communicating in a group of people they know, but you get them alone with people they don't know, they'll communicate	Com: diff
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S3	They'll spill their guts	

S4	Yea, basically I think its that old adage, I may never see this person again,and I don't have to worry about embarrassing myself..	Com: 3rd party
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S3	I thought that was a British thing..	

S4	No.Yea, sometimes it is easier to pour it out on a stranger because they are so disconnected to everything thats going on and because they are disconnected, you can get an honest opinion from them.. its a third party, its good, I've done it, I don't know many people who haven't done it.	B: 3rd party
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S3	No.or call a dry cleaner, this is like a small town, you know everybody, it will come back..	

S4 I find being single, when I have a problem I go to my close friends, I can communicate with them well, but if I don't communicate or they don't communicate, and there's a problem it doesn't get solved. Com: BB

My family is here in Ottawa and its fairly close, if I have problems I've always got my family I can go to and talk to but when they give you their answers its always support and that may not be the best answer you need from them. They are there to support you and thats what a family is suppose B: support

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to do. Because they are family they may not want to tell you the truth, they want to support you and thats happened. Your friends will give you a different answer, and you go to a third part and sometimes that third part is the best answer and they will give you the solution, only because they don't care B: 3rd party

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S3 They don't care what they say to you...

S4 That may be cold and it may be cruel but its the truth, its the answer, because you are looking for the answer it doesn't mean that it has to be the answer that you want B: truth

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S3 I think too, like you were saying about communication, verbal communication and unresolved problems, sometimes unresolved problems, they sit unresolved and if you are the type ,like I am and a lot of people are, that if you have problems you are keeping that problem inside even if its not really a real problem, you are keeping something inside of you and maybe its making you grouchy or rude or depressed or weepy or whatever, because its a symptom of what's inside that should really come out and get on with your life, and sometimes other people see that and that causes further problems because you are interacting with these people on a level that is maybe a little out of character or maybe its becoming more your character because you have these unresolved issues inside that creates more problems whereas if you get these things resolved or at least just speak your mind and say well, I'm feel a little weepy today because instead of just acting all weepy, sometimes if you have those unresolved problems.... Af: conf

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S4 If its close usually body language will tell me,like if I know the person, they don't have to say anything, you read the

body language type of thing, that will tell you H: com HB
something's going on and you can start
communicating with them that way. I always will
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respect someone's privacy too, if they don't want to talk
about it they don't have to talk about it cause that could cause Com: insight
another problem you don't need to have there but there's so much
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going on in society now that in a certain respect there's times
when you don't want to get involved anymore there's just too much H: take approp
going on..

S3 There's too much in the paper, everything is a problem..

S4 It almost desensitizes, sort of putting, like those jurors
had to watch that Rodney King tape 150 times, you have got to
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become desensitized to watching that guy get beat up after the
thirtieth or fortieth time well OK, here he goes getting hit
again, it doesn't do anything to you anymore, there's just so much Af: take approp
going on outside and you're getting buffeted with so much
information and everything that just happens on a day to day
basis, just
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keeping your sanity sometimes just takes a lot of energy.
With fencing, and everything I do, I see a sports psychologist,
and we are trying to get things going on the right track and
one of the things that we've found and we've watched in
the attitudes in the kids who are fencing, they've got
no pressure on them to do very much and there's really no,
like on the kids 15-20 that are maybe just before university,
in their attitude they are really carefree,when you look at
some of the adults, myself included, and you watch what's going Af: takes effort
on and you try to disenfranchise yourself
from the stress of work,and everything else, of paying the bills,
and just making sure you've got food on the table and everything
else, thats a big problem and to
try to set it aside and to concentrate on one thing, like in a
fencing tournament, it takes a lot of energy, and if you are
constantly doing that, there's got to be a
certain amount of energy drain
that goes on just in the normal course of the day, that sometimes
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you don't want to have anything to do with other people's
problems, because you are so
tired of solving the daily problem,
sitting at home watching TV is enough,I know I felt like that

after days after work when all I've wanted to do to go home and
turn on the bube tube, and — Af: emot distance
not even want to talk to my girlfriend,
or not want to talk to my roommate, not want to talk to anybody,
just sit down and watch TV because I've had it. The day has taken
so much out of me that I don't want to do anything, and being able
to have that quiet time for myself, to let it sort of hang out so
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to speak, I'm ready for the next day, and I find being involved
in a sport, in another sense, that its another thing that I can — S: method
get problems out or I can work them out through physical exertion
and I can go home and sleep well and I'm really ready for the next
day.

I've been raised, in our family, if you have a problem
you discuss it, we're big on communication, we're also big on
yelling and screaming at each other and ten minutes after its over
with and you go on as if nothing has ever happened. — Com: HB
It works, for us it works, that doesn't mean that its going to
work for everybody else, I thing you
have to find what works for you and use it.

S3 You were mentioned about the sport outlet, its really easy to
become insulated in your own little world, four walls and the kids
or whatever,that you see very
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small things that are real none issues as major problems,
which is a real danger, you become so into yourself, and
into that little world that you don't see the big picture,
this is not a problem, now smarten up, get out of your chair and
get on with your life, you've got it good when so much else is
happening out there. A lot of times
its not a problem, its just one's own..often my girl friend will
call and say, I've got a problem, I've got a problem, she's phoned
everyday at work and I say, your problem is that you
need a kick in the but, you have a great hubby, a fabulous job,
the world's greatest nanny, pots of money, a great house,
what's your problem? Oh, maybe I don't have a problem! I'd been
hearing this for weeks, I thought I'd better say it, because I
couldn't figure out what the problem was and I had
given up listening anymore, and she said — B: gain persp
"Right, thats a good point" and that was the end of that.
Sometimes we all do that, its very easy to fall and when you do
turn on the TV sometimes and you do see some horror stories from
far off lands, they are always so much worse than your problems. I
always try to think well maybe mine are none issues.I think that
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communication thing is really good.
In my family, with my parents,
there was never a problem solved since I was born, there they Com: MB
are,there still there, we just
don't talk to them, they don't talk to us and they
don't talk to their kids about problems and
their kids don't talk to them about problems.

S4 If people listen,friends would come over, and if we have a
disagreement at the house, we'd yell and scream at each other, and
people ...the world's ending, type of thing, and then five minutes
later, ..you'd blow off the steam or you'd get it over with and
then its over with and that is
sometimes that's all you need is that pressure release valve goes
and with your family you know that they are going to love you
afterwards anyways, so if you've got a good family,
you'll say things to your family that you won't say to your
friends or I wouldn't say to my girlfriend because I Com: support
know it would damage the relationship but I can go home and yell
and scream at my Mom and Dad, or my brothers and sisters, and know
that whatever happens they're still going to be there. The saying
is true 'bloods thicker than water', and I have that pressure
release valve there and it helps. There's things I can talk to my
family that I can't talk to anybody, or say to anybody else, I
know thats there so if you don't have that it could be hard on
other people. I would think I'm luck in that sense.

R So you feel thats not an avenue thats open to ...

S4 Some people, I don't think thats an avenue thats open to some
people depending on the family structure that they have. Having a
family outlet is important to solving the problems, a family is
sort of a microcosm of what goes on in society but at the same
time its very much different. There is a lot of segmented families
out there in society now, and thats got to be Af: support
confusing and hard on kids and other people. two Moms and two Dads
because of divorce. I'm luck, it was a stable family.
Like everybody else, we had our problems but it was stable,
it was good, didn't lack for anything, but I
didn't get everything I wanted either, so I learned
from that, thats a way to solve problems in and of itself. If I
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wanted something and my parents weren't going to give it to me,
how was I going to get it.Its a minor thing, but to a kid, it can
be a big thing so that if I wanted a new bike, well you've got an
old one, make it do. But its not good enough.. That's a problem H: take approp
so, what did you do, so I'd go cut grass and earn the money to do
it.That was easy, it wasn't a big thing, it was a big thing back
then. When I think about it now its really minor, but it taught
independence and at the same time the support was always there, I
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think thats a key thing to be able to be successful and thats a problem in itself, trying to be successful, living up to what you think everybody elses's expectations are of you, that can be a huge problem to some people — B: take approp

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S3 Touching on that bicycle thing, I think it was really good because we've had these students through our house and one of the things we've really noticed is that the mom and dad have solved all the kid's problems.
When you solve somebody elses problems continually all the time, I really believe that it takes a certain amount of power out of their own lives. Solving your own problems,
we don't have a lot of control in a lot of ways over our own lives, we pay our taxes, there are certain things you just can't do and at the end of the day you have to put thing on the table, and one of the things
when you are growing up is usually your parents — B: take approp
have a lot of say over what you are up to but solving certain problems like that gives you some control, something to have a little control and power over and if you take all that away from a person its like this , you can play and be happy and watch a video and drive that new bike dad bought you but its just handed to you and its like something missing,I'm not sure if its power or control or what, some type of taking charge over your own life is gone and I think thats really a dangerous thing because you need that even when you are little and its some part of you life you do take that.Even a two year old needs some type of control over their own life too and if that means for example having a problem and having to deal with it yourself, like a kid in the school yard

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punches you, now is mommy going to run over to the school and say, don't punch my kid again or I'll punch you but mothers do that, but I don't think thats OK because children have to have that control over their lives and also as
you learn those problem solving things as you grow up
whether its a two year old trying to figure out...well my two year old figured out you just get a chair and open the cupboard
and climb up, there's a problem solving thing, — B: childhood
she's learned how to solve this problem , but I
think that as you grow up and you practice ways of problem solving it makes you a better adult, it
teaches you initiative because you have to think ..
I've got a problem I've got to solve it,if I'm going to go to school tomorrow and this kid is going to punch me again or
I really do want those roller blades and I'm going to figure out a way of getting them so as an adult you don't
sit there waiting for people to solve your problems you are going to take the initiative

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S4 Getting away with things you weren't supposed to helps you solve problems. I thought I got away with a lot of things I was doing as a teenager but my parents knew about it but in the long run it wasn't hurting anything so they let me get away with it, B: previous exp
being conniving, its a bad word but, being conniving and trying to sneak around and try to do things is problem solving because you are trying to out-wit your parents. My dad was an intelligence
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officer in the armed forces and a _____ Church Minister and he can think of everything well ahead of anybody else, when you are trying to have an argument with him, I've learned through experience that if you are going to discuss you make sure you have Com: MB
everything well prepared before you go talk to him because he'll twist you up and have you turned around so badly you won't know where you were coming from before, but when we wanted to get away with something you had to prepare really well, if you want to stay out, sneak, do something you weren't supposed to do you had to prepare for it so you had to solve that problem, we thought we did but they knew what was going on anyway. Being a teenager...

S3 Taking control...

S4 Taking control but in your own mind because you think you are getting away with it regardless, as a 16 year old you don't think B: take approp
your parents know, you've gotten away with it , its not until you are 30 years old and you are talking about it ...we knew, so its 15 years down the road that you find out ..

S3 I think thats good that you can talk to your parents about problems because in our house it was just never something that you did and it was always something very funny too because if you did have a problem and you solved it in a different way you went to a girl friend or a teacher or someone and you told your problem and they heard about it ...Why didn't you come to us, we're your parents, but I think that problem too like your going to open that up like you've got to communicate with the kids, like my parents would never bring a problem up to us, I remember when I was about 8 or 9 the word economize...I was so frightened, we were 'economizing' it was just so scary, I thought gosh, we've got no food and no money but what it meant was that my mom wanted to get a new house or something, there was a certain amount of cut backing going on, but they never discussed it with us , it was none of our business and here was a parent, it was none of our business to know what 'economize' meant or why or if there were any other problems going on, they never discussed anything with us Com: support

and then we turned around and went to a friend or a teacher or a neighbour's mom ..shock..why wouldn't we come to the parents because they were our parents, I've never felt comfortable with that to this day because I think that as an adult, kids can take a lot, kids are a lot more adaptable that adults usually and if I'm having a bad day or having a problem, I don't think that I shouldn't talk to my son about it ...we're having a real problem now like there's a strike on at work or something,

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we just can't take that holiday this year or talking to him about the problems so its not scary,mysterious thing because children are really good at understanding and then they will come to you with their problems. Com: MB

I What do you think most people would like help with in their problem solving?

S4 That depends on what the problem is... C: relative

I Does it?

S4 Yea, I think so. Depends on you too and I guess the relationship you have with other people as to whether or not they trust you as a confidant to be able to give you the answer or tell them the problem, I think what your relationship is with that person is going to determine what type of problem you are told about, whether its big or small. B: trust

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S3 I think too there are a lot of problems you can't solve , there really are. There are somethings you can't even help with, nobody can help with, like your back problem, nobody can, you need to get it off your chest, you're feeling down maybe but nobody can do anything other than do grocery shopping, make sure you are comfortable but its not going to solve the problem, but its comforting to get it off your chest. There are other problems that you can actually solve, maybe a parent who really can't take that kid another time because she's already hit her once this morning and she's going to hit her again, she's just feeling so bad for whatever reason and she's feeling so bad inside that you can say B: some solvable

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"why don't I just take the child for lunch" you can solve the problem , remove the child, that type of problem but sometimes all it is is listening.. Com: listening

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I Do you think that people want help in the processes they use?

S4 Sometimes...

S3 the listening and talking, maybe they have gone through this
in their brain for weeks or days or whatever and have a big
headache trying to solve the problem, and they really need to do
it verbally, they've been thinking about it for a long time and
now they really need to get it off their chest, also — Com: NB
little bits of feedback so
they can see the path they took was reasonably logical,
somebody more objective,because obviously you are not necessarily
objective yourself on a personal problem so that they can see
the path they took and their problem solving was OK and
then almost like they reached a couple of tentative solutions they
have been thinking about and sort of getting
some positive feedback on that,

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a feeling that this was OK, that they have done OK,
not self-esteem, but giving them, confidence, that maybe that
course of action really is OK, maybe they are going to tell their — Af: self-c
husband to smarten up or go live with him mother, I think thats
part of it too, giving them confidence

S4 I've had the situation where close friends or even family
have handed problems to you because they are
so fed up that they are giving the problem to you
for you to solve and you go ahead and you deal with it,
you solve, I can't handle this anymore,
what's going on..solve it for me, and that sometimes is worse
than trying to verbalize or — H: take approp
help the person solve his problem, is
having a problem that you didn't want to have..to have anything to
do with and having it solved, and I've had that happen a couple of

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times, basically who I work for, I've had people with tax problems
because I work for _____, and they figure well you can
solve them, any problem with _____, well I can to an
extent,but thats not my job to do that. I could get myself in — Af: pp > diff
trouble. Nine times out of ten because they are a close friend, or
because they are family or whatever reason you'll capitulate and
do it to keep the harmony going and go and fix up whatever needs
to be fixed up and find out whatever has to be found out, use a

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contact, sometimes thats very uncomfortable and that creates
tension and could create a problem that wasn't there before. I — Af: conf
think a lot of times relationships have to , you have to let them
happen and its a part of being..

B What suggestions would you have for a course or workshop in problem solving for adults on everyday problem ?

S4 Communicating, learn how to communicate, don't be
afraid to communicate, if you can't communicate — Af: com diff

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even to yourself or be
honest about stuff thats going on you are going to have Com: trust
a hard time solving problems and I would think that
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unless you can communicate and communicate well you are
not going to solve your problems,
there's a real fine line between communicating properly and
communicating improperly and if you
can't focus on the problem to Com: IB
the extent to say..well this is what I think it is , it may not,
like you were saying somebody's giving you all these little
problems and there's a big problem in the background they
haven't figured out, but being able to communicate
all the little problems that big problem will come to the
forefront through the communication, unless they can do that
they are never going to solve the problem.

S3 I was thinking too..to identify problems worth solving,
a lot of problems you have no control over,
you cannot solve, there not, you only have to turn the B: signif of p
TV on or read the newspaper and I think first of all is to
realize that you can't solve everything and ...

S4 Are those problems..to me thats just something thats going
on, its interesting but it has not real effect on me to an extent,
I can't help it what's going on in Ethiopia. I can do my part to
give canned goods and every thing else, that helps but thats not B: some solvable
solving the problem because I'm so far away and in those
countries the problems are so endemic that these people want to
wipe themselves out anyway, do I want to concern myself with this
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S3 But a lot of people maybe do, people who just carry that,
they want to solve the world problems, they want to solve all B: some solvable
their neighbours problems,or their friends problems and I think
you have to learn that you can't solve everybody's problems all
the time because to
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identify problems that are worth solving...first of all some
things aren't problems, somethings B: signif of p
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that are problems that you really can't solve or you
shouldn't be solving, like you said about people coming to you, B: some solvable
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I tend to be the other way, I see people with problems I
jump in whether they like it or not, they've got problems and
I've got to solve it, I
spend days trying to resolve, my poor cleaning lady, she want to
bring her two nineteen year old sons to Canada and she can't
afford it, its a problem and I can solve it somehow so I've been
on the phone for days trying to learn all about immigration and

church groups that could give her a hand, and stuff and its going to come down to that I can't solve this problem, what I can do is give her support,give her furniture, make sure she's comfortable and make sure she has work so she can pay for the kids to come. I think part of it is to realize that you can't solve all the problems, that
some problems aren't worth it, they really aren't problems and then to tackle them the ones that are worth solving,
the ones you have some control over, somethings you don't have control over, living in Canada. I think to realize that you can't solve everything and there will be problems in your life that won't be resolved properly, and
not to have that guilt trip that that wasn't resolved, that even though you can't resolve it you can't let it fester inside..
its like a relative that you didn't get along with and they

H: take approp

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drop dead,in a way you are never going to resolve that relationship, the person is dead, you can't even deal with it..
get on with your life and not let that upset you. If I
was in a bad mood and my father dropped dead and I feel I caused his heart attack, you read about people who carry that to their grave as baggage and I think thats also that maybe
we feel that we have to resolve all the problems but maybe
some of it is that we can just forget about it

B: some solvable

S4 Sort of like opening and closing a door, I only make so much money a year and I can't give to every charity who comes to my door, and I can't...

S3 you don't feel badly anymore...

S4 no and I can't do it all, if I could I would but I can't and if by saying I can't why should I feel bad thats just the reality of life I know in my heart that if I could I would so...I don't
want to create a problem where there isn't a problems ..so if someone asks for something there is nothing wrong with saying no and I shouldn't feel bad for saying no..if that doesn't create a problems then find it doesn't create a problems
I know there are people out there who want to be
involved in absolutely everything and they want to run
all the fundraising drives for 40,000 charities

B: some solvable

S3 They can't say no

S4 Yea, you've got to say no...they have a real problem. to me thats a major problem

H: take approp

S3 often at neglect of other thing like family

S4 I find that I have to set aside time for myself even if that means turning on the TV or curling up with a good book for me thats ...for myself I need quality time. Even if I'm reading a book that doesn't mean that my brain has gone dead I still have a fairly active thought process, sometimes that helps solve problems that I have — H: takes time

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S3 what you are maybe making is time to solve that problem, a lot of people keep so busy that you need to make time to solve problems and there's times when you shouldn't solve problems like before you fall asleep, you know what happens when you are up all night, if you're trying go to sleep with this problem,and you've got one problem at 3 o'clock in the morning there's usually half a dozen that come up, like to try and get that across too, I know people who say, when I'm in bed I'll try and sort it out, thats a poor time to start to try and solve a problem — H: takes time

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S4 I find sleep very good for solving problems ..

S3 Now that I'm older I found that thats become a problem because it is when I pick up problems , its when I taught myself to pick up problems when I went to sleep, but its not good on some of the emotional problems like if you are having a problem with your husband or whatever.. its not like lying on your income tax, there are things that have feelings ..it doesn't mix with sleep — Af: conf

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S4 I use it to solve...and I like it. I can control it and sort of I call it a special place where I go when I sleep and I'll solve the problem and I'll remember it , I've taught myself to remember what the solution is, sort of put it on video and sort of play it back when I wake up.. I've never found that its bothered me or cost me any sleep or anything like that — S: method

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S3 You don't wake up at three AM

S4 I think anybody can train themselves to do that...its just a matter of doing, its like anything you have go to practice to be able to ride a bike, you have to take lessons to learn how to ski if you are willing to learn something and so it, you will be able — S: previous exp

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to do it. I've never been held back when I wanted to try something it was up to me to decide I couldn't do it..if I wanted to try I was always allowed to try , if I failed OK you failed get up off your behind and try it again until you succeed, we were never, with my parents, if we started something we weren't allowed to quit half way through, the deal we had with any sport or anything if you are taking it up you take it until the end of the season

and at the end of that season if you don't want to do it you don't have to do it again next season but while you are in it you put 110% in it because if you don't you are not going to sit down and sometimes it was tough but it was fair thats the way we were always taught, you've made a committment, if you don't like it,tough luck, you have made a committment, we're spending that money on you and you do it and thats always... when I spend I make sure when I spend it's something I'm going to want to, and if I do spend money on something I don't like and it lasts for whatever, I don't stop because I've made a committment to go and do it even if its a hard pill to swallow — H: takes effort

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S3 back to that question..you were saying in your family about shouting and stuff, for most people its not necessarily the greatest way to discuss a problem, if you have a problem and you could talk to the person or talk to somebody about the problem or maybe even talk to the problem, maybe you feel there's a problem in the house, there's socks on the floor and you needed to discuss that and maybe get it out but it sort of has to be done with a certain approach, a rational, calm logical approach, there are steps to go through, you don't just screech "I don't want to see your socks on the floor, if I see them again I'll throw your soup at you" and thats not OK You have got to approach the problem and if it does start to get out of hand, take a break because sometimes problems are very emotional, specially interpersonal skills, I think some people really need to learn how to discuss a problem, help them carefully manage that discussion and carefully, especially if its a person who does get emotional or irrational and there's plenty of people like that especially maybe by your bringing up the problem its wounded an ego or it comes right to the heart you have to present the problem the way they don't get on the defensive and so that you are able to communicate, you want to keep the communication open, if they go on the defensive and clam up,and become emotional, irrational, hysterical,this is not going to get solved, you are going to have another problem because someone is going to say something they wish they hadn't said and then its compounded. I think a lot of problem solving, people have to learn how to communicate, discuss and manage that discussion, and not be offensive, you know there are certain types of people who make you feel like dirt or something,they've got this problem and they turn it on you, now what do you do with something like that, — Com: help

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most of us throw up our hands in horror and turn away and feel guilty for a day or two or feel depressed or something and you think ..I should talk to that person and stop this, for three days and what you need to do ...its a certain amount, not only are you learning to manage the problem but if you do learn it, it — Af: conf

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gives you the self-confidence,and a directness, you know how to handle it before it happens, when it happens or when certain types of problems come up you know how to carefully manage the situation, not manipulatively but to say...the neighbour is building a fence on your property, now what are you going to do, thats my property, he believes its his property, it would be really easy to have a real fight here and there is no resolution to ...carefully go up to that person without offending him and keeping communication open and saying I think maybe 'we', don't say 'you', don't point, I think maybe we might have something to discuss here why don't we get a survey because I think maybe this fence is a little bit on my property but in such a way..all the time ..the problems we've been talking about are interpersonal problems, they are the worst problems ...its really easy to reroute traffic or put a stop light up but its really, Com: help really hard to handle neighbour problems . family problems, girlfriend,boyfriend, husband, children problems . Those are the real problems we have to live with everyday, a lot of them don't have real resolutions...I was thinking that learning basically like you said communication, learning to communicate logically, rationally, not putting other people on the defensive and actually maybe letting them help solve their problem.Its a lot like the worst job on the planet, being a teacher, there's this kid in the class and this kid is a real pain and won't do his work and jumping on the desks, you have to discuss this with the parent, both of them and they think the world of their child, what are you going to say. There going to say..teacher its your problem, you must be a bad teacher, I'm going to have you fired. Now you have to somehow discuss with these parents, maybe its their career, maybe the fact that they work 'till midnight every night and they've had a ninety year old man who's blind to look after there kids..we all have those problems everyday but we have to learn...

S4 Our educational system and our educational levels do it,I know from watching and listening to people who are totally different to the way I would do something..and its just watching these guys walk over broken glass sometimes to get to the same thing where..hey build bridge. Making it through high school and B: educ signif
.. making it through college or university makes you to an extent analytical and everything else and you are socializing with people who are generally at the same level as you are or maybe they are at a higher level, but it

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exposes you to different people who are taking different courses and I went through business administration and I bumped into engineers and architects and everything and you are talking with people...here again it gets back to tha

communication 'cause an engineer is going to see
something different than I see it..someone who is going to look at
it through my eyes as an administrator and
learn from other people...and other people who
drop out at high school or even before high school, they're sort
of shooting themselves in the foot. the only people they are
going to hang around with are people who have dropped out and
the level of whatever they are doing is going to hover at a
certain level, B; educ enhances
they don't learn or get values instilled on them that the
rest of society want, they don't learn how to..it doesn't even
mean you have to be super successful and making 5 or 6 hundred
thousand dollars, you
learn a certain amount of self-esteem and a certain
amount of self-confidence being able to do it. Just by
being able to pass college or university is a step if
people who are uneducated loose that step, they're still
learning to walk, while we're running, its a loosing battle and
I think thats why there are so many problems
going on in this country now because there are so many people who
are opting and we are becoming like a lot of other countries where
there's a rich and there's a poor, there's no middle ground
anymore.

S3 If you are on welfare you have a very
different set of problems than if your cleaning lady didn't C: relative
show up this morning

Thank you for your views!