Effect of Type of Instruction on Solution

of Psychological Self-Help Problems

by

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Abstract

Information in self-help books is typically presented in one of
three formats: didactic information, examples, or practice
problems. The present study examined the effect of information
format on the solution of personal problems. Four test problems
were given to 200 subjects recruited from Introductory
Psychology classes. Each of ten groups received a different
type of information immediately prior to solving each test
problem. Three of the groups received information in Didactic
(D), Example (E) and Practice Problem (P) formats, respectively,
while a control group received no information (NI). Six other
groups (DD, DE, DP, EE, EP, and PP) received combinations of two
sets of information prior to each test problem. The letters
that designate each of these groups represent the formats in
which the two sets of information were presented. A Ryan-Einot-
Gabriel-Welsch multiple range analysis indicated that groups EE,
DP, EP and DE obtained significantly higher scores than NI.
Examples were effective as instructional material when presented
with other information and when presented in pairs. Practice
problems were effective when combined with other types of
information but not when presented with other practice problems.
The results were discussed with reference to production theory.

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Introduction

Bibliotherapy is the use of literary materials in the treatment of personal or social problems (Glasgow & Rosen, 1978). Within the field of bibliotherapy there are three distinct areas; the traditional area, the behavioral area and the commercial self-help area.

The traditional area generally involves reading and discussion of works of fiction directed by a librarian, psychiatrist or psychologist in an institutional or educational setting (Rubin, 1978). There exists a body of theoretical work on traditional bibliotherapy, although the number of controlled studies is small. There is little empirical support for the effectiveness of traditional bibliotherapy even though applied programs are in place in hospitals and correctional institutions (see Rubin, 1978; Schrank, 1982, for reviews).

The behavioral area includes bibliotherapeutic materials which use modelling, aversive conditioning, desensitization, or operant techniques (Glasgow & Rosen, 1978). Behavioral bibliotherapy programs are usually administered by a psychologist, psychiatrist or medical doctor. The research literature in this area is more extensive than in the traditional or self-help areas and provides support for the therapeutic value of written material (e.g., Tripet Dodge, Glasgow & O'Neill, 1982;

see Glasgow & Rosen, 1978; Scogin, Bynum, Stephens & Calhoon, 1990, for reviews). However, the results from this area of research do not support many of the claims made for bibliotherapy by traditional theorists. For example, theorists in the traditional area regard a structured discussion of written work essential for a successful outcome (Baruth & Phillips, 1976; Olsen, 1975) whereas behavioral bibliotherapy programs have been shown to be effective without such discussion (e.g., Tripet Dodge et al., 1982). Writers in the traditional area also consider imaginative fiction to be most effective in producing behavioral change (Munson, 1986) while research in the behavioral area has shown that successful outcomes are obtained with non-fictional sets of instructions (e.g.,Libman et al., 1984).

The third area, commercial self-help bibliotherapy, has not been extensively researched (Stevens & Pfost, 1982). This area is typified by low-priced, commercially produced self-help books, but would also include pamphlets, audiotapes, videotapes, and magazine articles. For the purposes of the present discussion, we will concern ourselves with commercial self-help books, since they are the most widely used type of self-help bibliotherapy material. A self-help book is defined as any commercially available book which makes at least one claim to help people solve personal problems (Saper & Forest, 1987). Self-help books

are easily obtainable and many of them achieve bestseller status. Estimates of the number of people who read them run into the millions and a survey of bookstore shelves shows that these books dominate the psychology section (Starker, 1988a).

Self-help books are an increasingly important subset of bibliotherapeutic programs because of the large number of people who use them and because of the promises they make (Glasgow & Rosen, 1978; Rosen, 1987). For example, the back cover of Burns (1981) claims that by using the techniques described in the book "we can alter our moods, deal with emotional problems, and get rid of depression without the use of drugs." Bach and Torbet (1985) claim, "'The Inner Enemy' provides tools for the individual to help himself maintain the inner balance of positive and negative voices." (p. 10).

Research into self-help books is necessary for a number of reasons. Many people use self-help books as evidenced by the sales figures reported on the covers of self-help paperbacks, such as "the 7-million copy bestseller" (Harris, 1973). According to a recent survey of clinical practitioners the use of self-help books is advocated by professional psychologists and psychiatrists (Starker, 1988a, 1988b). Self-help books are a potentially cost-effective means of treating personal problems. Unfortunately, they popularize theories and techniques which are

often unvalidated and yet they claim to change human behavior. Any one of these facts would justify the scientific examination of issues in the area. Together, they indicate an urgent need for investigation.

Rosen (1987) pointed out that the effectiveness of these self-help books has not been established. Forest (1987) found that subjects who read a self-help book obtained higher mean self-actualization scores on the Personal Orientation Inventory than subjects in a no-reading control group. However, later research with six self-help paperbacks (Forest, 1988) failed to show any effect of reading self-help books on scores obtained on self-report personality measures. These findings suggest that commercially available self-help books do not produce measurable changes, at least within the realm of personality. Further research is needed in the area of self-help books especially in view of evidence from behavioral bibliotherapy research that written material can have an effect on the reader (Scogin et al., 1990).

Research into self-help books could take a number of directions. Studies examining whether or not the books produce changes in behavior are important since many people, including psychologists, believe in their utility (Starker, 1988a). However, since research into this question has produced

conflicting results, it may be useful to inquire into what makes a particular book more or less effective.

It has not yet been determined what factors influence the effectiveness of the books. Thus far, research into the action of such variables as format, the reading level of the book, length, or even the information content has been nonexistent. It is important to investigate these process issues if we are to establish guidelines for self-help bibliotherapeutic materials. Furthermore, without an examination of how self-help books work we cannot hope to understand differences between therapist administered, therapist directed, and self-directed programs (Glasgow & Rosen, 1978).

In order to conceptualize the processes involved in self-help bibliotherapy it is important to define what self-help books are. Saper and Forest (1987) defined them as manuals which teach the reader personal problem-solving procedures. Evidence for this view of self-help books can be found in the claims made by the books themselves. For example, Burns (1981, foreword), states "I expect that readers of this book will be able to apply to their own problems the principles and techniques evolved in our work with patients," and DuBrin (1985) claims, "this book contains over one hundred strategies and techniques for bouncing back from setback, disappointment and hard times." (p. 2).

Personal problem-solving effectiveness has been found to be important as a moderating variable between stress and depressive symptoms (Nezu, Nezu, Saraydarian, Kalmar & Ronan, 1986) and Borck, Fawcett and Lichtenberg (1982) found that training student counsellors in personal problem-solving improved counseling performance. Since personal problem-solving skills have an impact on behavior and mental health, and since self-help books purport to teach these skills, research into the factors affecting the effectiveness of self-help books as problem-solving manuals is essential.

Personal or social problem-solving has been defined by D'Zurilla and Nezu (1982) as the cognitive-behavioral process by which individuals identify effective means of coping with problematic situations encountered in daily living. I will define these personal problem situations as those which have a negative hedonic impact on an individual or group or are associated with the probable occurrence of a negative affective state in the future. The negative hedonic state motivates the solver to find a solution. This is an important feature of the above definition, because, without this motivation, a situation cannot properly be called a problem (Erickson & Jones, 1978). However, this definition indirectly encompasses financial/career, parent-child, and health problems since they usually have some

negative hedonic component. Since the purpose of this study is to examine factors influencing the process of psychological self-help we will exclude from our definition of self-help books those publications with a major emphasis on financial/career, parent-child, health, religion, and occult/parapsychology issues.

The process of personal problem-solving consists of two parts, according to Gick (1986). First, the solver constructs a problem representation (or problem space). It is in this initial stage that the solver identifies the conditions which gave rise to the negative affective state, or which are associated with the future occurrence of such a state, and identifies the goal state. The goal state defined in the representation stage is characterized by a reduction or avoidance of negative affect, although additional objective criteria are often specified. These objective criteria are directly related to the solver's representation of the problem conditions that gave rise to the negative hedonic state in the first place. For example, if the solver considers the motivating negative affect to be the result of conflict with his or her spouse, then one criterion of the goal state will be a reduced frequency of marital conflict.

In Gick's second stage, the solver searches through the problem space for a solution, that is, an action or actions which will reduce the negative hedonic state or which will avoid

negative consequences in the future. If the potential solution is successful when applied then the process ends, but if the solution is unsuccessful then the solver backtracks to a previous stage.

A solution is deemed successful when the state reached meets the criteria for a goal state (Erickson & Jones, 1978). As outlined above, the set of criteria for the goal state includes the reduction of negative affect and if this negative hedonic state is not ameliorated, then the solution will not be considered successful.

There are a variety of ways in which problems can be categorized. The two ways of grouping problems that we will consider are: (a) in terms of how well-defined they are, and (b) according to Simon's (1983) three logical types of problems based on artificial intelligence research. The first classification system considers all problems to be one of two types: those which are well-defined and those which are ill-defined.

Personal problems encountered in daily life are ill-defined problems in contrast to the physics, math, and puzzle problems which have been studied most intensively thus far (Simon, 1973). Ill-defined problems are those which do not have one correct answer and which do not contain all the information needed for their solution (Reitman, 1965; Simon, 1978).

However, the difference between well-defined and ill-defined problems may not be so great that principles involved in the solution of one do not apply to the other. Simon (1973) has pointed out that this division is not a sharp binary classification system, problems exist along a continuum between the two extremes. He argues that there is no evidence that qualitatively different mechanisms are involved in solving problems which are located at different points along the problem structure dimension. In an interesting theoretical chapter, Greeno (1980) suggests that geometric problems have characteristics traditionally associated with ill-defined problems. They require that the solver identify missing information and auxiliary problems that will provide new information needed for the solution of the original problem. In some cases the geometric problems can be solved in a number of different ways or are solved under goal-free conditions (e.g., Owen & Sweller, 1985; Tarmizi & Sweller, 1988). Also, even well-defined mathematical and physics problems can appear ill-defined due to a lack of knowledge on the part of the solver (Simon, 1973). From this point of view, the processes involved in solving ill-defined problems do not differ in kind from those involved in problems traditionally considered well-defined (Gick, 1986; Greeno, 1980; Simon, 1973).

Self-help problems are ill-defined, but they may also be classified according to Simon's (1983) three-category system. In this system, problems can be represented (a) as reasoning, in which new statements are deduced from axioms and previously deduced statements; (b) as search tasks, in which moves in a problem space lead the solver from an initial condition to a final condition; or (c) as constraint satisfaction, in which classes of objects which fail to meet the constraints of the problem are eliminated. These three sorts of problems are not necessarily mutually exclusive. A particular problem-solving task may viewed as belonging to all of these general categories.

Logic problems are ones in which the solver is given a set of axioms and the solution is found by applying the formal rules of logic to the axioms. A set of deductions is produced which can be further manipulated by applying logical operations until the correct solution is generated. Well-defined logic problems include all the information required to solve them (aside from the rules of logic, which can be assumed to be stored in long-term memory).

However, viewed as logic problems, personal problems lack sufficient information for a solution when encountered in daily life. This presents some difficulty for the idea that personal problems are logic problems, but the logic task interpretation

may still apply to social problems found in self-help books. In this context, the function of self-help books is to provide the additional information necessary for the solution of the problem. An example of a personal problem typically found in a self-help book might be an adult child bothered by increasingly unreasonable demands on his time from an elderly parent.

Examining this problem from the logical task viewpoint, we can see that a self-help book could provide the information that the adult child has the assertive right to spend his time in the way that is most enjoyable or profitable to him. This information could be combined with the known facts that the parent wants to spend time with the adult child, and that the parent's demands are interfering with the adult child's social and work life. The solver would then come to the correct conclusion that he should reject unreasonable parental demands. Thus, viewing personal problems as logic tasks, at least within the realm of self-help books, is possible and gives us a description of the specific role played by the self-help book; providing information necessary for the solution which may be unavailable from other sources.

However, Bellack, Morrison, and Mueser (1989) pointed out that although logic serves to reduce uncertainty and provide guidance when making choices between alternatives, most social

problems cannot be solved using logic alone. They conclude that formal logic is neither necessary nor sufficient to solve personal problems. Conceiving of self-help problems as logic tasks does not explicitly recognize the fact that most social and cultural rules that we must adhere to are arbitrary, not logical. The potential solutions arrived at by a process of deductive logic are often impractical due to the constraints of society and interpersonal relationships. If the results of deductive logic in social problem-solving must ultimately be evaluated according to constraints on social behavior, then this view of the problem-solving process ignores an important aspect of self-help problem-solving.

As mentioned above, the problems presented in self-help books might also be conceived of as search problems. Search is a process where the individual takes successive steps which move him or her closer to the goal state. The primary mechanism involved in the search process is means-ends analysis (Bellack et al., 1989). Viewed from this perspective, any action that is taken by the problem-solver is a move through the problem space (the solver's internal representation) towards a goal. If we consider the parental demand example, the solver weighs a number of alternative actions and their consequences, and decides to reject the next unreasonable demand that the parent makes.

As can be seen from the above example, this way of viewing the problem-solving process is limited in its utility. First, this description of problem-solving does not explain how or even whether the individual's representation of the problem determines what alternative moves are considered. With reference to the parental demand example, the search model has little to say about the construction of the problem space, or whether this influenced the potential solution selected. This is an important issue since the process of representing a social problem is often more difficult than solving it, in fact, the solutions frequently become obvious once they have been adequately conceptualized (Bellack et al., 1989).

Second, it is unclear how many moves in any given case are necessary for the solution of social problems, because an adequate definition of a move has not yet been formulated. Unlike in games like chess, where moves are distinct units, it is impossible to determine whether social problems require more than one move from initial state to goal state. Even in cases where it is apparent that more than one move is required, it is unclear how individual moves are to be evaluated without reference to the overall plan of action, in other words, how one determines what is closer to the goal state and why. Furthermore, this description does not advance our understanding of how one devises

the overall plan. Finally, since any action can be called a move through a problem space, the model is impossible to disprove and makes no predictions whatsoever.

Therefore, the search view adds nothing to Gick's two-stage analysis. In fact, Gick's (1986) analysis is superior because it explicitly acknowledges the role of the internal representation of the problem and is presented as a general process that applies to all problem-solving activities rather than as one of three problem types.

Conceiving of personal problems as falling into one of Simon's three hypothetical categories should be done on the basis of improvement of the theoretical model of personal problems and the role of self-help books in their solution. No such advantage can be gained from conceiving of personal problems as either logic or search tasks. The logic task model of personal problems fails because logic is usually insufficient for the solution of social problems, and because it does not recognize the fact that social and cultural constraints limit the practicality of solutions arrived at by logical processes. The search task model also fails because it has so little to say about the construction of the problem space, how moves through the space are selected and evaluated, and what constitutes a move, therefore it is not productive to view personal problems in this way. Thus, two of

Simon's three categories have been eliminated as ways of conceptualizing personal problems. The third category of problems postulated by Simon is the class of constraint satisfaction tasks. Personal problems are most profitably conceived of as belonging to this category.

Constraint satisfaction tasks are problems in which a large class of potential actions or objects is narrowed down to a unique set by specifying constraints on the solution (Simon, 1983). This way of viewing personal problems has face validity since society and our interpersonal relationships place constraints on our behavior. These constraints explain why personal problems often appear difficult to solve and also point out what role self-help books may have in their solution.

In the example mentioned previously, which involved an adult having trouble dealing with a parent's demands, the individual may comply with unreasonable requests in order to avoid hurting his or her parent's feelings. A satisfactory solution, one that enables him to avoid hurting his parent's feelings and to eliminate unreasonable demands on him, is simply not possible. Many personal problems take this form. Another common example might be the business executive who would like to advance in her career while still spending a great deal of time with her children and spouse. The constraints on the solution

are difficult, if not impossible to meet.

Self-help books appear to redefine the problem constraints so that the problem is solvable. In the parental demand example, a typical self-help book might suggest the introduction of a new principle; an assertive right that makes it fair and reasonable for the adult child to reject excessive demands on his time. This right negates one of the constraints on an acceptable solution and the problem is then readily solved. In the latter example, a self-help book may prescribe putting one's family ahead of one's career even to the extent of impeding career advancement. A solution can be found once the problem is redefined in these terms.

As illustrated by the above analysis, concepts originally used to classify problems such as mathematical and geometric problems can be applied to personal problems found in self-help books. Though personal problems might traditionally be considered ill-defined constraint-satisfaction tasks, and therefore different from those studied in the problem-solving research to date, current theory does not indicate that they be investigated in a different manner (Gick, 1986; Greeno, 1980; Simon, 1973). Also, because some research in problem-solving directly pertains to using verbal information to solve problems (e.g., LeFevre, 1987; Reder, Charney & Morgan, 1986), it is a

logical source of hypotheses for investigations of the self-help bibliotherapy process.

Problem-solving research suggests that the way in which information necessary for the solution of a problem is presented may determine how easily the problem is solved (Adams et al., 1988; Gick & Holyoak, 1983; LeFevre, 1987; LeFevre & Dixon, 1986; Morris, Bransford & Franks, 1977; Perfetto, Bransford & Franks, 1983; Tarmizi & Sweller, 1988). What is commonly referred to as a problem in the problem-solving literature actually consists of two parts: (a) instructions or information on how to solve the problem and (b) the stimulus problem to be solved by the subject. In an experimental setting, when responses to a stimulus problem are used as a measure of problem-solving ability, this stimulus problem is referred to as a test problem.

Problems presented in self-help books vary in their type and structure. Most problems have instructions which include an abstract description of the general situation and the procedure which should be used to resolve it. This type of problem information can be called didactic text. Didactic information consists of abstract statements about general situations and procedural information which is not about a specific person or event. For instance, a self-help book may suggest that when people encounter a stressful life event they require time away

from their responsibilities to adjust to the new conditions.

Often the problems also include a concrete description of a specific situation in which a particular problem-solving procedure should be applied. This type of instructional material can be called an example. Examples consist of statements about a specific person or instance in which a personal problem is described, a procedure is applied, and the problem is solved. Examples are descriptions of events which are tied to a particular location, time, and to specific people, all of which have particular attributes. For instance, a book may contain a description of a specific person, Bob, who experienced tension between himself and his father's new wife. Bob took time off work and away from his father to grieve for his long-dead mother, and thereby eliminated the cause of his particular problem. Sometimes these examples are taken from the author's personal experience, but often they are composites of several cases constructed for the purpose of illustrating the problem-solving technique.

Examples of problems are structurally similar to the problems they exemplify, that is, the aspects of the problem which are involved in its solution are the same in both the example problem and the test problem (Ross, 1989). Therefore, examples fit Gentner's (1983) definition of a problem analog, and

include problems considered by Reed (1987) to be either equivalent, having the same superficial story content and solution procedure; or isomorphic, having a different superficial story content but the same solution procedure. Examples are often referred to and used by students when solving problems in a new domain and have been shown to be very effective as instructional material (Ross, 1989).

There are two types of examples: worked and unworked. Worked examples are those which include the initial state, the goal state and include or describe any intermediate steps. Unworked examples merely describe the initial state of the problem in concrete terms and omit either a specific description of the goal state, the intermediate steps in the solution procedure, or both. If an unworked example instructs the reader to attempt a solution and there exists some finite set of correct answers, then it is referred to as a practice problem. Whereas practice problems function as instructional information on problem-solving techniques, other kinds of unworked examples may function as: (a) illustrations of different types of problems, (b) evidence for the author's point of view, (c) elaborations on didactic information, or (d) demonstrations of principles outlined in the book. Practice problems are considered a subcategory of unworked examples even if the correct solution is

presented to the solver later.

Simon (1980) commented that instructional materials in general contain worked examples and practice problems as well as didactic text. A casual examination of self-help books reveals that in addition to didactic information, examples appear in almost all of them and practice problems, although not as common, are sometimes included (e.g., Burns, 1980; Bach & Torbet, 1985).

Self-help books contain concrete examples of situations which illustrate the principles or techniques taught by the book and clarify the causes and important features of problematic situations. Aside from the instructional value of examples (i.e., they may help the reader learn how to solve problems), the vividness hypothesis (Borgida & Nisbett, 1977; Nisbett & Ross, 1980) would predict that concrete, highly imaginable information has a greater impact on a reader's behavior and opinions than abstract information.

To the extent that a large proportion of a typical book consists of examples we may infer that the author considers concrete examples to be essential to teaching the principle or technique. In fact, examples have been shown to be very effective in teaching people to solve geometric problems (Tarmizi & Sweller, 1988), series completion problems (LeFevre, 1987), and computer operation skills (Reder et al., 1986).

Practice problems also appear in self-help books and are important from a theoretical viewpoint. Presumably, practice at solving problems of a certain type should have an effect on the solution of isomorphic problems which is distinct from that produced by worked examples (ie. problems presented with the answers and intermediate steps). Problems which share the same schema, but which have different details are called isomorphic problems (Reed, 1987). Morris et al.'s (1977) transfer-appropriate processing model and Anderson's (1982) ACT* theory predict that the way that a procedure is encoded in memory has a significant effect on access to that information during later problem-solving. Since the encoding of practice problems may differ from the encoding of worked examples, one would expect that information presented in these formats would differ in instructional effectiveness. Also, practice has been shown to be an important variable in a number of areas including problem-solving latency (Carlson, Sullivan & Schneider, 1989; McKendree & Anderson, 1987), dual task performance (see Schneider & Detweiler, 1988, for a review), and analogical problem-solving performance (LeFevre, 1987).

The question of whether the form of the information (examples vs. didactic text) can influence the application of that information to a particular problem is an issue of special

relevance to the area of self-help books. Since any effects produced by self-help books are necessarily attributable directly or indirectly to information provided by the books, the format of the information is potentially a powerful variable.

Researchers in problem-solving have investigated the role of examples in problem-solving. However, most of this evidence deals with well-defined mathematics or physics problems. The present study was designed to extend the findings of problem-solving research to the study of self-help books in order to advance our understanding of the effect of information format on personal problem-solving. The present study addressed the relative effectiveness of didactic, example, and practice problem information, as well as combinations of these thereby generating a comprehensive overview of effects of information format on self-help problem-solving performance. The experiment included the following four basic groups: a no-information (NI) control group, a didactic information (D) group, an example (E) group, and a practice problem (P) group. These groups compared the instructional effectiveness of abstract didactic text, an example, and a practice problem relative to a control group receiving no information about the problem.

In addition, the experiment examined the effect of combining information of various types. In order to evaluate the effect of adding didactic information to didactic, example, and practice problem information, the following groups were included: a didactic group given twice the amount of didactic text (DD), a didactic plus example (DE) group, and a didactic plus practice problem (DP) group. Also, an example plus practice problem (EP) group, and a two example (EE) group were included to evaluate the effect of adding example information to practice problem and example information. The DE group mentioned above was used to examine the case in which example information and didactic information are combined. Finally, a two practice problems (PP) group was included in order to evaluate whether two practice problems produce higher scores on a personal problem-solving task than a single practice problem.

Effects of the order of presentation were not examined due to the prohibitive number of groups this would have required. Therefore, an ED group was not included in addition to the DE group described above. A chart showing the ten groups in the present study arranged in a four by four matrix of all possible combinations of treatments is included in Table 1.

Table 1

Groups Included in the Present Experiment

	Type of information (first set)			
Type of information (second set)	No information	Didactic	Example	Practice problem
No information	NI	--	--	--
Didactic	D	DD	--	--
Example	E	DE	EE	--
Practice problem	P	DP	EP	PP

Note. NI, D, E, P, DD, DE, DP, EE, EP, and PP designate treatment groups. Refer to text for the full names of the groups.

For the purposes of the present study didactic information consisted of abstract statements, paraphrased from self-help books, which were not specific to one person or situation. Example information was also paraphrased from self-help books and consisted of statements about a specific person, where a problematic situation was described, some action was taken, and the problem was solved. Practice problems were defined as Example problems in which subjects were instructed to attempt to solve the problem before being presented with the solution. The didactic information, examples, and practice problems corresponding to each test problem were analogs of that test problem, as defined by Gentner (1983).

This study compared the performance of subjects given various types of instructional material on personal problem-solving tasks. Due to the large number of groups there were a relatively large number of predictions that were made. Predictions which were based on the findings of previous problem-solving research or theoretical work are discussed below.

The NI group was expected to obtain the lowest scores on the problem-solving tasks since the subjects in this group received no information on how to solve the problems. Miller (1987) found that subjects receiving no information obtained lower scores on an error-detection task than the same subjects

tested after receiving didactic information. Therefore, the D group was expected to perform better than the NI group on the problem-solving task in the present experiment.

Several studies suggested that subjects given examples would show superior performance to those given didactic information (e.g., LeFevre, 1987; LeFevre & Dixon, 1986; Reder et al., 1986). Lefevre (1987) found that subjects processed didactic text differently from examples and that the selection of examples can influence how successfully the procedure illustrated can be applied. Therefore, the E group was predicted to score significantly higher on the problem-solving task than the D group, which was expected to score significantly higher than the NI group.

Little research has been conducted regarding the effects of practice problems as opposed to worked examples on subsequent problem-solving performance. Morris et al.'s (1977) appropriate processing model predicts that subjects will form better condition-action pairs or productions (Anderson, 1987; Erickson & Jones, 1978) because the original, problem-oriented processing of the practice problems allows better access to the action sequence, or production in long-term memory. Adams et al. (1988) found that information presented in problem-oriented sentences was more readily accessed during the problem solution phase than

when it was presented in a factual statement.

Some evidence that the way useful information is encoded affects subsequent problem-solving performance can be found in studies of self-instruction. Self-instruction is a cognitive-behavioral training technique which has been well validated by psychological research (Evangelisti, Whitman & Johnston, 1986). This technique involves having subjects verbalize questions that arise during a problem-solving procedure as well as the answers to those questions. For instance, in the Evangelisti et al. (1986) study subjects were trained to solve a classification problem using self-instruction. The subjects first verbalized the question, "What am I supposed to do in this problem?", then answered it, "I have to find which of the two pictures on this bottom card is most like the picture on the top card. There are three ways that the pictures can be the same. They can be the same color or the same size or the same shape." The subjects continued with the next question in the sequence, "How can I do this?" and answered it, "To do this I must look carefully at each of the figures. It will be a big help if I tell everything I see." The sequence of questions and answers continued until the correct solution to the problem was obtained.

This training procedure promotes problem-oriented processing, and thus the appropriate-processing model (Morris et

al., 1977) predicts a greater likelihood of correct application of procedures acquired through self-instruction. As well, production theory (Anderson, 1987; Erickson & Jones, 1978) predicts that self-instruction will produce superior acquisition of problem-solving procedures over that produced by worked examples or didactic information. Results of self-instruction research support these predictions.

Miller (1987) found that above average readers trained with self-instruction performed better on a error detection task than those trained using verbalized didactic information. Similarly, Evangelisti et al. (1986) demonstrated the superiority of self-instruction over didactic information for a visual classification task. These results supported the production theories which predicted better condition-action pair formation in the practice problem condition than in the example condition. Therefore, they indicated that practice problems in the present study would produce better problem-solving performance than worked examples or didactic information.

However, Tarmizi and Sweller (1988) found that worked examples produced higher problem-solving rates than self-instruction when cognitive load is small. This result suggested that subjects in the E condition would perform better than subjects in the P condition in the present study.

Also, since subjects probably answer some practice problems incorrectly, inappropriate productions may be formed by this procedure. If this is the case, subjects who attempted practice problems before the test problems would show lower scores than those who received worked examples.

Perfetto et al. (1983) found evidence that inappropriate productions may interfere with subsequent problem-solving. In their study, subjects who answered a problem incorrectly on the first trial tended to answer the same question incorrectly on a second trial even when they had been informed that the correct answer had been presented in previously memorized material. They further established that this effect was specific to the particular problem (i.e., the effect was not found for new problems). The present study can be regarded as representing an intermediate condition in that the test problems share a common procedure with the practice problems and theoretically are solved by the same production.

In spite of the surprising nature of these results they did not pose a serious challenge to production theory. Consequently, we predicted that practice problems would produce higher scores on the personal problem-solving tasks than examples due to the formation of better condition action pairs.

The findings of previous research discussed above suggested

that (a) didactic information would produce better acquisition of problem-solving procedures than no information in the present study; (b) examples would produce superior acquisition to didactic information; and (c) practice problems would produce superior acquisition to examples. Thus, the following prediction was made; hypothesis 1: the mean scores on the test problems for the NI, D, E, and P groups should all be significantly different, with NI < D < E < P.

The present study also allowed us to examine the effect of combining examples and didactic information. LeFevre and Dixon (1986) found that subjects given conflicting didactic and example information used the example information in preference to the didactic instructions. Their subjects did not use the didactic information presented to them. From this result we expected that the addition of didactic text to a worked example would not produce any significant increase in problem-solving success. However, assuming that worked examples produce superior problem-solving to didactic instructions, the DE group was expected to perform better than the D group.

The Didactic plus Didactic group was included for the sake of completeness. Research by Reder et al. (1986) has shown that concept elaborations produce no improvement but that practical procedural elaborations improve problem-solving. Therefore, it

was expected that the addition of more didactic information would not improve performance over the didactic alone group.

There was evidence that the Example plus Example group would show better performance than the E, D, and DE groups. Gick and Holyoak (1983) demonstrated that the provision of two examples dramatically improved schema induction and transfer performance over either one example or a verbal description of the underlying principle, as well as a combination of both. They attributed this finding to the operation of an analogical mapping process requiring two analogs in order to function. If the postulated mapping process exists it would operate in the present experiment as well. Hypothesis 2 was that the addition of example information to didactic, example and practice problem information would increase scores over those obtained by groups receiving didactic, example and practice problem information alone, that is, DE > D, EE > E, and EP > P.

No research has thus far examined whether adding practice problem information to other instructional information improves performance on a problem-solving task. However, Gick and Holyoak's (1983) analogical mapping process would supposedly operate on additional practice problem information to produce better problem-solving. As well, production theory predicts better condition-action pair formation due to problem-oriented

processing when practice problem information is added to other information. Accordingly, hypothesis 3 was that the addition of practice problem information to didactic, example and practice problem information would improve subjects' performance over those subjects who received didactic, example and practice problem information alone, that is, DP > D, EP > E, and PP > P.

Method

Subjects

One hundred male and one hundred female undergraduate students from the University of Manitoba undergraduate subject pool received credit towards the completion of an Introductory Psychology course in return for their participation in the study. A maximum of three non-native English speakers were allowed in each of the ten groups. If any group had more than three non-native English speakers then randomly selected non-English speaking subjects were dropped from the group until only three non-native English speakers remained in the group. Eight subjects were dropped from the study because they were non-native English speakers.

Materials

The materials used in the experiment included didactic instructional text paraphrased from self-help books, didactic text expanded to twice its original length, test problems

paraphrased from self-help books, examples of problems and their solutions that were analogous to the test problems, and practice problems identical to the analog example problems except for the addition of instructions to attempt a solution.

Didactic instructional text was expanded to approximately twice its original length by including paraphrased repetitions of statements already in the didactic text. The resulting text included about double the number of words but no more conceptual information than the original. For example, the following statement was presented in the D condition, "Frequently we may poison ourselves by projecting onto other people some quality in ourselves that we are unwilling to accept," while in the DD condition similar information appeared in this form, "Frequently we may poison ourselves by projecting onto other people some quality in ourselves that we are unwilling to accept. Thus, we may find some aspect of our personality unacceptable and so we attribute it to another." (see Appendix D).

Analog examples of problems and their solutions were generated by the experimenter to be isomorphic (Reed, 1987) to test problems and their solutions paraphrased from self-help books. General schemata were derived from specific problem examples and their solutions described in the books (see Appendix I). These schemata were used to generate examples and practice

problems and to ensure that the didactic information was analogous to the information provided in the other formats. The analog examples preserved the structure of the schemata without duplicating the details of the original problem-solution set. These example problems were used in the Example (E) condition (see Appendix B).

Subjects in the P condition received the above analog examples with instructions to attempt a solution inserted between the problem statement and the corresponding solution. The solutions were presented on a separate page in this condition (see Appendix C).

Four test problems were used to evaluate subjects' problem-solving performance. These were paraphrased from problems found in four different self-help books (see Appendix E). The first test problem dealt with a man who wanted to phone a woman he met at a party, but was afraid of being rejected. The second test problem dealt with a woman who wanted to make an extremely elaborate cake but could not spare the large amount of time necessary. The third test problem described a man who returned to a supermarket to get his lost purchases replaced and who had to deal assertively with the objections of the clerk. The final test problem involved a woman who was depressed about her life but was not sure why. The solutions which correspond to these

test problems were not presented to subjects but served as criteria for independent raters' judgments of subject-generated solutions. The ratings obtained served as the dependent measure of the subjects' ability to correctly solve the problems. A complete listing of didactic information, examples, and practice problems used in the study is attached (see Appendices A through E). In addition, the subjects were required to answer a demographic questionnaire, which included questions on first language and sex, and a post-experimental questionnaire (see Appendices F and G).

<u>Procedure</u>

Subjects were divided into ten groups of 20 people. Testing was carried out in groups of 4 to 20 subjects per test session.

First, the demographic questionnaire was administered to the subjects. Each subject was then asked to provide solutions to four different personal problems taken from four different self-help books. Immediately prior to solving each of the problems the subjects were given instructional information about how to solve the problem. Each group received this information in a different format. For instance, the subjects in the DE group received didactic information on how to solve test problem 1, then an example illustrating the correct procedure for the solution of test problem 1, and then test problem 1. Next, the

Table 2

Sequence of Information and Test Problems for Each Group

Group	Sequence of information and test problem presentation										
NI	--	--	T1	--	--	T2	--	--	T3	--	--	T4
D	D1a	--	T1	D2a	--	T2	D3a	--	T3	D4a	--	T4
E	E1a	--	T1	E2a	--	T2	E3a	--	T3	E4a	--	T4
P	P1a	--	T1	P2a	--	T2	P3a	--	T3	P4a	--	T4
DD	D1a	D1b	T1	D2a	D2b	T2	D3a	D3b	T3	D4a	D4b	T4
DE	D1a	E1a	T1	D2a	E2a	T2	D3a	E3a	T3	D4a	E4a	T4
DP	D1a	P1a	T1	D2a	P2a	T2	D3a	P3a	T3	D4a	P4a	T4
EE	E1a	E1b	T1	E2a	E2b	T2	E3a	E3b	T3	E4a	E4b	T4
EP	E1a	P1b	T1	E2a	P2b	T2	E3a	P3b	T3	E4a	P4b	T4
PP	P1a	P1b	T1	P2a	P2b	T2	P3a	P3b	T3	P4a	P4b	T4

Note. T1 represents test problem 1, T2 represents test problem 2, etc..
Note. The first letter in the information format code represents the form in which the information was presented, either didactic, example or practice problem. The number following the letter denotes the test problem to which the instructional information corresponds. Since two sets of each type of information were constructed for the study, the lowercase letter in the above table was included to indicate which set was used in any given case. For instance, E1a represents example information for test problem 1, the first example. P2b represents practice problem information for test problem 2, the second practice problem.

subjects received didactic information on how to solve test

problem 2, then an example illustrating the procedure, and then

test problem 2, and so on for problems 3 and 4. The type of

instruction the subjects received prior to each problem depended

on the group to which they belonged (see Table 2). Half the

subjects received the problems in reverse order so that any

linear trend in the scores could not be attributed purely to

differences in the relative difficulty of the problems.

Subjects in the No Information (NI) group did not receive

any information on solving the test problems. Subjects in the

Didactic (D) group received didactic instructions paraphrased

from the self-help book from which the corresponding test problem

was derived alternating with the test problems (see Appendix A).

Subjects in the Example (E) group were given solved examples

which were isomorphic to the test problems (see Appendix B).

Subjects in the Practice Problem (P) group were given the same

solved examples as the E group but were asked to solve each of

the practice problems prior to looking at the corresponding

solution (see Appendix C).

Subjects in the Didactic-Didactic (DD) group were given

didactic instructions similar to those for the D group but

expanded to approximately twice the number of words before each

test problem (see Appendix D). Subjects in the Didactic plus

Example (DE) group were given both the didactic information from the D condition and the worked examples from the E condition before each test problem (see Appendices A and B). Subjects in the Didactic plus Practice Problem (DP) group were given both the didactic text and the practice problem from the P condition (see Appendices A and C). Subjects in the remaining groups (EE, EP, PP) received combinations of information in the same way (see Appendices B and C).

All materials including information and test problems were presented in booklets. Subjects wrote their answers to the practice problems and test problems in the booklets. They were not permitted to look back at earlier problems or to make changes to attempted practice or test problems. Subjects were allotted 3.5 minutes to read or respond to each set of instructional information and 5 minutes for each test problem. Thus, subjects receiving two sets of information were given 7 minutes to assimilate both sets of information and 5 minutes to solve the test problem. A total of 48 minutes was allotted for the completion of all four units in groups DD, DE, DP, EE, EP, and PP, each unit consisting of instructional information and a test problem, while groups D, E, and P were given 34 minutes, and group NI was given 20 minutes.

Results

The solutions to the four problems were rated by two
independent raters for similarity to the solutions found for the
corresponding problems in the self-help books. The raters used a
five-point Likert scale to score the solutions. Thus, scores for
each problem ranged from 0 to 4. Specific point values for each
part of the problem solution were provided to the raters for each
test problem (see Appendix H). Scores for the four problems were
then added together to produce a total score with a possible
range of 0 to 16. The raters were blind to the conditions and
the hypotheses of the experiment.

An interrater reliability coefficient was calculated using
Cronbach's alpha statistic (Cronbach, Ikeda & Avner, 1964). The
interrater reliability was relatively high (alpha = 0.85, p <
.0001).

Group differences in total score over all four test
problems were evaluated using an a priori Ryan-Einot-Gabriel-
Welsch multiple range (REGWQ) statistic with alpha set at .05.
This test was selected because it performs all possible
comparisons with reasonable power, but controls the
experimentwise alpha level better than the more popular Duncan's
multiple range test (Einot & Gabriel, 1975). In addition, a
trend by treatment interaction analysis of the scores for the

individual test problems in each of the ten groups was carried out. This test was conducted with alpha set at .05 to evaluate any differential effects of practice between groups. Total experimentwise alpha, therefore, was .0975.

An overall one-way ANOVA was performed in order to obtain the error term that was used in the a priori REGWQ analysis. The ANOVA found significant group differences, $F(9,190) = 3.16$, $p<.01$. The results of the REGWQ statistic are presented in Table 3. The EE, DP, EP, and DE groups performed significantly better than the NI control group, $q(190) = 4.61$, $p<.05$.

Hypothesis 1 stated that the mean scores on the test problems for the NI, D, E, and P groups should all be significantly different, with NI < D < E < P. This hypothesis was not supported by the results of the REGWQ analysis.

Some support for hypothesis 2 was evident in that the DE, EE and EP groups were significantly different from the control group while D, E, and P groups were not. The differences between D and DE, E and EE, and between P and EP were in the expected direction; however, they were not significant. This finding indicates that examples presented in combination with other information are significantly more effective as instructional material than no information.

Table 3

Results of the Multiple Range Analysis

Group	Mean	S.D.
EE_a	6.90	2.33
DP_a	6.75	2.31
EP_a	6.45	2.64
DE_a	6.25	2.31
E_{ab}	6.00	1.83
DD_{ab}	5.90	1.88
D_{ab}	5.70	2.67
P_{ab}	5.60	2.08
PP_{ab}	4.95	2.06
NI_b	4.00	1.29

Note. Groups which have the same subscript do not differ from each other.

Hypothesis 3 stated that adding practice problem information to didactic, example and practice problem information should improve subjects' scores over those subjects who received only one set of information. This hypothesis was not supported since the differences between D and DP, E and EP, and P and PP groups were not significant. Unlike the group differences postulated inhypothesis 2, these differences were not all in the expected direction.

While DP and EP groups were significantly different from the control and obtained high scores relative to the other groups, group PP obtained the lowest mean score of any group other than the control. This result indicates that adding a practice problem to either didactic or example information improved subjects' scores over the NI control group while combining a practice problem with another practice problem did not. This contradicts hypothesis 3 which stated that adding practice problem information to didactic, example, and practice problem information should increase subjects' scores on the test problems. It is also important since it may indicate that practice problems have different effects when presented in pairs than when presented with other types of information. However, since the differences between DP and PP and between EP and PP were not significant, this is difficult to assert.

Another difference which was of theoretical interest was the relative mean scores of EE and PP groups. These groups received identical information, yet they obtained scores which appeared to differ considerably, although this difference was not significant in the REGWQ analysis, either.

Since the three differences between EE and PP, DP and PP and between EP and PP were not significant in the REGWQ analysis, but were of considerable theoretical importance, a post hoc analysis was carried out. This analysis was conducted in order that conclusions could be drawn about the effect of practice problems with greater confidence.

The post hoc analysis was undertaken using pairwise Fisher t-tests to examine the three differences mentioned above (EE vs. PP, DP vs. PP, and EP vs. PP). Post hoc Fisher t-tests were selected since they were the most powerful of the commonly used procedures. Some researchers believe that Fisher tests inflate the experimentwise alpha rate to an unacceptable extent. However, if relatively few Fisher tests are used, the experimentwise alpha rate remains tolerable (Howell, 1982, pp. 343-344). In this case, 3 t-tests were performed out of a possible 45 pairwise comparisons.

It was also felt that using the Fisher tests was justified for the following reasons. First, the relatively low mean score

of the PP group has important implications for theory. Secondly, the t-tests were used to reinforce the findings of the REGWQ analysis rather than to support new conclusions independent of the original analysis. Finally, both the difference between EE and PP and the difference between DP and PP would have been significant in the original analysis had the more common Duncan's multiple range test been used rather than the REGWQ analysis.

The t-tests found the difference between EE and PP groups to be significant, $t(190) = 2.83$, $p<.01$, as well as the difference between DP and PP, $t(190) = 2.61$, $p<.05$, and between EP and PP, $t(190) = 2.17$, $p<.05$. The results of the Fisher tests show that the EE, DP and EP groups obtained significantly higher scores than the PP group.

The trend by treatment analysis on the individual problem scores in each of the groups did not detect any group by time interaction. A significant inverse quadratic trend was detected, $F(3,570) = 189.58$, $p<.0001$, with scores on the first and fourth problems being significantly lower than scores on the second and third problems. However, this trend cannot be attributed to a combination of practice and fatigue effects because it is symmetrical and therefore might be due to differences in problem difficulty. In retrospect, presenting the problems in random order would have been a better control procedure than reversing

the order of the individual problems. This procedure would have

allowed for the interpretation of symmetrical trends as well as

linear ones.

Some significant relationships were found between subjects'

responses to various questions on the demographic and post-

experimental questionnaires. A significant correlation was

found ($\underline{r}$=0.46, $\underline{p}$<.0001) between the number of self-help books

read and how often the subject looked at the Psychology section

in bookstores. Those subjects who reported looking at the

Psychology section of bookstores most often, were also likely to

have read the greatest number of self-help books. Also, a

significant correlation was found ($\underline{r}$ = 0.27, $\underline{p}$<.0001) between how

often the subject looked the Psychology section in bookstores and

how helpful (as opposed to harmful) the subject judged self-help

books to be. The more helpful subjects judged self-help books to

be, the more often they reported looking at the Psychology

section of bookstores. An ANOVA carried out on the subjects'

ratings of how often they looked at the Psychology section in

bookstores found a significant difference between male and female

subjects, $\underline{F}$(1,198) = 5.73, $\underline{p}$<.05, $\underline{r}^2$ = 0.03. Women reported

looking at the Psychology section of bookstores more often than

men. Finally, an ANOVA carried out on the subjects' judgements

of the difficulty of changing one's behavior revealed a

significant difference between men and women, $F(1,198) = 9.20$, $p<.01$, $r^2 = 0.04$. Womens' judgments of the difficulty of changing one's behavior were significantly higher than those made by men.

Discussion

The results of the REGWQ analysis did not detect significant differences between NI, D, E, and P groups, contrary to hypothesis 1. This indicates that none of the single sets of information, regardless of whether they contained didactic information, examples or practice problems, were effective as instructional material in this study. This implies that subjects cannot easily learn how to solve personal problems from written material that gives only one example, one practice problem, or one didactic passage. It may be that at least two sets of information are necessary for significant learning to take place.

The REGWQ analysis found significant differences between EE, EP and DE groups and the NI control, which indicates that examples are effective as instructional material when combined with another example or some other type of information. As mentioned above, the differences between D and DE, E and EE, and P and EP groups were in the predicted direction; subjects who were given example information in addition to another set of information obtained higher scores than subjects receiving only

one set of information. However, these differences were not significant. This provides partial support for hypothesis 2, which stated that adding example information to didactic, example, and practice problem information would increase subjects' scores.

There is some similarity between this finding and Gick and Holyoak's (1983) finding that subjects who were given two examples performed significantly better than subjects given only one example or didactic information or a combination of both. Gick and Holyoak postulated the existence of an analogical mapping process that required two examples to function. However, it cannot be concluded that this analogical mapping process is operating in the present study because the REGWQ analysis did not find significant differences between EE and E, EE and D, or EE and DE. Furthermore, group DE performed significantly better than the NI control, which would not be expected if the analogical mapping process works only with examples, as asserted by Gick and Holyoak.

Hypothesis 3 was not supported by the results of the REGWQ analysis. Practice problem information combined with either didactic (DP) or example (EP) information enabled the subjects to obtain significantly higher scores than the control group, but presenting two practice problems (PP) did not. The REGWQ

analysis failed to detect any significant differences between DP and PP or between EP and PP. However, the post hoc Fisher t-tests found these differences to be significant.

It is interesting that group EE obtained the highest mean score of any group. A post hoc Fisher t-test found a significant difference between EE and PP even though the only procedural difference between the two groups was that subjects in group PP attempted to solve the problem before being given the solution. Since the two groups were given identical problems and solutions, attempting to solve the practice problem must have interfered with the ability of the subjects in the PP group to use information in the correct solution.

Hypothesis 3 was based on production theory (Anderson, 1982) which predicts that subjects given practice problems would form superior productions and so obtain the highest scores. Asking subjects to solve the practice problem may have caused subjects to form inappropriate productions which interfered with performance even after the correct solution had been presented. This is contrary to Anderson's (1982) ACT* theory, which predicts that productions will be modified by presenting the correct solution.

Research by Perfetto et al. (1983) also found evidence that productions are not automatically modified by subsequently

presented information. They reported that attempting to solve a problem limits access to previously acquired information relevant to solving that problem.

In their experiment, subjects were given information, then presented with problems which could be solved using this information. One group of subjects was informed that the previously presented information would help them solve the problems, while another group was not informed of this. The informed group obtained higher scores on the problems than the uninformed group. The uninformed group was then informed of the relevance of the previously presented information and given a second chance to solve the problems. On the second trial, the uninformed group still scored significantly lower than the group which had been informed on the first trial. Subsequent experiments in the study established that generating solutions for problems interfered with accessing the relevant information in memory when solving the same problems on a second trial.

The access failure described by Perfetto et al. can be viewed as interference by an inappropriate production. Since the original productions generated by subjects in the uninformed group did not include accessing the previously acquired information, subjects were less likely to search for the relevant information in memory. Viewed in this way, Perfetto et al.'s

results are contrary to Anderson's (1982) ACT* theory. Anderson's theory predicts that the productions should have been modified when the subjects were informed of the importance of the previously acquired information. Therefore, Perfetto et al.'s study indicates that Anderson's theory needs to be expanded to account for this failure to modify incorrect productions.

There were important differences between this experiment and Perfetto's study. First, this experiment used ill-defined, personal problems, while Perfetto et al. used well-defined, riddle-type problems. Second, the practice problems were isomorphic to the test problems in the present study, whereas Perfetto et al. used identical problems. Finally, subjects in the present experiment were given the correct answer after generating their own solution, while in Perfetto et al.'s experiment they were referred to previously acquired information.

In spite of these differences, inappropriate productions appear to interfere with subsequent problem-solving in both studies. This implies that the formation of inappropriate productions can interfere with subsequent problem-solving whether the problems are ill-defined or well-defined, and whether the subsequent problems are isomorphic or identical. Both studies also indicate that these inappropriate productions are not readily modified by subsequently presented information.

The correlations found among the questionnaire items were generally not very strong, except for the correlation between the number of books read and the subject's report of how often they looked at the Psychology section in bookstores. This correlation should exist from a theoretical point of view, since both should be an index of overall interest in self-help books. This highly significant result indicates that these items have at least some validity. The sex difference found in how often subjects looked at Psychology books in bookstores seems to indicate that women are somewhat more interested in self-help books than men are. This may be due to the way in which self-help books are marketed. Forest (1985) found that a large proportion of commercial self-help books were intended specifically for women readers. If publishers are indeed producing large numbers of books designed to attract women readers, then it would not be surprising that women show somewhat greater overall interest in self-help books.

Women tended to rate the difficulty of changing one's behavior slightly higher than men did. This might be due to a response bias, since men may be less likely to report a lack of confidence in their ability to change or control their behavior.

The limitations of the present research include constraints on the statistical power of the analysis, and the selection and number of the test problems. The fact that the experiment

included ten groups restricted the choice of the statistical analysis. If a smaller number of groups had been included, statistical analysis could have been carried out using a simple one-way ANOVA with either a priori Bonferroni t-tests or post hoc Fisher t-tests. This would have resulted in a substantial increase in the power of the statistical test, without danger of inflating the experimentwise alpha level (Howell, 1982, p. 343). The REGWQ test used here was necessarily conservative, and therefore lacking in sufficient power to detect theoretically important differences.

As mentioned above, the significant quadratic trend in mean scores for the test problems could not be interpreted in terms of practice or fatigue effects. This was because the procedure of reversing the order of the test problems did not control for differences in problem difficulty. Future studies should present test problems in random order and should equate problems for difficulty. Also, using a greater number of test problems might serve to reduce variability in total scores, thereby increasing the power of the statistical analyses.

There has been very little research on practice problems to date. The results of the present experiment suggest that research with practice problems may have important consequences for problem-solving theory. Therefore, further research should

be conducted to determine what factors influence the formation
and modification of productions when solving personal and other
problems. As well, a replication of Perfetto et al.'s study with
isomorphic problems instead of identical problems is indicated.

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Appendix A

Didactic Information

1. Frequently we may poison ourselves by projecting onto other people some quality in ourselves that we are unwilling to accept. (An effective antidote involves making contact with these alienated parts and allowing ourselves to experience them). Much self-poisoning occurs as a result of people's inability to accept those parts of themselves which they feel are undesirable, uncomplimentary, or disruptive to their image of how they "should" be. People always pay the price when they reject part of themselves. Taking risks means reaching out despite fears and anxieties. We can't expect our fears and anxieties to simply disappear. Only after we experience reaching out are anxieties and fears likely to diminish.

2. The ability to see things in perspective and the technique of simplifying can be gradually learned by developing the habit of asking ourselves these four questions:
-Will it matter in five years?
-What do I need more of in life?
-What do I need less of?
-How can I simplify this?
With the habit of these questions will come some new skills- the art of "discretionary neglect," the art of saying no, the art of deciding what not to do, the art of discerning which things are worth doing well...and which things are just worth doing ...and which things are not worth doing at all.

3. You may find it necessary to refuse a request several times before a person "hears" you. In this case, you can use a technique called the broken record. To use the technique you calmly repeat your refusal with or without your original reason for declining. You do so as often as is required. You may find it helpful to practice this with a friend. Continue to refuse any compromise that is unsatisfactory. State your refusal briefly and bluntly; avoid apologies and long explanations. Try to use "I" messages because they indicate that you have made a choice about what you want to do, rather than what you think you can or should do.

4. We must recognize the fact that our expectations, real and unrealistic, are products of our culture. Living in a society which worships success, money, power, and prestige, as ours does, it is understandable that our expectations are this way. The point is that depression is usually tied to a lost dream that entails perfection. The unhappy woman frequently doesn't understand that she is grieving for something that is lost, and that the lost dream developed from her

"shoulds". All a woman may understand is that she is furious, either with herself or with someone else. This is understandable, because her self-esteem has been bound up in achieving this dream however unrealistic. This is what makes the loss so hard to take. We must identify the lost dream and the underlying "shoulds" that cause the depression before it can be overcome.

Appendix B

Example Information

1a. Example: One of Betty's friends mentioned to her that a local agency was looking for some new fashion models. Betty was interested in this news because she had always dreamed of a modelling career but felt she was not good-looking enough. Whenever her parents or friends had suggested she become involved in modelling she always found some excuse to avoid visiting the agencies. Now, she realized she would not have many more opportunities to break into the highly competitive world of modelling since she would soon be considered too old to start. Betty really wanted to model but was afraid that she would be rejected by the agency and that her ego would be crushed. She convinced herself that the agencies were only interested in a certain "type", and that the agency would be unwilling to hire her because she was too unusual looking. Betty began to think that she should at least try attending an open audition. She wanted affirmation of her attractiveness but was afraid to try out because she felt being rejected would be painful and humiliating. Betty was torn between her two options and needed to come to some decision before the open audition. What should Betty do?

Solution: Betty realized that trying out was important to her and also that she feared rejection. She said to herself,"I'll go to the audition. I'm afraid that I'll be really hurt if the agency doesn't feel I'm attractive enough. But I also know that if I don't try now I'll never get another chance. I'm going to the audition. I know I'm afraid and I'm going to go anyway." She did go and was given some part-time modelling work as a result.

1b. Example: Cheryl wanted to join an aerobics class but felt that the other students would think she looked ridiculous jumping up and down in a leotard. She was convinced that the others were simply prejudiced against fat people and would think that she was too overweight to keep up with the other people in the class. If she joined she would be exposing herself to spoken or unspoken criticism by lithe but heartless people. She feared that going to the class would destroy her self-esteem and so she told herself that others would not accept her as she was. On the other hand she had tried everything else and wasn't able to lose weight. She also had a friend who had slimmed down incredibly by joining an aerobics club. She wanted to go and began working up her courage. "I really should go down and join the class this evening...but I'll make a spectacle of myself just walking in. I've heard that if you're too fat they won't even let you join anyway." She continued to vacillate between her desire to join and her fear of looking foolish for months. What should Cheryl do?

Solution: "I want to join the aerobics class but I'm worried about it, too. I'm afraid that someone there will make a comment that will send me running out of the room in tears. But if I don't go soon I'll never go at all. I'm going to join. I'm scared and that's what I want to do. Cheryl joined the class and found that she really enjoyed it.

2a. Example: A woman was trying to organize a large party for the staff of her community organization. She looked into renting a hall, getting a liquor license, catering food, and arranging entertainment. The evening she planned was going to be an ambitious project. What should this woman do?

Solution: She eventually decided to reserve a couple of large tables at a local night club where entertainment and drinks would be provided.

2b. Example: A young elementary school teacher spent 20 or 30 hours a week designing attractive 2- and 4-color handouts and instruction booklets for her students. They generally included at least two funny drawings or cartoons (she was quite good at drawing) and some examples of student work from previous years. She had very little time left for social activities and found it increasingly difficult to prepare lessons on time. What should the teacher do?

Solution: She eventually cut back on the amount of time she spent on the handouts, cutting out comic strips from the newspaper rather than drawing original ones, and sticking to black printing on colored paper. She was able to meet her deadlines easily and had a much more enjoyable workday and social life.

3a. Example: A door-to-door salesman called on Carlo and tried to sell him encyclopedias by making him feel guilty and anxious. Write down a conversation that shows how Carlo should handle this situation.

Solution: Carlo did not want to buy any encyclopedias and used the broken record technique to prevent the salesman from manipulating him into buying. He was persistent and nonmanipulable. No matter what the other person said, Carlo responded with "I understand (how you feel), but I'm not interested (in buying an encyclopedia)." The dialogue went something like this:
Salesman: You want your children to learn faster, don't you?
Carlo: I understand, but I'm not interested.
Salesman: Your wife would want her children to have them.
Carlo: I understand, but I'm not interested in buying.
Salesman: You don't understand, otherwise you would buy these for your

children.
Carlo: I understand how you feel, but I'm not interested.
Salesman: You keep saying the same thing. Can't you say anything else?
Carlo: I understand, but I'm not interested in buying.
Salesman: Let me ask one question. How old are your children?
Carlo: I understand, but I'm not interested.

3b. Example: Fred's boss asked him to postpone his vacation. However, Fred didn't want to change his plans since he had already contacted his parents and told them when he was coming to visit. Write down a conversation that shows how Fred should handle this situation.

Solution: Fred used the broken record technique to prevent his boss from coercing him into putting his vacation time off. No matter what his boss said, Fred responded with,"I understand (that you want me to work during July), but I won't (postpone my vacation)." The dialogue went like this:
Fred's boss: Fred, I'm sorry but I'm going to have to ask you to postpone your vacation time.
Fred: I understand, but I won't postpone my vacation.
Fred's boss: I know you wanted to get away in July, but we really need you here.
Fred: I understand that you want me to work during July, but I won't.
Fred's boss: Couldn't you just change your plans? I promise you can take the time off in August.
Fred: I understand that you want me to work during July, but I won't postpone my vacation.
Fred's boss: I don't understand why it's such a big deal. Can't you see my side of it?
Fred: I understand, but I won't postpone my vacation.
Fred's boss: You know July is a busy time for us. We're going to need everyone here to take orders.
Fred: I understand, but I won't postpone my vacation.

4a. Example: Sheila is thirty-eight, a divorced woman who owns and runs a small shop. She is a controlled woman who seems to be cold and distant. Yet, the more she talks, the more this indifference seems like a facade. "My work supports me very well," she says, "and I'm thankful for that. But it's boring. I'd like to be doing something else but I'm not sure what. Often I feel I have so much inside me that I'm going to explode.
    "I try to do as much as I can. I ice skate, go to concerts, go out with men.
    "I hate the notion of marriage. I'm scared to give up my freedom. But part of me wants marriage - or a enduring relationship with a man." She shrugs. "I feel agitated a lot of the time - and yet I know I do more than many people I know.

"Sometimes I'm furious - oh, if I see a married woman who is able to do whatever she wants in life because her husband is supporting her, or if I walk past a superb piece of jewelry that I can't afford. I adore beautiful things. I have an artist's sensitivities. I need to find an outlet for that. But I can't give up my business; I like my nice house and clothes, and, besides, what am I going to live on when I retire?

"Sometimes I think I've been just a bit depressed all my life. Some mornings I wake up feeling so lethargic, and don't know why. Sometimes I think I was born to be a princess and here I am toiling away!"

Solution: Sheilah says she should be a princess. She wishes to be supported by a husband and thereby escape her workaday existence. This is an example of a lost dream that leads to depression. Also note that she is caught between two important "shoulds", she should have found a suitable husband to support her and she should be successful and independent.

4b. Example: June was a violinist who quit music to raise her family. At the time she had wanted to devote herself fully to her husband and children. Soon, however, she found that she missed playing for an audience. She returned to playing concerts and recitals after an eight year absence. But she had repeated bouts of depression. The musicians she worked with were professionals and next to them she felt she looked merely average. June could see that she would never be the star player that she once thought she could be. After several months she was ready to give up. "It's no use," she said, "I was a fool to think I could do this.".

Solution: June had given up her dream of ever becoming an exceptional violinist, but was unable to forgive herself for this failure. She had set herself the extremely difficult task of being as good or better than people who had been playing all along while she had been busy raising a young family. She felt that she "should" have been able to succeed in spite of this. She was demanding the impossible of herself.

Appendix C

Practice Problems

1a. <u>Practice problem</u>: One of Betty's friends mentioned to her that a local agency was looking for some new fashion models. Betty was interested in this news because she had always dreamed of a modelling career but felt she was not good-looking enough. Whenever her parents or friends had suggested she become involved in modelling she always found some excuse to avoid visiting the agencies. Now, she realized she would not have many more opportunities to break into the highly competitive world of modelling since she would soon be considered too old to start. Betty really wanted to model but was afraid that she would be rejected by the agency and that her ego would be crushed. She convinced herself that the agencies were only interested in a certain "type", and that the agency would be unwilling to hire her because she was too unusual looking. Betty began to think that she should at least try attending an open audition. She wanted affirmation of her attractiveness but was afraid to try out because she felt being rejected would be painful and humiliating. Betty was torn between her two options and needed to come to some decision before the open audition. What should Betty do? Write down what you think is the answer to this problem and then look at the solution on the next page.

<u>Write your answer here</u>: _____

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<u>Solution</u>: Betty realized that trying out was important to her and also that she feared rejection. She said to herself,"I'll go to the audition. I'm afraid that I'll be really hurt if the agency doesn't feel I'm attractive enough. But I also know that if I don't try now I'll never get another chance. I'm going to the audition. I know I'm afraid and I'm going to go anyway." She did go and was given some part-time modelling work as a result.

1b. Practice problem: Cheryl wanted to join an aerobics class but felt that the other students would think she looked ridiculous jumping up and down in a leotard. She was convinced that the others were simply prejudiced against fat people and would think that she was too overweight to keep up with the other people in the class. If she joined she would be exposing herself to spoken or unspoken criticism by lithe but heartless people. She feared that going to the class would destroy her self-esteem and so she told herself that others would not accept her as she was. On the other hand she had tried everything else and wasn't able to lose weight. She also had a friend who had slimmed down incredibly by joining an aerobics club. She wanted to go and began working up her courage. "I really should go down and join the class this evening...but I'll make a spectacle of myself just walking in. I've heard that if you're too fat they won't even let you join anyway." She continued to vacillate between her desire to join and her fear of looking foolish for months. What should Cheryl do? Write down what you think is the answer to this problem and then look at the solution on the next page.

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Solution: "I want to join the aerobics class but I'm worried about it, too. I'm afraid that someone there will make a comment that will send me running out of the room in tears. But if I don't go soon I'll never go at all. I'm going to join. I'm scared and that's what I want to do. Cheryl joined the class and found that she really enjoyed it.

2a. Practice problem: A woman was trying to organize a large party for the staff of her community organization. She looked into renting a hall, getting a liquor license, catering food, and arranging entertainment. The evening she planned was going to be an ambitious project. What should this woman do? Write down what you think is the answer to this problem and then look at the solution on the next page.

Write your answer here: _____

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Solution: She eventually decided to reserve a couple of large tables at a local night club where entertainment and drinks would be provided.

2b. Practice problem: A young elementary school teacher spent 20 or 30 hours a week designing attractive 2- and 4-color handouts and instruction booklets for her students. They generally included at least two funny drawings or cartoons (she was quite good at drawing) and some examples of student work from previous years. She had very little time left for social activities and found it increasingly difficult to prepare lessons on time. What should the teacher do? Write down what you think is the answer to this problem and then look at the solution on the next page.

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<u>Solution</u>: She eventually cut back on the amount of time she spent on the handouts, cutting out comic strips from the newspaper rather than drawing original ones, and sticking to black printing on colored paper. She was able to meet her deadlines easily and had a much more enjoyable workday and social life.

3a. <u>Practice problem</u>: A door-to-door salesman called on Carlo and tried to sell him encyclopedias by making him feel guilty and anxious. Write down a conversation that shows how Carlo should handle this situation and then look at the solution on the next page.

<u>Write your answer here</u>: _____

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<u>Solution</u>: Carlo did not want to buy any encyclopedias and used the broken record technique to prevent the salesman from manipulating him into buying. He was persistent and nonmanipulable. No matter what the other person said, Carlo responded with "I understand (how you feel), but I'm not interested (in buying an encyclopedia)." The dialogue went something like this:
Salesman: You want your children to learn faster, don't you?
Carlo: I understand, but I'm not interested.
Salesman: Your wife would want her children to have them.
Carlo: I understand, but I'm not interested in buying.
Salesman: You don't understand, otherwise you would buy these for your children.
Carlo: I understand how you feel, but I'm not interested.
Salesman: You keep saying the same thing. Can't you say anything else?
Carlo: I understand, but I'm not interested in buying.
Salesman: Let me ask one question. How old are your children?
Carlo: I understand, but I'm not interested.

3b. Practice problem: Fred's boss asked him to postpone his vacation. However Fred doesn't want to change his plans since he has already contacted his parents and told them when he is coming to visit. Write down a conversation that shows how Fred should handle this situation and then look at the solution on the next page.

Write your answer here: _____

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Solution: Fred used the broken record technique to prevent his boss from coercing him into putting his vacation time off. No matter what his boss said, Fred responded with,"I understand (that you want me to work during July), but I won't (postpone my vacation)." The dialogue went like this:
Fred's boss: Fred, I'm sorry but I'm going to have to ask you to postpone your vacation time.
Fred: I understand, but I won't postpone my vacation.
Fred's boss: I know you wanted to get away in July, but we really need you here.
Fred: I understand that you want me to work during July, but I won't.
Fred's boss: Couldn't you just change your plans? I promise you can take the time off in August.
Fred: I understand that you want me to work during July, but I won't postpone my vacation.
Fred's boss: I don't understand why it's such a big deal. Can't you see my side of it?
Fred: I understand, but I won't postpone my vacation.
Fred's boss: You know July is a busy time for us. We're going to need everyone here to take orders.
Fred: I understand, but I won't postpone my vacation.

4a. Practice problem: Sheila is thirty-eight, a divorced woman who owns and runs a small shop. She is a controlled woman who seems to be cold and distant. Yet, the more she talks, the more this indifference seems like a facade. "My work supports me very well," she says, "and

I'm thankful for that. But it's boring. I'd like to be doing something else but I'm not sure what. Often I feel I have so much inside me that I'm going to explode.

"I try to do as much as I can. I ice skate, go to concerts, go out with men.

"I hate the notion of marriage. I'm scared to give up my freedom. But part of me wants marriage - or an enduring relationship with a man." She shrugs. "I feel agitated a lot of the time - and yet I know I do more than many people I know.

"Sometimes I'm furious - oh, if I see a married woman who is able to do whatever she wants in life because her husband is supporting her, or if I walk past a superb piece of jewelry that I can't afford. I adore beautiful things. I have an artist's sensitivities. I need to find an outlet for that. But I can't give up my business; I like my nice house and clothes, and, besides, what am I going to live on when I retire?

"Sometimes I think I've been just a bit depressed all my life. Some mornings I wake up feeling so lethargic, and don't know why. Sometimes I think I was born to be a princess and here I am toiling away!" Why is Sheila so unhappy? Write down what you think is the answer to this problem and then look at the solution on the next page.

Write your answer here: _____

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Solution: Sheila says she should be a princess. She wishes to be supported by a husband and thereby escape her workaday existence. This is an example of a lost dream that leads to depression. Also note that she is caught between two important "shoulds", she should have found a suitable husband to support her and she should be successful and independent.

4b. Practice problem: June was a violinist who quit music to raise her family. At the time she had wanted to devote herself fully to her husband and children. Soon, however, she found that she missed playing for an audience. She returned to playing concerts and recitals after an

eight year absence. But she had repeated bouts of depression. The musicians she worked with were professionals and next to them she felt she looked merely average. June could see that she would never be the star player that she once thought she could be. After several months she was ready to give up. "It's no use," she said, "I was a fool to think I could do this." Why is June so unhappy? Write down what you think is the answer to this problem and then look at the solution on the next page.

Write your answer here: _____

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Solution: June had given up her dream of ever becoming an exceptional violinist, but was unable to forgive herself for this failure. She had set herself the extremely difficult task of being as good or better than people who had been playing all along while she had been busy raising a young family. She felt that she "should" have been able to succeed in spite of this. She was demanding the impossible of herself.

Appendix D

<u>Didactic-Didactic Information</u>

1. Frequently we may poison ourselves by projecting onto other people some quality in ourselves that we are unwilling to accept. Thus, we may find some aspect of our personality unacceptable and so we attribute it to another. (An effective antidote involves making contact with these alienated parts and allowing ourselves to experience them). We must fully experience these aspects of ourselves and completely accept them as part of ourselves. Much self-poisoning occurs as a result of people's inability to accept those parts of themselves which they feel are undesirable, uncomplimentary, or disruptive to their image of how they "should" be. The tendency to reject parts of one's own personality that are unflattering or hard to accept is destructive and causes a great deal of trouble for a great many people. People always pay the price when they reject part of themselves. It is impossible to do this and still be completely happy. Taking risks means reaching out. We have to try to reach out despite fears and anxieties. We can't expect our fears and anxieties to simply disappear without any action on our part. They simply won't disappear by themselves and it is unreasonable for us to expect that they will. Only after we experience reaching out are anxieties and fears likely to diminish. We can only dispel our apprehensions and anxieties by taking risks.

2. We can learn to have a better sense of perspective. We can also learn to make things simpler. Part of the secret to learning this is the following. The ability to see things in perspective and the technique of simplifying can be gradually learned by developing the habit of asking ourselves these four questions:
-Will it really make any difference to me in five years?
-What is it that I need more of in my life?
-What is it that I need less of in my life?
-Does there seem to be any way of making this simpler?
If you faithfully develop the habit of asking these four easy questions at the appropriate times, you will find that you will learn other abilities. As you acquire the habit of asking these questions you will also come to acquire some new skills. These new skills will probably include the following: the art of "discretionary neglect," the art of saying no when it becomes necessary, the art of deciding what you are not going to do, the art of discerning which of the many things you do every day are worth doing well...and which things are just worth doing ...and which things are not worth doing at all. These are all very valuable skills.

3. At times, you may find it necessary to refuse a person's request several times before a person "hears" you. You will probably find that they will not listen to your refusal the first few times you state your position. In this case, you can use a technique we call the broken record. This technique can be used in any situation that someone seems not to be hearing your rejection of their idea or suggestion. To use

the technique you calmly repeat your refusal with or without your original reason for declining. You do so as often as is required. If you end up having to repeat yourself many, many times, then so be it. You may find it helpful to practice this with a friend. Role-playing is quite often beneficial when you are learning the broken record technique. Continue to refuse any compromise that is unsatisfactory to you. You should declare your rejection of unacceptable arrangements clearly and continually. It is important to state your refusal briefly and bluntly in as few words as possible. Try to avoid apologies and long explanations because they are usually unnecessary. Also, you should try to use "I" messages. Messages like these are appropriate because they indicate that you have made a definite choice about what you want to do, rather than what you think you can or should do.

4. We must come to recognize the fact that our expectations, realistic and unrealistic, are the products of our culture. Our culture determines the way we look at ourselves and what we expect will happen in the future. Living in a society which worships success, money, power, and prestige, as ours does, it is understandable that our expectations and dreams are also this way. If one examines the expectations engendered by our social structure you will see that they can be problematic and can lead to depression. Understanding depression is difficult but is possible if you are able to understand the underlying causes. The most important point is that depression is usually tied to a lost dream that entails perfection. A depressed woman is usually grieving for something which is lost. However, the unhappy woman frequently doesn't understand that she is grieving for a lost dream, and that the lost dream developed from her "shoulds", which in turn were a product of her society. All a woman may understand is that she is furious, either with herself or with someone else. This anger and resentment is understandable, because her self-esteem has been bound up in achieving this dream however unrealistic. The fact that her ego is involved is what makes the loss so hard to take. It is very important to identify the lost dream and the expectations from which it developed. This process is necessary if the woman is to become happy and if she is to develop into a whole, fully functioning person. We must identify the lost dream and the underlying "shoulds" that cause the depression before it can be overcome.

Appendix E

Test Problems

1. <u>Test Problem</u>: Phil thought that people didn't like him. Over the years he had convinced himself of this ("After all, you don't see people beating down my door to make friends with me"). In this way he was able to avoid his fear of making contact with people, and an even stronger fear that rejection would be overwhelmingly destructive to him. As he became conscious of his own apprehensiveness, he began to cautiously think about taking some action. As frequently happens, an antidote to a toxic pattern is often begun when the frustration of an unfulfilled need becomes especially strong. In this instance, his best friend had given Phil his cousin's telephone number. Phil had met her at a concert a couple of months earlier and really wanted to know her better. He had been working up his nerve ever since:"Maybe I'll call her...but on the other hand, maybe she's seeing somebody by now. Maybe she's not interested in me," etc.. Phil's debate with himself was simply an expression of his inner anxiety. In one way or another he continued to torture himself with uncertainty and conflict between his fearfulness and what he wanted. What should Phil do?

<u>Write your answer here</u>: _____

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2. <u>Test Problem</u>: A housewife was in the process of designing an elaborate cake. "It's for the church anniversary party," she explained,"and I thought I'd better make it really special." However, her schedule was very busy since she had three children, and she wasn't sure where she would find the time to complete this project. She mentioned that the cake she had in mind would take her fifteen to twenty hours. What should the housewife do?

<u>Write your answer here</u>: _____

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3. <u>Test Problem</u>: Marv had done the shopping for his wife one Saturday. He had returned home, but discovered that he could not find his meat purchases. Marv went back to the store to get his meat purchases back. He knew that he would have to deal effectively with the objections raised by the clerk. Write down a conversation between Marv and the clerk that shows how Marv can cope assertively with the situation. <u>Write your answer here</u>: _____

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4. <u>Test Problem</u>: Laurie married at twenty-seven and had two children, Sarah and Billy, before she was thirty. "I grew up wanting to be a lawyer like my father," she says. She looks young and full of life. Yet the setting is somewhat inappropriate: a suburban home which seems to have little of Laurie's exuberance. The surroundings are much too conservative. From looking at Laurie, one would expect a bolder decor. She doesn't seem to be at home here. "I suppose I wanted to please my father," she continues, "he wanted a clever daughter. But I hated law school, though I did marry a lawyer. I felt that law would restrict me, that I wouldn't be able to express the emotional part of me. Actually, I always wanted to be an actress, and have people applaud me. I love the idea of being on stage. I know that sounds foolish. But I guess I need a lot of attention from people. It's not enough having my family and friends love me." She pauses to check on Sarah who's taking a nap.

"You know, when I look at my baby, I feel like a bitch for complaining. I don't mean to sound discontent. Sarah is a beautiful baby. Really, working in an advertising firm, which is what I did before I became pregnant, was not making me any happier. But when I was working there was more excitement in my life. I always had to look good. Now I feel so lifeless all the time. I have to force myself to do things. I know my husband doesn't want to hear all my complaints. He wants me to be happy. I'm jealous because he goes out to practice law every day even though I quit law school of my own free will. But really, if I look at my life, it's okay. I don't want to sound like I'm absolutely despondent because I'm not. It's just that sometimes I really feel down and I'm not really sure why. Maybe if I knew what was bothering me I wouldn't feel so bad." Why is Laurie so unhappy? <u>Write your answer here</u>: _____

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Appendix F

Demographic Questionnaire
DO NOT PUT YOUR NAME ON THIS QUESTIONNAIRE

1. Female _____   Male _____   Check one.

2. Native English Speaker ___   Nonnative English Speaker ____

    A native speaker is a person who learned English as their first language and it is the language they speak most proficiently. Nonnative speakers are people who learned another language first and they speak that language better than English.

3. I have read _____ self-help psychology books.
   Circle   0 1 2 3 4 5   More than 5 (specify) _____

4. I look at the books in the psychology section of bookstores (do not include psychology textbooks or scientific psychology books in your evaluation)
        Never   Occasionally   Frequently
        0   1   2   3   4   5   6   7

5. Age _____

6. What is the highest grade or year that you completed in school?
(1 - 12) _____

7. Please circle the number of years of education completed in any of the areas listed below

        Trade apprenticeship...........1 2 3 4 5

        Business school................1 2 3

        Community College..............1 2 3 4

        Nursing school.................1 2 3 4

        University.....................1 2 3 4 5

        Postgraduate university........1 2 3 4 5

8. Present Occupation: _____

9. Employment Status (check as many as apply
   Homemaker _____   Employed full-time _____
   Student _____   Employed part-time _____
   Retired _____   Unemployed _____

Appendix G

Post-Experimental Questionnaire

1. Do you find books interesting to read? Circle   Yes   No

    Why?

2. What types of books do you prefer?

    Circle: Fiction   Nonfiction   Both Types

3. Have you ever read a self-help psychology book, that is, a
    book which promises to help people improve themselves in
    some area of psychological or social functioning such as
    reducing anxiety or making friends?

    Circle   Yes   No   If yes, how many?   _____

    Try to name the titles of the books or give their general
    topic area.

4. Do you think self-help psychology books would be helpful or
    harmful to people who wanted to change their own behavior?
    Circle a number.

    Very Helpful   7---6---5---4---3---2---1 Very Harmful

5. Do you have any comments about the test problems which you
    filled out?

6. How easy do you think it is for a person to change their
    behavior?

    Circle a number   Hard   7---6---5---4---3---2---1 Easy

7. What do you think the purpose or goal of the experiment was?

8   Did you encounter any problems or difficulties in serving in
    this experiment?

9. Did you hear anything about the instructions or procedures in
    this experiment from other students?   Circle   Yes   No
    What were you told?

Appendix H

<u>Guide for Scoring the Test Problems</u>
Below are some excerpts from self-help books describing the answers given to the test problems in the present study. These are provided to help you rate the subjects' responses. Please use the point system outlined at the end of each entry, and refer to the excerpt only when you cannot decide whether or not a particular point should be awarded.

1. Phil decided that he really wanted to ask his friend's cousin out. He said to himself:
"I am really interested in her, and I feel anxious about taking the first step. I'm afraid she will reject my overtures. If I stick my neck out and call her and she rejects me, I'll feel even worse. That would really hurt. I also feel that the longer I wait, the more difficult I'm making it for myself. I'll call her. I'm scared <u>and</u> that's what I honestly want to do."
    Much self-poisoning is the result of refusal by the person to accept those parts of himself which he feels are undesirable, uncomplimentary, or disruptive to his image of how he "should" be. A person always pays the price when he rejects part of his self.
    Phil's fear bothered him, so he tried to project it onto the outside world. As long as his fear remained an alienated part of his self, he would continue to pay the price by avoiding those people to whom he would like to reach out.
    Taking risks means reaching out in spite of fears and anxieties. We cannot expect our anxieties to just disappear. Only <u>after</u> we experience reaching out are our anxieties likely to diminish.

1 point for saying that calling will help diminish his fear.

1 point for saying that the longer he waits the worse he makes it for himself or for saying that he's torturing himself.

1 point for Phil phoning in spite of his fear.

1 point for description of Phil accepting his fear and experiencing it, facing his fear, or meeting it head-on, etc..

2. The only reason she could think of for the extensive project was that she'd always believed "if something's worth doing, it's worth doing well."
    Not really--not always! Some things, in relation to the real priorities, are just barely worth doing at all and ought to be simplified down to "quick and easy" rather than blown up to "elaborate and time-consuming." We decided a better saying would be "If a thing is just barely worth doing then just barely do it!"
    She decided (with relief) to make a nice, innocuous cake from an easy recipe that took one hour.

1 point for getting the task done without help from friends or family.

1 point for not doing it as well as it would have been done had she followed the original plan.

1 point for any solution requiring much less time.

1 point for putting down an answer which was substantially the same in the details (i.e., she makes a simple cake rather than buying one).

3. Excerpt from the self-help book, "When I Say No, I Feel Guilty." Marv reported that on the previous Saturday he had done the week's marketing for his wife and when he returned home, he could not find his meat purchases. Since his father was at the house for dinner, Marv asked if he would like to accompany him to the supermarket to get his meat purchases back.
    Setting of the dialogue: Upon entering the supermarket with his father in tow, Marv spoke to the clerk at the checkout counter about his missing purchases.
    Clerk: Yes?
    Marv: When I was here earlier, I bought three steaks, a roast, and two chickens with my other groceries and when I got home, the meat was missing. I want my meat.
    Clerk: Did you look in your car?
    Marv: Yes, I want my meat.
    Clerk: Well, I don't think I can do anything about it.
    Marv: I understand how you might think that, but I want my meat.
    Clerk: Do you have your cash register receipt?
    Marv: Yes, and I want my meat.
    Clerk: (Looking at the receipt) You have six meat purchases here.
    Marv: That's right, and I want my meat.
    (Dialogue continues)

Marv repeats what his main message is at least three times. 1 pt.

Marv refuses to be sidetracked into answering irrelevant questions, he gives only information that describes the situation, he clearly states what he wants rather than what he thinks the clerk or manager should do. Also, Marv does not attempt to give logical reasons for his behavior. 1 pt.

Marv does not try to threaten, manipulate or intimidate the clerk by yelling or other aggressive behavior. 1 pt.

The clerk or manager does not give in right away, Marv has to state his case more than just once. 1 pt.

4. Laurie is suffering from chronic, low-grade depression. At this stage in her life., Laurie is not suffering so much from failure to achieve her father's goals as from failing to achieve her own goals. If Laurie makes her father's goals her own then she, and not her father becomes responsible for them.

When Laurie accepts and takes her father's goals as her own without evaluating them, she has not really exercised free choice. Nevertheless, she binds herself to a set of standards which may or may not be reasonable, and in which she may or may not believe. By doing this she wraps herself in sticky plastic; no matter which way she turns, she cannot extricate herself from the rigid standard that she has internalized and made her own.

Because Laurie has kept alive and nurtured a fantasy, a fantasy of brilliance in a profession, she must remain dissatisfied with any other work she does. It isn't that "work wasn't the answer". It's that no work which does not fulfil the fantasy will satisfy her.

Even Laurie's feelings about her baby are involved. She feels that any seventeen-year-old can take care of a baby, and discredits herself for "sinking so low" as to be only a housewife. Disliking herself for being in that role she feels "bitchy" towards her baby. Ashamed of that feeling, and angry for having it, she becomes doubly dissatisfied with herself. This feeling, common in many young women, leads to a sense of having been "put aside" or "put on the shelf".

Laurie's entire background predisposed her to having children. Children, she was told again and again, were supposed to bring you happiness and fulfilment. A brief excursion into the world of men (law school) reinforced the cultural stereotype that identifies a woman's place. Laurie didn't feel as if she fit in there. But Laurie was involved in a deep conflict, for her father had sanctioned this world of men while her social milieu pointed in another direction. The presence of this conflict was something Laurie had to keep depressed, for she could not bear the anxiety it generated. In this example we see how conflict is always one of the cornerstones of depression.

Laurie's basic discontent relates to an inherent recognition that she will not achieve her dream of the brilliant career woman. As the years go by and she makes no attempt to develop herself, she will feel that loss more and more keenly. Her depression is partially grief over the loss of her dream, the dream of an exciting life, a life she is making no real effort to achieve.

Laurie is leading the life she thinks she should lead. For Laurie, her lost dream concerns being a brilliant career woman. She has, however, suppressed her healthy needs for change and achievement because they make her feel too guilty. She feels she should be satisfied. If she is not, she is a "bad" person.

Mention that she dislikes her stereotyped role as a housewife. 1 pt.

Mention Laurie's dream of brilliance in a career or that she <u>should</u>'ve been a lawyer. 1 pt.

Mention that she feels she <u>should</u> be satisfied to be a wife and mother. 1 pt.

Appendix I

Schemata for the Test Problems

Structure for test problem #1: Person wants something but is afraid that failure to get what he or she wants will be humiliating. Conflict between what is wanted and fear of being evaluated negatively. The incorrect assumption is that fear of humiliation should stop one from attempting something and that the solution involves some way of reducing this fear. Redefining the problem constraints so that one is able to act in spite of fear rather than having to get rid of it first makes the solution possible. Solution is to accept the fear and to take action anyway.

Structure for test problem #2: Person wants to do something well but doesn't have much time because of other commitments. The assumption is that anything worth doing is worth doing well. Redefining the problem so that activities no longer have to take fixed amounts of time or effort makes multiple demands on one's time easier to manage. Solution: Find a way to do it without spending much time or energy.

Structure for test problem #3: Person wants something but someone else opposes him. Solution: The protagonist does not let himself be manipulated into "seeing reason" or trying to justify his position logically. Instead he merely repeats what he wants until he gets it.

Structure for test problem #4: Person feels unhappy in her present situation because of her unrealistic expectations. The assumption is that one has to be perfect and to achieve one's goals in order to be worthwhile. Problem can be solved by examining one's expectations and the lost dream that was given up. Once the lost dream and its accompanying shoulds has been recognized, the woman can work towards redefining her goals so that they will be achievable.