❚ THE COGNITIVE-STYLE INVENTORY

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INTRODUCTION

In organizations the quantity and quality of cognitive behaviors—those associated with the activities of thinking, learning, problem solving, and decision making—produce a dramatic impact on productivity, performance, and potential for growth. The Cognitive-Style Model and its accompanying instrument, The Cognitive-Style Inventory, provide a basis for identifying the patterns of behavior that typify people's approaches to these critical activities. The instrument identifies cognitive styles that imply preferred and consistent patterns of responses that are both habitual and unconscious as well as deliberate.

By introducing individuals, groups, and organizations to both the model and the instrument, the human resource development (HRD) practitioner can accomplish the following:

- Help people to identify their own cognitive styles and to understand the benefits as well as the drawbacks of all cognitive styles;

- Teach people how to predict their own behaviors as well as those of others with regard to thinking, learning, and problem solving;

- Prescribe developmental strategies that people can use to enhance their own cognitive styles and/or to build strength in styles that they do not generally use;

- Increase people's skill and flexibility in various problem-solving situations; and

- Facilitate the interactions between individuals and groups.

BACKGROUND AND DEVELOPMENT OF THE COGNITIVE-STYLE MODEL

Theories about cognitive style were developed as a result of early studies conducted by Witkin, Lewis, Hertzman, Machover, Meissner, and Wapner (1954); Witkin, Dyk, Patterson, Goodenough, and Karp (1962); and Bruner (1966). These and other studies resulted in theories that generally assumed a single dimension of cognitive style, with an individual's style falling somewhere on a continuum between the extremes of this dimension. Many of the theories assigned a positive value to one of the extremes and a negative value to the other. The two extremes are described in general terms by Keen

(1973), McKenney and Keen (1974), and Botkin (1974): the *systematic* style (generally viewed as "good" when a value is assigned) is associated with logical, rational behavior that uses a step-by-step, sequential approach to thinking, learning, problem solving, and decision making; in contrast, the *intuitive* style (generally viewed as "bad" when a value is assigned) is associated with a spontaneous, holistic, and visual approach. Subsequently, many studies, books, and journal and magazine articles on the subject of cognitive styles have appeared, for example, Sargent (1981), Martin (1983), Buzan (1983), Wonder and Donovan (1984), and Latting (1985). Each addresses the same basic elements identified earlier as the systematic and intuitive styles.

These theories can be linked with those of left-brain/right-brain thinking, which follow the same bipolarity pattern. Brain research in the late 1960s and early 1970s resulted in the discovery that the two sides of the brain are responsible for different mental functions (Buzan, 1983). Taking brain theory one step further and linking it to the concept of cognitive style, Wonder and Donovan (1984, p. 3) state, "Because of our specific genetic inheritance, our family life, and our early training, most of us prefer to use one side of the brain more than the other." The types of behaviors associated with the two sides are as follows (Wonder & Donovan, 1984):

1. *Left brain*: analytical, linear, sequential, concrete, rational, and goal oriented; and

2. *Right brain*: intuitive, spontaneous, holistic, symbolic, emotional, and visual.

A review of the material on both cognitive style and left-brain/right-brain theory resulted in the following generalizations about cognitive styles:

1. There are distinct, observable, and measurable differences among people's cognitive styles.

2. Cognitive style can easily be detected through language and nonverbal behavior patterns. Dialogue between individuals can reveal differences and can highlight the need for awareness and understanding of these differences.

3. Styles are frequently associated with career choices; therefore, there are connections between behavioral styles and certain functions or divisions within an organization. In fact, style can dominate an organization's culture.

4. Styles take on connotations of "good" or "bad," with one style generally considered to be "better" or "best" depending on the individual interpreter or system evaluator.

5. There is a need to understand, recognize, and develop each area of cognitive specialty.

6. Creativity and effectiveness can be increased when the bipolar dimensions are fused.

In addition, most of the recent studies regarding brain functioning and cognitive style assert the need to use each of the bipolar elements of the systematic and intuitive styles (either by combining or alternating between them) in order to generate greater performance, productivity, and creativity.

EXPLANATION OF THE COGNITIVE-STYLE MODEL

Although the systematic and intuitive styles provided the foundation for The Cognitive Style Model, these two styles had not previously been shown to reflect the entire spectrum of people's behavior with regard to thinking, learning, and especially problem solving and decision making. Therefore, a multidimensional model intended to reflect the entire spectrum was created (Martin, 1983). This model consisted of two continua: (1) high systematic to low systematic and (2) high intuitive to low intuitive. Ongoing observational studies, along with efforts to develop measurement devices for assessing cognitive behavior, have resulted in an expanded version of that original model. As a result, the most current thinking is reflected and best illustrated by the grid presented in Figure 1.
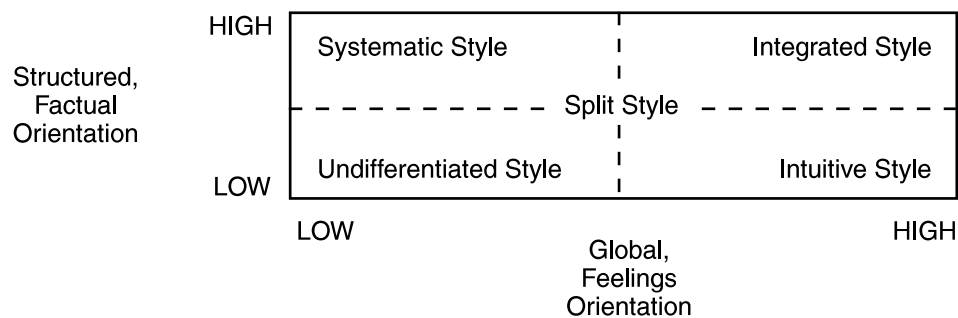
	HIGH	Systematic Style	Integrated Style
Structured, Factual Orientation			Split Style
	LOW	Undifferentiated Style	Intuitive Style
		LOW Global, Feelings Orientation HIGH	

Figure 1. Illustration of The Cognitive-Style Model

The five styles displayed on the grid in Figure 1 are described in the following paragraphs. (The descriptions of the systematic and intuitive styles are based on Keen, 1973; McKenney & Keen, 1974; and Botkin, 1974.)

1. *Systematic style*. An individual identified as having a systematic style is one who rates high on the systematic scale and low on the intuitive scale. According to findings in the Harvard studies, an individual who typically operates with a systematic style uses a well-defined, step-by-step approach when solving a problem; looks for an overall method or programmatic approach; and then makes an overall plan for solving the problem.

2. *Intuitive style*. An individual who rates low on the systematic scale and high on the intuitive scale is described as having an intuitive style. Someone whose style is intuitive uses an unpredictable ordering of analytical steps when solving a problem, relies on experience patterns characterized by unverbalized cues or hunches, and explores and abandons alternatives quickly.

3. *Integrated style*. A person with an integrated style rates high on both scales and is able to change styles quickly and easily. Such style changes seem to be unconscious and take place in a matter of seconds. A result of this "rapid-fire" ability is that it appears to generate an energy and a proactive approach to problem solving. In fact, integrated people are often referred to as "problem seekers" because they consistently attempt to

identify potential problems as well as opportunities in order to find better ways of doing things.

4. *Undifferentiated style*. An individual rating low on both the systematic and the intuitive scale is described as having undifferentiated cognitive behavior. Such a person appears not to distinguish or differentiate between the two style extremes and, therefore, appears not to display a style. In fact, in a problem-solving or learning situation, he or she may exhibit a receptivity to instructions or guidelines from outside sources. Undifferentiated individuals tend to be withdrawn, passive, and reflective and often look to others for problem-solving strategies.

5. *Split style.* An individual rating in the middle range on both the systematic and the intuitive scale is considered to have a split style involving fairly equal (average) degrees of systematic and intuitive specialization. At first glance the split style appears to differ from the integrated style only in the degree of specialization. However, people with a split style do not possess an integrated behavioral response; instead, they exhibit each separate dimension in completely different settings, using only one style at a time based on the nature of their tasks or their work groups. In other words, they consciously respond to problem-solving and learning situations by selecting appropriate style.

Due to the fact that an assessment score identifying a split style generally indicates an equal degree of both dimensions, it might be assumed that both dimensions would be equally exhibited. However, actual observational findings have not produced this result. As a rule, in stressful situations, one dimension appears to dominate, generally as a result of habit. It has been significant that many individuals exhibiting this particular cognitive style have indicated that they were in the process of a cognitive transition; they were moving into a new area of cognitive specialization and were "trying out new behaviors and skills."

Figure 2 presents a more detailed overview of findings about the five styles from formal as well as informal studies and data collections.

EFFECTS OF COGNITIVE SPECIALIZATION

There are indications that the result of extreme cognitive specialization in one dimension can drastically impact overall effectiveness in personal and professional situations. Extreme specialization may limit an individual's or a group's ability to think, learn, solve problems, and interact with others.

SYSTEMATIC STYLE

Descriptors of Style	Language Patterns	Nonverbal Patterns	Projected Career Positions
Convergent thinker	"Let's examine the facts."	Creates an endless list	Engineer
Concrete	"The data indicate..."	Establishes a chronological ordering of steps to be taken	System analyst
Highly structured	"The specific objectives must be measurable."		Computer programmer
Logical		Spends a great deal of time on detail	Production manager
Rational	"Here are my points: A, B, C,...."		Accountant
Ordered		Often belabors a point or step of the process before proceeding to the next step	Purchasing agent
Linear	"What's your rationale?"		Personnel specialist
Step-by-step approach	"Where's the logic in that?"		Public administrator
Concrete on facts, figures, and data	"Do the following: 1, 2, 3,...."		
Reduces problems to workable segments	"I have to figure this out carefully before I can come to a conclusion."		
Product focused			
Deductive			
Very conscious of approach			
Uses a well-defined method or plan for solving a problem			
Uses a highly sequential process			
Handles a problem by breaking it down into a series of smaller (often hierarchical and manageable components			

Figure 2. Overview of Cognitive Styles[1]

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[1] This overview was inspired was inspired by Keen, 1973; McKenney and Keen (1974); and Botkin, 1974.

INTUITIVE STYLE

Descriptors of Style	Language Patterns	Nonverbal Patterns	Projected Career Positions
Divergent thinker	"Somehow my gut tells me...."	Very visual approach	Advertising agent
Global	"I have a sense that...."	'Plays' with (pores over) data	Marketing manager
Abstract	"Let's look at the whole picture."	Can appear to be disorganized	Graphic artist
Visual			Counselor
Spontaneous	"You're not looking at the big picture."	Thinks with eyes, has to see the problem, very frequently draws or graphically displays the problem or alternative solutions	Therapist
Concentrates on ideas and feelings	"The solution is simple."		
Emotion based	"Common sense dictates...."		
Process focused			
Inductive	"I see the answer but I don't know how I got it."		
Not consciously aware of approach, but does use a method that is generally driven by experience			
Keeps the overall problem in mind continually			
Frequently redefines the problem			
Looks at 'the big picture' or the entirety of the problem			

Figure 2. (continued) Overview of Cognitive Styles

INTEGRATED STYLE

Descriptors of Style	Language Patterns	Nonverbal Patterns	Projected Career Positions
Has highly developed, dual cognitive specialties Is highly flexible and adaptable; alternates easily and quickly from one style specialty to another Exhibits high degrees of internal locus control Looks for opportunities to solve problems Creative, innovative Proactive	"I'm just as concerned about the process as I am about the product." "Before we establish measurable objectives, we should develop a philosophy, a vision of the future. Our objectives should be consistent with that philosophy." "I have the answer, but need to determine how I arrived at it."	Active Alert High participation and involvement Frequently acts as facilitator or interpreter of language in groups Appears to be comfortable with "disorganized organization"	Entrepreneur Consultant Researcher

UNDIFFERENTIATED STYLE

Receptive Is not a problem-solving specialist; does not exhibit a specific specialty Passive, reflective Relies heavily on rules, procedures, instructions, suggestions, or guidelines Reacts to the problem stimulus and does not impose a process on the problem Has difficulty making decisions Procrastinates; delays action	"I don't need to know the whys, whens, and wherefores....Just tell me what you want me to do." "I don't ask questions; I just do what I'm told." "Tell me exactly what you want to have done."	Passive, mostly nonverbal Reflective Low involvement Confluent Waits patiently for specific directions	Bookkeeper Administrative assistant Clerical worker

Figure 2. (continued) Overview of Cognitive Styles

SPLIT STYLE

Descriptors of Style	Language Patterns	Nonverbal Patterns	Projected Career Positions
Has approximately equal degrees of systematic and intuitive style that are average/medium in terms of degrees of intensity.	Pattern changes according to the style being used at the time of observation.	Pattern changes according to the style being used at the time of observation.	All careers
Styles are used as completely separate entities.	Generally an individual with a split style is in the process of a cognitive transition involving building new strengths and skills in the dimension that is perceived to the weaker of the two (systematic or intuitive).	Generally an individual with a split style is in the process of a cognitive transition involving building new strengths and skills in the dimension that is perceived to the weaker of the two (systematic or intuitive).	
Styles are not at all integrated and are consciously selected for each specific situation			
Out of habit, one style is used often than the others.			

Figure 2. (continued) Overview of Cognitive Styles

Effects on the Individual

Cognitive style specialization—particularly in systematic, intuitive, and undifferentiated styles—appears to limit one's ability to fully function in learning and problem-solving situations. In many cases individuals whose styles are specialized are highly successful in most endeavors but have a blind spot in the ways in which they take in information, sort the data, and ultimately respond.

The same blind spots appear in conversations and interactions between individuals or groups that specialize in different cognitive styles. The dialogue frequently becomes stilted and often breaks down. Barriers and misunderstandings between individuals occur due to the differences in methodologies and language or nonverbal communication patterns. Differences in cognitive specialization also can lead to poor performance reviews, conflict situations, and a lack of "job fit" or match between an individual and an organization. Indeed, the success of the "fit" between an individual and a group or an organization can be predicted by the degree to which the cognitive styles match. Once a group or an organization becomes characterized by a particular style, it may begin to reward that style exclusively; for example, managers might insist that subordinates use the same processes or approaches that they use. In such a situation people whose styles are different from the organization's may be labeled "resistant," "stubborn," "weird," or even "incompetent"; consequently, they may find it difficult or even impossible to succeed in the organization.

When such a bias occurs within an organization, often it is in favor of the systematic style, which is generally associated with the left side of the brain. Wonder and Donovan (1984) describe this phenomenon as follows:

> Researchers refer to the left brain as the dominant hemisphere and the right as the nondominant one, because the skills of the left brain are dominant in our society. Money, technology, efficiency and power are thought to be the rewards of leftbrain planning. (p. 14)

In an industrial and highly technological society, systematic ability is critical; therefore, the systematic style has become favored. Yet innovation is fostered by the intuitive style.

Effects on the Work Group

Differences in style among members of a work group can also create difficulties in achieving goals. Cognitive-specialization differences in groups frequently result in process and communication problems. If severe enough, the problems can cause communication breakdowns, which, in turn, can lead to spending a great deal of time on the process of problem solving rather than on accomplishing the task with the greatest effectiveness. In a few isolated cases when the degree of cognitive difference is extreme, the group members sometimes experience a mental "logjam." The group becomes immobilized and gets stuck, actually unable to proceed. If the problem of differences is severe enough and the group has the option to do so (as may be the case with a task force), it may choose to terminate its efforts.

However, when differences and similarities among cognitive styles in a group are recognized and taken into consideration, a type of synergy can be created. This synergy results when the group honors the efforts of each of its members to use his or her particular cognitive expertise in those stages of the problem-solving process where it is most appropriate. For example, systematics and intuitives might work together on the first phase of the problem-solving process (problem identification). Then the intuitives might use a divergent approach by expanding all of the problem possibilities in order to identify all potential problems. Subsequently, the systematics might employ a convergent approach, using the intuitives' list to identify realistic problems. Ultimately, the focus of the group's problem-solving activity would become more and more narrow and specific until a problem statement could be generated.

Another type of synergy is created when a group's members all share the same cognitive style and begin to work on a task that requires a methodology characteristic of that style. In this case members easily understand one another's language and readily pick up on nonverbal cues. As a result they communicate and work well together. However, it is important to understand that the opposite result also could occur when the members share one style. For example, the group might find it necessary to complete an assignment that requires behaviors characteristic of an opposite style.

Effects on the Organization

Organizational systems can sometimes experience the difficulties brought about by cognitive-style specialization of entire divisions. For example, one young, newly appointed vice president of a well-known publishing company explained that she was having a great deal of difficulty managing her work unit. She reported behaviors of resistance, sabotage, and raging battles that she described as an ongoing war. She was in charge of coordinating the activities of the Production Division (a function characterized by a systematic style) and the Marketing and Advertising Division (a function characterized by an intuitive style). Her performance evaluation and position were dependent on her ability to instill and maintain peace and harmony between the two divisions. What she did not know and was surprised to discover was the notion that these two groups essentially spoke different languages and thought and acted in distinctly different ways. As a result, each division perceived the other as "misfits." Once she understood the implications of their cognitive-style differences, she could address the problem.

THE INSTRUMENT

The Cognitive-Style Inventory consists of forty statements, half of which pertain to the systematic style and half to the intuitive style. Respondents evaluate each statement according to the degree to which they agree with it. Subsequently, the respondents transfer their responses to the scoring sheet, which yields a systematic score and an intuitive score. These scores are then transferred to the interpretation sheet, which allows them to determine to what degree they specialize in systematic and intuitive styles. Finally, they locate their scores on the scales provided in the interpretation sheet to identify their own specific styles.

Validity and Reliability

The Cognitive-Style Inventory has face validity. Because it is used primarily as a basis for discussion of the effects of cognitive style on individual, group, and organizational functioning, no attempt has been made to establish validity and reliability beyond this point.

Administration

The instrument, the scoring sheet, and the interpretation sheet can be completed by most respondents in approximately twenty to thirty minutes. It is advisable to follow scoring and interpretation with a lecturette and discussion on cognitive styles. If the HRD practitioner prefers, respondents may be instructed to complete the instrument, listen to the lecturette and participate in the discussion, and then predict what their styles will be before they complete the scoring and interpretation sheets. If the practitioner wants the respondents to practice identifying styles, he or she may distribute copies of Figure 2

from this paper; cover the contents with the respondents; and then show a videotape of a group problem-solving session, asking the respondents to monitor verbal and nonverbal patterns and to identify individual styles.

Uses of the Instrument and the Model

The HRD practitioner can play an important role in helping an organization to understand, appreciate, and expand the range of cognitive behaviors used by its members. To fulfill this role, the practitioner can administer The Cognitive-Style Inventory and explain the model to organizational members for the following purposes:

1. *Raise people's awareness of the significance of cognitive styles in general and of their own in particular.* Organizational members need to learn the benefits and liabilities associated with each specific style, particularly as it interacts with other styles. Botkin's (1974) study suggests that an individual's awareness of his or her own cognitive style can improve that person's ability to communicate and interact with others.

2. *Help people to develop the skills, attitudes, and behaviors associated with styles that they do not typically use.* According to Buzan (1983), research has shown that a synergistic effect takes place in all mental performance when an individual develops one mental area (either the systematic or the intuitive style) that was previously considered to be weak. The HRD specialist can provide training and development activities to enhance people's present styles and/or to build each person's underutilized or weaker style. For instance, a seminar on creativity that focuses on lateral thinking and creative problem-solving techniques such as brainstorming and visualization would greatly benefit people with a systematic style while supporting those with an intuitive style.

3. *Train people to be facilitators and/or advisors in the problem-solving process of a work group or a task force.* These individuals would become familiar with both The Cognitive-Style Model and the inventory and would act as interpreters or even negotiators in groups as needed in order to bridge the gap of cognitive differences. This strategy would be particularly useful in helping groups to deal with conflict. In addition, these people could be trained in team-building strategies so that they could assist groups in developing better intragroup relationships.

4. Use individual style similarities and differences in team-building sessions to examine interaction "pinch points" and "synergy points" in order to establish group guidelines. The HRD specialist, through process observation, could identify when and how cognitive barriers occur in the problem-solving process and could then offer preventive and prescriptive measures.

5. *Form task forces or product-innovation groups whose members are identified as specialists in specific cognitive styles.* This approach would "champion" creative designs from the inception phase to introduction in the marketplace. The HRD practitioner could help to create such groups throughout an organization (much like "quality circles") in an attempt to foster a cultural change geared toward innovative responses. Training and

development activities could build and integrate systematic and intuitive skills, both of which are needed for creative growth.

6. *Determine whether the organization as a whole, practices a cognitive-style specialization.* The HRD specialist could provide management-development programs to address the issue and build the skill base that is needed. A single style throughout an organization imposes limitations; consequently, the practitioner could conduct interventions designed to alter the culture to foster change.

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THE COGNITIVE-STYLE INVENTORY

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Instructions: For each of the statements in this inventory, refer to the following scale and decide which number corresponds to your level of agreement with the statement; then write that number in the blank to the left of the statement.

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

_____ A. I get a "feel" for a problem or try to "see" it before I attempt a solution.

_____ B. I analyze a problem or situation to determine whether or not the facts add up.

_____ C. I create pictorial diagrams/visual images while problem solving.

_____ D. I have a classification system ("pigeon holes") where I store information as I solve a problem.

_____ E. I catch myself talking out loud as I work on problems.

_____ F. I solve a problem by first "spotlighting" or focusing on the critical issues.

_____ G. I solve a problem by first "floodlighting" or broadening the scope of the problem.

_____ H. I attack a problem in a step-by-step, sequential, and orderly fashion.

_____ I. I attack a problem by examining it in its entirety before I look at its parts.

_____ J. The most efficient and effective way to deal with a problem is logically and rationally.

_____ K. The most efficient and effective way to deal with a problem is to follow one's "gut" instincts.

_____ L. I carefully solve a problem by ordering, combining, or building its parts in order to generate a solution for the whole problem.

_____ M. I carefully solve a problem by examining it in its entirety, in relationship to its parts, before I proceed.

_____ N. All problems have predetermined, "best or right" answers in a given set of circumstances.

_____ O. All problems are open ended by nature, allowing for many possible answers or solutions.

_____ P. I store volumes of data in my memory, much like a computer, by compartmentalizing each entry for easy recall.

_____ Q. I store a lot of data in my memory by adding to the image that is already

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

there and then determining how the information "fits" (like the relationship between a jigsaw puzzle and its individual pieces).

_____ R. Before solving a problem, I tend to look for a plan or method of solving it.

_____ S. I generally rely on "hunches," gut feelings, and other nonverbal cues to help me in the problem-solving process.

_____ T. I generally rely on facts and data when problem solving.

_____ U. I create and discard alternatives quickly.

_____ V. I generally conduct an ordered search for additional information and carefully select the sources of data.

_____ W. I consider a number of alternatives and options simultaneously.

_____ X. I tend to define the specific constraints of a problem early in the problem-solving process.

_____ Y. When analyzing a problem, I seem to jump from one step to another and back again.

_____ Z. When analyzing a problem, I seem to progress from one step to another in a sequential way.

_____ AA. I generally examine many sources of data, letting my eyes "play" over the information while searching for guiding clues.

_____ BB. When I work on a problem involving a complex situation, I break it into a series of smaller, more manageable blocks.

_____ CC. I seem to return to the same source of data several times, deriving different insights each time.

_____ DD. I gather data methodically, at a chosen level of detail, and in a logical sequence.

_____ EE. I generally sense the size and scope of a problem to produce the "whole picture."

_____ FF. When I solve a problem, my approach is detailed and organized; as a result, arriving at a solution is generally a time-consuming process.

_____ GG. I am able to solve a problem quickly and effectively; I do not spend a great deal of time on the problem-solving process.

_____ HH. I have an excellent memory and a good aptitude for mathematics.

_____ II. I am comfortable with uncertainty and ambiguity.

_____ JJ. I would describe myself—and so would others—as predictable and reliable.

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

_____ KK. I have an abundance of ideas and an inquisitive nature.

_____ LL. It is my nature to avoid "making waves" with change.

_____ MM. I would describe myself—as would others—as a risk taker.

_____ NN. I am comfortable with the status quo; "new ways" are not always better ways.

THE COGNITIVE-STYLE INVENTORY SCORING SHEET

Instructions: Transfer your inventory responses to the appropriate blanks below. Add the numbers in each column, and record the totals in the blanks provided.

_____	A.	_____	B.
_____	C.	_____	D.
_____	E.	_____	F.
_____	G.	_____	H.
_____	I.	_____	J.
_____	K.	_____	L.
_____	M.	_____	N.
_____	O.	_____	P.
_____	Q.	_____	R.
_____	S.	_____	T.
_____	U.	_____	V.
_____	W.	_____	X.
_____	Y.	_____	Z.
_____	AA.	_____	BB.
_____	CC.	_____	DD.
_____	EE.	_____	FF.
_____	GG.	_____	HH.
_____	II.	_____	JJ.
_____	KK.	_____	LL.
_____	MM.	_____	NN.

_____   _____

Total Intuitive   **Total Systematic**
Score   **Score**

THE COGNITIVE-STYLE INVENTORY INTERPRETATION SHEET

Place an "X" in the appropriate block to indicate your degree of cognitive specialization.

**Your
Systematic
Score**

High > 81	
Medium High 71-80	
Medium Low 61-70	
Low < 60	

**Your
Intuitive
Score**

High > 81	
Medium High 71-80	
Medium Low 61-70	
Low < 60	

Instructions: Scan the numbers listed below, one style at a time, until you find a style that lists your degree of systematic specialization as well as your degree of intuitive specialization. The style that lists both is your own cognitive style. For each style, the more extreme degrees of that style are listed at the top.

	Systematic Score	**Intuitive Score**
Systematic Style	High > 81	Low < 60
	High > 81	Medium Low 61-70
	Medium High 71-80	Low < 60
Intuitive Style	Low < 60	High > 81
	Medium Low 61-70	High > 81
	Low < 60	Medium High 71-80
Integrated Style	High > 81	High > 81
	High > 81	Medium High 71-80
	Medium High	High > 80
Undifferentiated Style	Low < 60	Low < 60
	Medium Low 61-70	Low < 60
	Low < 60	Medium Low 61-70
Split Style	Medium High 71-80	Medium High 71-80
	Medium High 71-80	Medium Low 61-70
	Medium Low 61-70	Medium High 71-80
	Medium Low 61-70	Medium Low 61-70

❚ THE CONCEPT OF LEARNING STYLE

Ronne Toker Jacobs and Barbara Schneider Fuhrmann

Literature pertaining to teaching and training often emphasizes that learners are not homogenous in the ways in which they learn and that trainers, therefore, need to account for the unique ways in which people acquire knowledge and skills. However, extensive psychological research on learning styles has, to date, had little impact on training practice. The assumption often seems to be that all the learners in a given situation will learn best in a single way—listening to a lecture, discussing in small groups, or exploring independently. This assumption is often valid; there does seem to be a relationship between the type of learning (content, topic, skills, process) and the appropriate style. However, it is sometimes possible and even valuable for learners to obtain the same learning objective in distinctly different ways.

STUDIES OF LEARNING STYLES

A thorough search of the literature indicates the significance of learning style and reveals that little has been accomplished in providing teachers or trainers with information that could impact practice and achievement.

Various teaching styles have been studied. Axelrod (1973), in an extremely general overview, classifies teachers as those who rely primarily on didactic modes-that is, they pass information on to students—and those who use evocative modes, drawing information and meaning from students. Adelson (1961) analogously describes the teacher as either *shaman*, who keeps the focus on himself; priest, who focuses on the discipline and sees himself as a representative of it; or *mystic healer*, who focuses on the student. A more discriminating and useful taxonomy was developed by Mann (1970), who describes individual teachers as various combinations of six primary styles. The *expert* defines the role primarily as giving information; the *formal authority* as directing and controlling; the *socializing agent* as preparing new members of a profession or discipline; the *facilitator* as enabling students to develop in ways they select; the *ego ideal* as being an inspiring model; and the *person* as being an interested and caring co-learner.

Less attention appears to have been paid to style of instructional content, with the styles noted by Bergquist and Phillips (1975) apparently most widely accepted. They identify three types of content: (a) *cognitive*, to add to or reorganize existing information; (b) *skill*, to improve performance on specific tasks; and (c) *affective*, to increase self-understanding and self-control. Bergquist and Phillips also describe styles of educational environment as *teacher oriented* (lectures, presentations); *automated*

(language and mathematics labs); *interaction oriented* (discussion experiences, simulations, workshops); and *experience oriented* (field practicums and internships).

The unique modes of learner response also have been studied. Mann and his colleagues (1970) analyzed interviews, questionnaires, and tape recordings of class interviews, and distinguished eight "clusters" of student behavior: *compliant* students are well socialized in the system and accept its values; *anxious-dependent* students generally feel incompetent and rely on teachers for support; *discouraged* workers are dissatisfied with themselves; *independents* are competent and not threatened; *heroes* feel superior and look for admiration; snipers display a low level of investment and much hostility; *attention seekers* need acceptance and look for social approval; *silent* students do not participate and usually feel helpless and vulnerable.

Another taxonomy was developed by Riechmann and Grasha (1974), whose learning-style categories are based on students' reactions to classroom events as well as their attitudes toward learning, their teachers, and their peers. They identified six learning styles: *competitive* students who learn in order to outperform classmates; *collaborative*, who believe they can learn best through sharing; *avoidant*, who are not interested in learning content in traditional ways; *participant*, who want to learn and enjoy the class; *dependent*, who lack curiosity and want to be told what to do; and *independent*, who enjoy thinking for themselves.

Cross (1976) details research that discriminates field-dependent students—those who perceive the world as a whole and emphasize relationships-from field-independent students, who tend to separate elements and approach the world in an analytical mode. Cross repeatedly emphasizes that "People will probably be...more productive if they are studying...via a method compatible with their style.... No one method should be regarded as a panacea for all students in all subjects.... Educators need to be aware of the cognitive styles of students, in order to provide the appropriate kinds of reinforcement.... The learning program [should not be] biased in favor of a particular cognitive style...."

Extensive work in cognitive style has been done by Hill (1971) and associates, who have developed a process for learning how an individual prefers to gather information (from associates, family, or individually) and to reason (deductively or inductively), to help individuals better understand their cognitive learning processes.

Erickson (1974) states that one of the most important factors in instruction is to provide learners with the opportunity to make full use of their talents and interests.

THE MODEL

A simple, practical model is needed to help teachers and trainers account for individual preferences in learning. Johnson (1976) notes that some students are "dependent prone" and need highly structured settings in which to function, while others are "independent prone" and require greater flexibility and freedom. These categories are similar to the field-dependent/field-independent dimension. We have added a third category to this: the "collaborative prone."

Through our study of the works cited, and based on our experiences with various models of learning styles, we have found a logical model that discriminates three learning styles: the *dependent style*, the *collaborative* style, and the *independent* style. Any one person will learn in all three styles, but may use a particular style in a particular situation, based on personal preferences and the unique characteristics of the subject to be learned or the activity to be engaged in. No one style in this model is better than the others, although one may be more appropriate for a given individual or in a given situation.

LEARNING-STYLE DESCRIPTIONS

The Learning-Style Inventory elicits for each individual a combination of three scores that indicate the relative importance of each style in the positive experiences recalled by the individual.

The D score, indicating *dependence* in the learning situation, refers to the learner's expectation that it is the teacher or trainer who is primarily responsible for the learning that occurs. The learner with a high D score has had positive previous experiences in which the teacher or trainer assumed total responsibility for content, objectives, materials, learning experiences, and evaluation. The learner perceived the teacher or trainer to be the expert and authority.

The C score, indicating *collaboration*, refers to the learner's expectation that the responsibility for learning should be shared by the teacher/trainer and learners. The learner with a high C score has had positive experiences in which the teacher/trainer shared responsibility and encouraged participation in all aspects of the learning design. Such learners enjoy interaction and perceive their peers as well as the teacher/trainer as possessing expertise or input worthy of consideration.

The I score, indicating *independence*, refers to the learner's expectation that he or she will be encouraged to set and attain personal goals. The learner with a high I score has had positive experiences in which the teacher/trainer is perceived as one expert who may be asked to share expertise, but who helps learners to develop their own expertise and authority and frequently acts as a resource to the learners.

No individual style is implicitly better or worse than the others. In fact, each of us has used all three and each has a current preference. The key to effective training is to be able to use the style that is most appropriate. Appropriateness depends on a number of factors, including the individual's ability and willingness to learn the content and the match between the learner's learning-style preference and the teacher/trainer's teaching-style preference. The dependent learner responds best to a directive teacher/trainer, the collaborative learner to a collaborative teacher/trainer, and the independent learner to a delegative teacher/trainer.

A very high score in any one mode may mean only that the learner has been particularly successful with that mode in the past or that he or she tends to overemphasize that mode, thus limiting opportunities to develop other styles. A very

low score may mean only that the learner has not been successfully exposed to the particular style, although it also may mean that he or she has avoided learning in that way.

Maturity Level and Learning Styles

Research with the inventory instrument indicates that less mature students (frequently freshman or older adult students) are more dependent in their learning styles. As they grow in maturity, they become more collaborative and then more independent in these preferences. Maturity, as defined by Hersey and Blanchard (1982) in their Situational Leadership® model, is assessed in reference to the person's ability and willingness to assume responsibility for directing his or her own behavior. Hersey and Blanchard view ability as a person's skill, knowledge, or experience to perform a particular task. They equate willingness with motivation. Therefore, when students are willing or motivated to learn in a particular area or subject, they think that subject is important. They are committed to accomplishing the necessary tasks and feel or become confident in their ability to perform the tasks. Consequently, as students move from lower levels of maturity to higher levels, their competence and confidence to accomplish the learning and to be in command of their learning increases (see Figure 1).

High Maturity   Independent

Collaborative

Low Maturity   Dependent
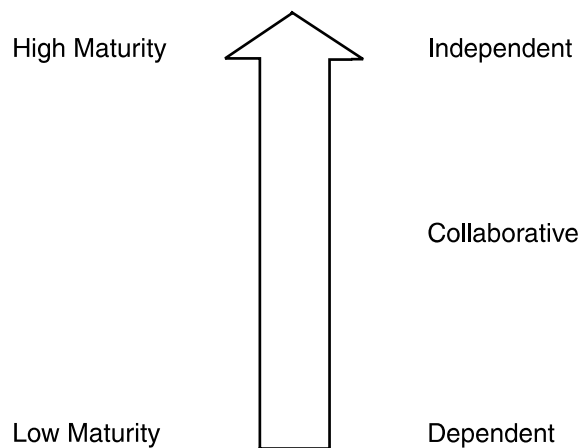
Figure 1. Maturity Levels and Learning Style

If we were to superimpose the student learning styles on the Situational Leadership® *maturity* scale, it would look like Figure 2.

M4	M3	M2	M1
Independent	Collaborative		Dependent

Figure 2. Situational Leadership® Maturity Levels and Learning Styles

Combining the concept of learning style with the Situational Leadership® concept of maturity allows us to describe the expected characteristics of an individual with each of the Learning-Styles Profiles used with the instrument. In each profile, a capital letter refers to a dominant style (score of 6 or higher on the instrument) and a lowercase letter refers to a non-dominant style.

Profile	Description
Dci	A person with this profile has had highly satisfying traditional learning experiences in which the teacher/trainer assumed major, if not full, responsibility for the learning experience. This learner may be very willing to learn, but is likely to assume a low personal competence base; is most productive in a structured learning environment; and is likely to need a great deal of support to venture into collaborative and/or independent learning experiences.
DCi	A person with this profile accepts the teacher's/trainer's authority and expertise but also enjoys individual participation and values the contributions and potential expertise and experiences of colleagues. This learner probably is quite willing to learn and feels at least somewhat confident, but probably needs encouragement to work independently.
DCI	A person with this profile has had satisfying experiences in all three modes. This versatility makes him or her willing to learn in any style. The person is likely to feel highly competent as a learner, regardless of the style of the teacher/trainer.
DcI	A person with this profile has had success both in the traditional learning environment and on independent projects but may lack interpersonal skills or the ability to function effectively in a group. This learner needs support to work with others and to develop interpersonal competence and may be willing and feel competent only when the learning does not require interaction.
dcI	A person with this profile has had particularly satisfying independent training experiences, working on projects independently and using the teacher or trainer as a resource. This person is comfortable working alone and with infrequent contact with others.
dCi	A person with this profile particularly enjoys participation, interaction, and collaboration. Working in groups and actively contributing to the learning process are valued, and both willingness and perceived competence are high in collaborative situations. This learner may have difficulty in recognizing appropriate teacher/trainer expertise, in taking a back seat, and in designing and executing independent projects.

Profile	Description
dCI	A person with this profile has had particularly satisfying learning experiences working collaboratively and independently. It is likely that this person has had successful dependent experiences as well but has selected the more recent collaborative and independent experiences as highlights. This person probably feels both willing and competent in most learning situations.
dci	This person either has had no really positive learning experiences or has resisted or misread the inventory. If he or she has had no positive learning experiences, this learner is likely to be both unwilling and lack-ing in self-confidence, regardless of the learning experience offered.

IDENTIFYING LEARNER/TRAINER STYLES

In designing learning experiences, teachers/trainers need to account not only for learner preferences but also for their own experience and preferences. Table 1 details the relationships between learner styles and teacher/trainer roles.

The Learning-Style Inventory contains one form to provide trainers with information about their trainees' perceived learning-style preferences and another form to provide trainers with information about their own perceived preferences of training style. Each version of the instrument contains thirty-six statements, with twelve statements reflecting dependent or directive learning preference, twelve statements reflecting collaborative learning preference, and twelve statements reflecting independent or delegative learning preference. Respondents are asked to identify two critical learning or teaching incidents (a learning highlight or peak experience constitutes a critical incident) and to place a check mark in the box by each statement if that statement is descriptive of the learning or teaching experience. If more than ten checks appear in a column for a peak experience, the respondent is asked to circle the ten most significant. After scoring the instrument, respondents are able to obtain a measure of the relative strength of each preference and of the possible preferred conditions.

USES OF THE LEARNING-STYLE INVENTORY

The Learning-Style Inventory can be used to gather data in any learning environment. The resulting information can be used (a) to modify a course or training design, (b) as a pre- and post-test if one of the objectives is to increase flexibility in learning styles, and (c) to gauge teacher or trainer effectiveness or potential difficulties if teaching/training style preferences are at odds with student preferences. Other uses include: (d) identification of the need to clarify expectations if, for example, the learners are seeking collaborative work and the instructor intends to lecture; (e) incorporation of mini

Table 1. Learner-Teacher/Trainer Descriptors

Learner Style	Learner Needs	Teacher/Trainer Role	Teacher/Trainer Behavior
DEPENDENT (May occur in introductory courses, new work situations, languages, and some sciences when the learner has little or no information on entering the course.)	Structure Direction External reinforcement Encouragement Esteem from authority	Director Expert Authority	Lecturing Demonstrating Assigning Checking Encouraging Testing Reinforcing Transmitting content Grading Designing materials
COLLABORATIVE (May occur when the learner has some knowledge, information, or ideas and would like to share or try them out.	Interaction Practice Probe of self and others Observation Participation Peer challenge Peer esteem Experimentation	Collaborator Co-learner Environment setter	Interacting Questioning Providing resources Modeling Providing Feedback Coordinating Evaluating Managing Observing process Grading
INDEPENDENT (May occur when the learner has much knowledge or skill on entering the course and wants to continue to search on his or her own or has had successful experiences in working through new situations alone. The learner may feel that the instructor cannot offer as much as he or she would like.	Internal awareness Experimentation Time Nonjudgmental support	Delegator Facilitator	Allowing Providing requested feedback Providing resources Consulting Listening Negotiating Evaluating Delegating

designs when the majority of the course is one preferred style but the learner preferences indicate a solid mix; (f) discussion of the scores with the learners as a group and/or counseling with them individually regarding the interpretation of their scores. The instrument also can be used in academic advising and professional development work. Teachers or trainers who show a solid preference in one style might choose to seek additional training or experience in one or more of the other styles.

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LEARNING-STYLE INVENTORY
(Trainee)

Ronne Toker Jacobs and Barbara Schneider Fuhrmann

Instructions: In order to determine your preferences in training events, think of two previous training (learning) experiences in which you were involved and which you regard as positive. Then read each statement below and decide if it applies to the first experience. If so, place a check mark (√) next to the number in the first space provided. Leave the space *blank* if the statement does *not* apply. After responding to the thirty-six statements, go back and count the check marks. If there are more than ten, circle those *ten* check marks that are *most* significant. Then repeat this procedure with the second training (learning) experience in mind, again circling your ten most significant check marks for that experience.

 1st   2nd

_____ _____ 1. The trainer's frequent monitoring encouraged me to keep up with the workshop.

_____ _____ 2. I appreciated the trainer's presenting most of the material in the course.

_____ _____ 3. I achieved the goals I set.

_____ _____ 4. I cooperated with other participants on the work

_____ _____ 5. I shared my ideas with other participants.

_____ _____ 6. I appreciated the trainer's having designed all the learning experiences for the workshop.

_____ _____ 7. I criticized others' ideas and pointed out areas they may not have discovered.

_____ _____ 8. Being able to try out new ideas was important to me.

_____ _____ 9. New ideas stimulated my curiosity, and I worked to satisfy myself.

_____ _____ 10. I used available resources for my own purposes.

_____ _____ 11. I frequently encouraged other participants to continue working, looking for alternatives, and moving toward goals.

_____ _____ 12. I felt good about the trainer's well-detailed plan and organization of the workshop.

_____ _____ 13. I created ways to accomplish my goals.

_____ _____ 14. I liked having the trainer assign all the materials we used.

_____ _____ 15. I offered ideas and thoughts that were accepted.

_____ _____ 16. I worked on my own.

_____ _____ 17. I developed the work I wanted to do.

_____ _____ 18. I listened to what others had to say.

_____ _____ 19. I evaluated my own learning.

_____ _____ 20. I worked patiently with others.

_____ _____ 21. I worked and talked with other participants.

_____ _____ 22. I went beyond workshop expectations to satisfy my own curiosity.

_____ _____ 23. The other participants and I challenged one another's ideas.

_____ _____ 24. I learned from the trainer's well-executed demonstration.

_____ _____ 25. I appreciated the opportunity to direct my own learning.

_____ _____ 26. I liked the trainer's thorough coordination of the workshop and out-of-class activities.

_____ _____ 27. I did exactly what was expected of me.

_____ _____ 28. I am glad that the trainer directed our discussions.

_____ _____ 29. I like the trainer's assuming full responsibility for assignments and learning tasks.

_____ _____ 30. I was warm and open to the people with whom I worked.

_____ _____ 31. I relied on the trainer's expert knowledge of the material.

_____ _____ 32. I am glad that the trainer alone decided how our work was to be evaluated.

_____ _____ 33. I designed my own experience.

_____ _____ 34. Workshop participants co-designed part of the workshop.

_____ _____ 35. I created a new approach or idea.

_____ _____ 36. I liked having time to work with the other participants.

LEARNING-STYLE INVENTORY
(Trainer)

Ronne Toker Jacobs and Barbara Schneider Fuhrmann

Instructions: In order to determine your preferences in training, think of two previous training experiences in which you were involved and which you regard as positive. Then read each statement below and decide if it applies to the first experience. If so, place a check mark (√) next to the number in the first space provided. Leave the *space* blank if the statement does not apply. After responding to the thirty-six statements, go back and count the check marks. If there are more than ten, circle those *ten* check marks that are *most* significant. Then repeat this procedure with the second training experience in mind, again circling your ten most significant check marks for that experience.

1st   2nd

_____ _____   1.   I employed frequent quizzes to keep the participants on course.

_____ _____   2.   I presented most of the material in the workshop.

_____ _____   3.   I had participants set their own goals.

_____ _____   4.   I worked with participants.

_____ _____   5.   I enjoyed having participants share their ideas with one another.

_____ _____   6.   I designed all the learning experiences for the workshop.

_____ _____   7.   I had participants critique one another.

_____ _____   8.   I allowed participants to experiment with new ideas.

_____ _____   9.   I encouraged participants to explore their curiosity and to work to satisfy themselves.

_____ _____ 10.   I suggested that participants use available resources for their own purposes.

_____ _____ 11.   I frequently encouraged participants to continue working together, exploring alternatives, and moving toward goals.

_____ _____ 12.   I felt good about telling the participants of the well-detailed plan and organization of the workshop.

_____ _____ 13.   I encouraged participants to create ways in which to accomplish their goals.

_____ _____ 14.   I liked selecting all the materials we used.

_____ _____ 15.   I accepted the participants' ideas and thoughts.

_____ _____ 16. I developed participants so that they could work on their own.

_____ _____ 17. I encouraged participants to adapt the workshop to meet their needs.

_____ _____ 18. I listened to what others had to say.

_____ _____ 19. I encouraged the participants to evaluate their progress.

_____ _____ 20. I worked patiently with others.

_____ _____ 21. I worked and talked with participants.

_____ _____ 22. I encouraged the participants to explore ideas beyond the workshop.

_____ _____ 23. The participants and I challenged one another's ideas.

_____ _____ 24. The participants learned from my well-executed demonstrations.

_____ _____ 25. I appreciated the participants' directing their own learning.

_____ _____ 26. I enjoyed thoroughly coordinating workshop and post-workshop activities.

_____ _____ 27. I told the participants precisely what to expect.

_____ _____ 28. I controlled the participants' discussions.

_____ _____ 29. I assumed full responsibility for the learning activities.

_____ _____ 30. I was warm and open to the people with whom I worked.

_____ _____ 31. The participants relied on my expert knowledge of the material.

_____ _____ 32. I alone decided how the participants would be evaluated.

_____ _____ 33. I encouraged the participants to design their own experience.

_____ _____ 34. The participants co-designed part of the workshop.

_____ _____ 35. I asked participants to develop new approaches or ideas.

_____ _____ 36. I liked having the opportunity to work with the participants.

LEARNING-STYLE INVENTORY SCORING SHEET
(Trainee)

Instructions: Check to see that you have circled no more than ten items in each column on the inventory. Total your responses (circles) for each item and transfer the total (0, 1, or 2) to the key below. Then total all your responses that fall in column D and write this number at the bottom of the column. Repeat this step for columns C and I.

D	I	C
1. _____	3. _____	4. _____
2. _____	8. _____	5. _____
6. _____	9. _____	7. _____
12. _____	10. _____	11. _____
14. _____	13. _____	15. _____
24. _____	16. _____	18. _____
26. _____	17. _____	20. _____
27. _____	19. _____	21. _____
28. _____	22. _____	23. _____
29. _____	25. _____	30. _____
31. _____	33. _____	34. _____
32. _____	35. _____	36. _____

TOTALS:

D _____	I _____	C _____
(Dependence)	(Independence)	(Collaboration)

Your scores in these three columns indicate the relative importance of each of three learning styles in the positive learning experiences that you have recalled. Most people have a preference for one or two styles but are able to learn in all three styles, depending on the situation.

Your learning-style profile can be drawn by determining your primary and secondary styles. If you scored 6 or higher in the D column, write a capital "D" in the space below. If you scored 5 or lower in the D column, write a lowercase "d" in the space. Do the same for the next two columns, writing a capital "C" or "I" if you scored 6 or higher in either of those columns and a lowercase "c" or "i" if you scored 5 or lower in either of those columns.

There are eight possible profiles, or combinations of learning styles: Dci, DCi, DCI, DcI, dcI, dCi, dCI, and dci. The administrator of the Learning-Style Inventory instrument will explain these various combinations to you.

Learning-Style   D _____   I _____   C _____
    Profile   D or d   I or i   C or c

LEARNING-STYLE INVENTORY SCORING SHEET
(Trainer)

Instructions: Check to see that you have circled no more than ten items in each column on the inventory. Total your responses (circles) for each item and transfer the total (0, 1, or 2) to the key below. Then total all your responses that fall in column D and write this number at the bottom of the column. Repeat this step for columns C and I.

D	I	C
1. _____	3. _____	4. _____
2. _____	8. _____	5. _____
6. _____	9. _____	7. _____
12. _____	10. _____	11. _____
14. _____	13. _____	15. _____
24. _____	16. _____	18. _____
26. _____	17. _____	20. _____
27. _____	19. _____	21. _____
28. _____	22. _____	23. _____
29. _____	25. _____	30. _____
31. _____	33. _____	34. _____
32. _____	35. _____	36. _____

TOTALS:

D _____ I _____ C _____

(Dependence) (Independence) (Collaboration)

Your scores in these three columns indicate the relative importance of each of the three training-learning styles in the positive training experiences that you have recalled.

To determine your profile, write a capital "D" in the space below if you scored 6 or higher in the D column. If you scored 5 or lower in the D column, write a lowercase "d" in the space. Do the same for the next two columns, writing a capital "C" or "I" if you scored 6 or higher in either of those columns and a lowercase "c" or "i" if you scored 5 or lower in either of those columns.

Learning-Style	D _____	I _____	C _____
Profile	D or d	I or i	C or c

❚❚ DECISION-STYLE INVENTORY

Rick Roskin

Our society is tending toward a "total information environment" which has excited proponents of the science of management and alienated those who fear Orwell's "Big Brother" syndrome.

Despite the fears of the latter group, however, more information about every-body and everything is becoming available daily, sharpening the appetite of those interested in quantitative decision-making theory. The exciting fact about complex, esoteric mathematical models is that they become more meaningful as the number of unknowns decreases. The greater the information available, the fewer the unknowns, and the more realistic the mathematical model. However, the unhappy reality is that even after the computer has produced the numbers, someone, somewhere, has ultimately to assume the responsibility for making the final decision. As Marks (1971) suggests:

> Despite all the talk about decision making, uncertainty remains a factor, and no one tells executives how to deal with it. Scientific management stops at the point where nature is not rational. If help is to be found it must come from poets and preachers, men whose business begins at the limits of rational certainty. (p. 57)

We are told in effect, that we must confront uncertainty by taking "the leap of judgment" beyond facts and logic, that such leaps are necessary and that courage stands next to intelligence as an irreducible ingredient in the decision-making process.

Yet there is a method that can help us determine where our "leap of judgment" might lead us.

THE DIMENSIONS OF EFFECTIVE DECISIONS

Maier (1963) has developed an effective way to look at decision making. From research, he has found that two dimensions seem to be relevant in appraising a decision's potential effectiveness. One of these is the objective or impersonal quality of the decision. (This aspect is the most common focus of mathematical models.) The other has to do with its acceptance, or the way the persons who must execute the decision feel about it. (This aspect is the most common focus of behavioral models.)

Depending on the individual's normal style of decision making, he or she will tend to focus on quality or acceptance regardless of the nature of the problem situation. The Decision-Style Inventory was developed to make individuals more aware of the fact that decision style should be flexible and should depend on the nature of the problem with which they are confronted.

DECISION-STYLE INVENTORY

After the participant responds to the ten incidents in the inventory, he or she reads the Theory Summary Sheet, which describes the four types of problems and suggests the corresponding types of decision styles. Then each participant transfers his or her scores to the Scoring Sheet.

To analyze the data on the Scoring Sheet, the participant uses the Decision-Style Tree, which identifies the problem type and decision style indicated on the Scoring Sheet. Then the participant can compare his or her particular decision style with the prescribed style on the Prescribed-Style Answer Key.

Variations

The Decision-Style Inventory can be used as an effective group activity by having each group member answer the ten incidents individually and then having the group reach consensus on the appropriate answer. From the interaction that takes place, the facilitator can focus on how the group performed in relation to the model.

The inventory can also be used to determine if the individual tends to score either Acceptance or Quality consistently too high or too low.

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DECISION-STYLE INVENTORY[1]

Rick Roskin

Two different dimensions seem important in appraising a decision's potential effectiveness:

Quality: Relating to objective or impersonal attributes.

Acceptance: Relating to subjective attractiveness or desirability.

The first dimension depends on data derived from the situation. The second depends on the feelings of the people who must execute the decision. Thus, managers may have to concern themselves not only with how good a decision is from an objective point of view but how appropriate it is from the subordinates' viewpoints.

Examining specific problems may help determine the degree to which Quality and Acceptance are instrumental in decision-making.

On the next pages are ten management incidents. You are to indicate the degree of importance of the Quality and Acceptance factors in each incident as follows:

Circle one number for each factor to indicate your opinion. A "1" indicates little importance, a "7," great importance. If a time shortage for decision making is indicated, place an "X" in the space following "Time." If mutual trust between superior and subordinate is evident, place an "X" in the space following "Trust."

| Quality | 1 | 3 | 5 | 7 | Time | _____ |
| Acceptance | 1 | 3 | 5 | 7 | Trust | _____ |

Incident 1: University and Business Cooperation

The Department of Business and Management at a local university is deciding whether to operate a cooperative program. This type of program means that students spend alternate terms at the university and with business enterprises, in the hope that this mixing of practice and theory will be beneficial for both employer and student.

This new approach has many ramifications for the professors. For example, it demands a change in teaching schedules (there would be three semesters per year) and demands greater interaction with the business community.

A consultant has been brought in to help further understanding. The consultant has emphasized the importance of staff commitment. Past experience indicates that graduates from a cooperative program obtain better jobs than graduates from a non-cooperative program. This, however, is not a major concern, because the present program is considered satisfactory.

| Quality | 1 | 3 | 5 | 7 | Time | _____ |
| Acceptance | 1 | 3 | 5 | 7 | Trust | _____ |

Incident 2: Correct Product Pricing

A local firm has just developed a new product that is intended to contribute to corporate profits. The company is depending on it to a great extent because of declining markets for its other products, although as yet the situation is not critical. The manager is concerned about correct pricing: If the price is too low, increased sales will simply magnify losses; if the price is too high, sales will be too low to cover overheads adequately. The manager has a complete projected financial analysis of the product on the desk and the recent balance sheet of the firm clearly in mind.

| Quality | 1 | 3 | 5 | 7 | Time | _____ |
| Acceptance | 1 | 3 | 5 | 7 | Trust | _____ |

Incident 3: Bid Acceptance

The Candy Corporation has decided to reward its sales staff for a superb year by holding a dance and dinner. This social activity is to be a surprise, scheduled to be held in two months. Two of the best restaurants in town have tendered approximately equal bids.

| Quality | 1 | 3 | 5 | 7 | Time | _____ |
| Acceptance | 1 | 3 | 5 | 7 | Trust | _____ |

Incident 4: Office Allocation

A new office building stands before Lee Smith, manager of Associated Industries.

The new building has greatly improved offices compared with those presently occupied by Associated's staff. About half of the offices face westward, overlooking the ocean about one-half mile away. The other half view the city. At this time no office allocations have been made. As yet no employees, except top management, have seen the building's interior. The management is pondering the best distribution of offices.

| Quality | 1 | 3 | 5 | 7 | Time | _____ |
| Acceptance | 1 | 3 | 5 | 7 | Trust | _____ |

Incident 5: Group Decision-Making

Dale Taylor received a university Bachelor of Science degree with a major in personnel and a particular interest in participative management.

Taylor's present position as executive director of the Business Association (an association of businesses for the dissemination of free enterprise information) has in part been frustrating. As executive officer of a large service organization, Taylor persists in the attempt, but finds it difficult to implement ideas by group decision making. There are ten divisional representatives and a secretarial staff in the office. Excellent morale prevails and members are eager to help one another with any problems. Thus, the situation is special: High morale and a lack of interest in group decision making are evident. Apparently, the representatives are so busy with their own district problems that they feel that:

a) meetings are often needlessly time consuming;

b) Taylor can be expected to make the right decision.

Taylor ponders the situation with the following memo:

Memo To: Dale Taylor
From: Committee, Members of the Business Association
Subject: Bilingualism

In keeping with the current effort to recognize other ethnic backgrounds, we request that your organization be prepared to issue information in both Spanish and English. We would appreciate your ideas on how we can most effectively pursue this matter. Please respond to this request at your convenience.

| Quality | 1 | 3 | 5 | 7 | Time | _____ |
| Acceptance | 1 | 3 | 5 | 7 | Trust | _____ |

Incident 6: Process Recommendation

Printed Circuits Incorporated manufactures micro-circuitry for electronic instruments. This system uses an etching process and molten copper in place of wires to join electronic components. It is sophisticated technology. Most organization members are highly skilled experts whose ability assures that required product tolerances are achieved.

Chris Corbet is a highly respected research scientist in charge of circuit development, one of the few people with the knowledge and experience necessary for the position. Corbet supervises ten bright but less experienced researchers. Their creativity and drive never cease to be amazing. The team has developed a new alloy apparently superior to copper. Although not tested for a long period, it has passed most required standards.

Corbet has just received a request to make a recommendation on the process. Prospective buyers will arrive the next morning. It is 4:55 p.m.

Quality	1	3	5	7	Time	_____
Acceptance	1	3	5	7	Trust	_____

Incident 7: Equipment Appraisal

Kelly Gordon is the supervisor of a group of thirty workers who operate looms for a weaving firm. Although the looms are automated, the workers have an important job. They watch the material carefully, checking for flaws. If they fail to notice a flaw, hundreds of feet of material might either be ruined or have to be sold as seconds. (An example of a flaw is a single strand of incorrectly dyed thread being woven into material of another color.) The workers are allowed a certain number of feet of wastage per week. Beyond that amount, a percentage of the waste cost (up to a maximum) can be charged against their income. There is a definite preference for one type of loom. Some looms seem to produce better material than others. Unfortunately, the looms that produce a somewhat inferior product are easier to operate. Recently a new series of looms has been developed; the firm is testing these. Management has requested that Gordon appraise the machines.

Quality	1	3	5	7	Time	_____
Acceptance	1	3	5	7	Trust	_____

Incident 8: International Marketing

The comptroller of World International has a problem.

International is a firm that specializes in importing and exporting products. Using its marketing expertise, it sells its products in world markets. Because of the nature of the firm's business, it has a large legal department. This department must be familiar with the laws of customer countries, particularly trade agreements, tariffs, etc. Growing nationalism throughout the world has forced International to reassess its position, in particular whether it would be beneficial for the company to set up warehousing, distributing, and even production facilities in various countries.

Quality	1	3	5	7	Time	_____
Acceptance	1	3	5	7	Trust	_____

Incident 9: Equipment Choice

K.C. Hartman is in charge of a diving crew working from an offshore drilling rig situated about two hundred miles from the Atlantic coast. Hartman is an experienced diver and has worked in similar situations for several years. Because divers often face a dangerous task, they tend to feel rather independent of authority. Their attitude is that "I would rather depend on myself for my life than on anyone else." It is Hartman's opinion that the most suitable diving apparel for the divers is a "wetsuit." This is a formfitting suit of porous rubber. It allows the diver great flexibility. Some divers, however, prefer a "drysuit." Drysuits are made of nonporous wool-lined rubber. One danger of these suits, however, is that a sudden increase in air pressure can turn them into "balloons," often turning the diver upside down, unable to become righted without help. The morale and cooperation in the group has been excellent.

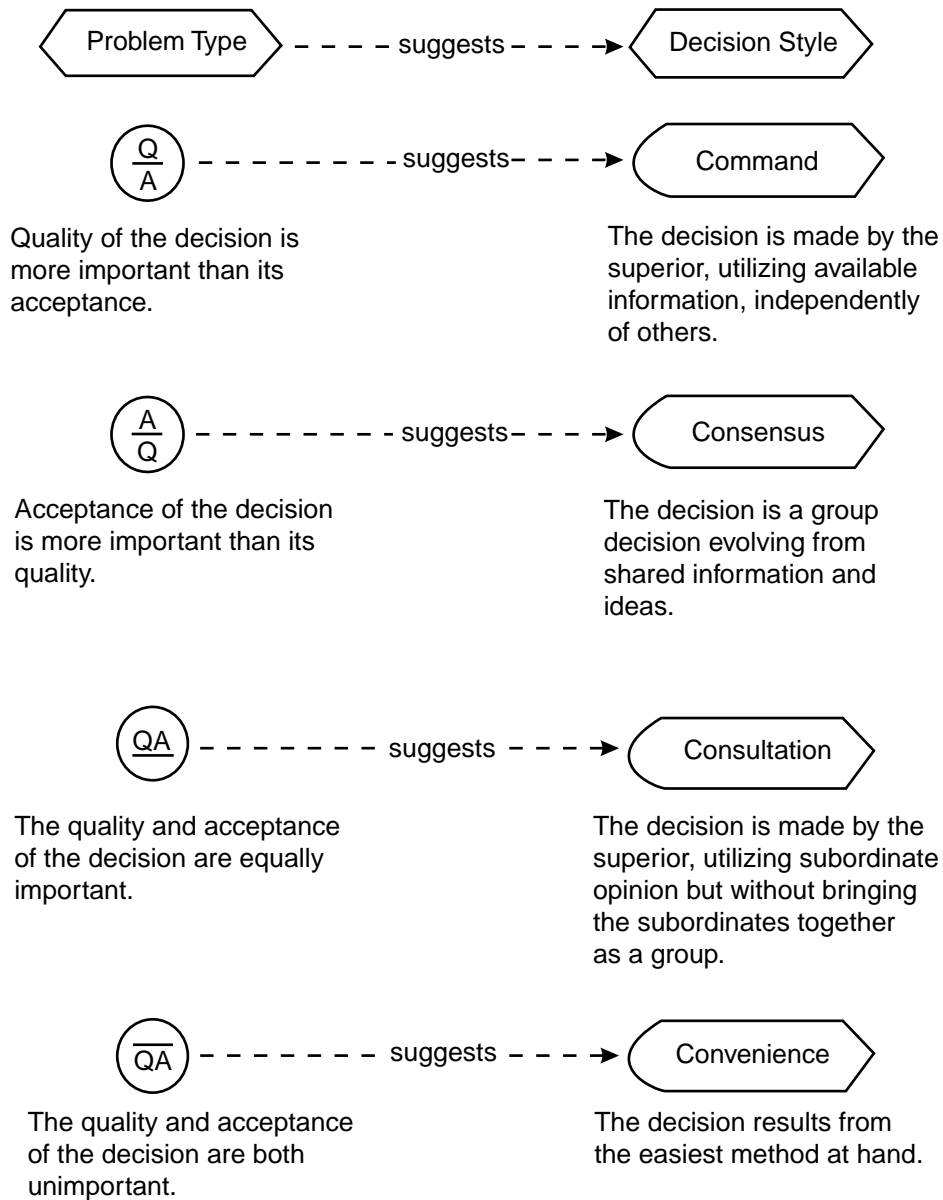|						
Quality	1	3	5	7	Time	_____
Acceptance	1	3	5	7	Trust	_____

Incident 10: Idea Development

Developing dreams is Robin Thorwald's job description. As creative director for a small advertising agency, Thorwald develops the dreams of other people.

The success of the firm is attributed to its ability to act quickly and innovatively. Its total budget has increased dramatically during its five-year existence.

Thorwald feels that the group brainstorming approach used to generate ideas is the key factor of the firm's achievement. Every decision made is a group decision. The cohesiveness and unity of the employees is excellent. One morning, after fighting a path through a snowstorm, Thorwald arrives to find almost all of the employees on hand. The telephone rings: A snow-tire distributor asks that a radio commercial be developed by that afternoon. It is 10 a.m.

Quality	1	3	5	7	Time	_____
Acceptance	1	3	5	7	Trust	_____

DECISION-STYLE INVENTORY THEORY SUMMARY SHEET

Problem Type – – – – suggests – – – → Decision Style

$\frac{Q}{A}$ – – – – – – – suggests – – – → Command

Quality of the decision is more important than its acceptance.

The decision is made by the superior, utilizing available information, independently of others.

$\frac{A}{Q}$ – – – – – – – suggests – – – → Consensus

Acceptance of the decision is more important than its quality.

The decision is a group decision evolving from shared information and ideas.

QA – – – – – – suggests – – – → Consultation

The quality and acceptance of the decision are equally important.

The decision is made by the superior, utilizing subordinate opinion but without bringing the subordinates together as a group.

$\overline{QA}$ – – – – – – suggests – – – → Convenience

The quality and acceptance of the decision are both unimportant.

The decision results from the easiest method at hand.

DECISION-STYLE INVENTORY SCORING SHEET

Instructions:

1. Transfer your responses to each incident to the table below.
2. Using the Decision-Style Tree, determine the Problem Type and Decision Style for each item and write these on the table.
   a. If a time shortage is present, the Decision Style is Command, whatever the Problem Type.
   b. If trust is present, the Decision Style is Consensus, whatever the Problem Type.
   c. If both time and trust are factors, the Decision Style is either Consultation or Convenience, depending on the importance of the Quality of the decision. (Note: The Convenience Style simply means that a decision maker will use whatever style that time and the group situation will allow.)
3. Using the Prescribed-Style Answer Key, check how many "correct" Decision Style responses you made and enter this number in the Total Correct box

Incident	Quality	Acceptance	Time	Trust	Indicated Problem Type (circle one)	Indicated Decision Style
1	_____	_____	( )	( )	Q A QA / A Q / QA	_____
2	_____	_____	( )	( )	Q A QA / A Q / QA	_____
3	_____	_____	( )	( )	Q A QA / A Q / QA	_____
4	_____	_____	( )	( )	Q A QA / A Q / QA	_____
5	_____	_____	( )	( )	Q A QA / A Q / QA	_____
6	_____	_____	( )	( )	Q A QA / A Q / QA	_____
7	_____	_____	( )	( )	Q A QA / A Q / QA	_____
8	_____	_____	( )	( )	Q A QA / A Q / QA	_____
9	_____	_____	( )	( )	Q A QA / A Q / QA	_____
10	_____	_____	( )	( )	Q A QA / A Q / QA	_____

Total Correct [   ]

DECISION-STYLE TREE

Problem Type	Decision Style

QA — Consultation

A above 4

A below 4

Q above 4

Q below 4

$\frac{Q}{A}$ — Command ← Time

$\frac{A}{Q}$ — Consensus ← Trust

A above 4

A below 4

$\overline{QA}$ — Convenience
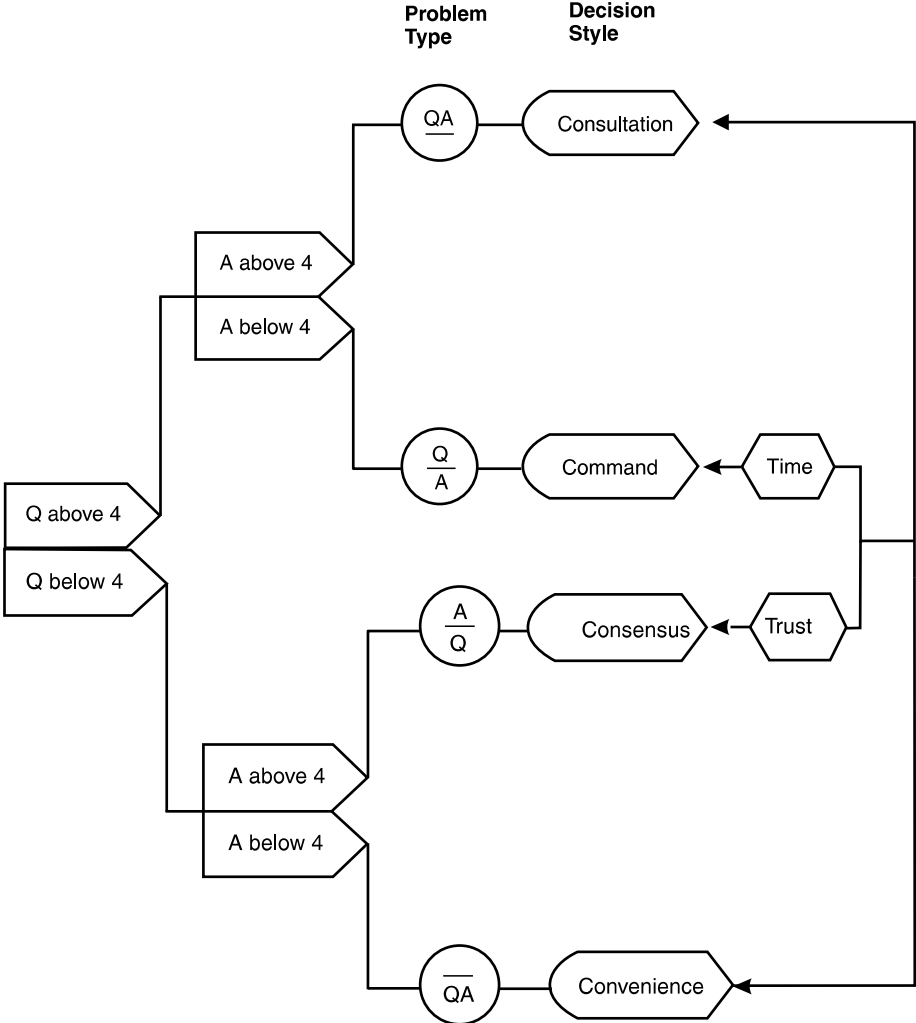
PRESCRIBED-STYLE ANSWER KEY

The prescribed style is the correct style as determined by the author. Some variation may occur, and users are encouraged to work out their own rationales. (Note: The inventory does not differentiate between a score of 1 and 3 and between a score of 5 and 7. This flexibility allows for the fact that the relative importance of Quality or Acceptance may be understood in different ways.)

Incident	Prescribed Style	Rationale
1	Consensus	This is a key commitment issue.
2	Command	The manager has full information.
3	Convenience	The factors of a surprise party and similar restaurants are emphasized.
4	Consensus	The office layout is unlikely to affect productivity significantly; hence Acceptance is the key.
5	Consensus	Mutual trust is evident and the employees would probably like an input into such a key issue.
6	Convenience	Both mutual trust and a time constraint are in evidence.
7	Consultation	Good equipment will not lead to good results unless operators like it.
8	Command	Specialized knowledge makes Quality most important. The time element may be checked as well.
9	Consensus	While both Quality and Acceptance are important (Consultation), the mutual trust leads to a Consensus Decision Style.
10	Convenience	Mutual trust and a time constraint are evident. (Probable style will depend on how busy the firm is at that moment.)

❚ INVENTORY OF BARRIERS TO CREATIVE THOUGHT AND INNOVATIVE ACTION

Lorna P. Martin

Creativity was once widely held to be limited to a few talented individuals. However, "an impressive body of solid research over the past few decades has conclusively proved that most of us were born with rich and vigorous imaginations, and that creative ability is almost universally distributed" (Raudsepp & Hough, 1977, pp. 34). "Creativity as a fundamental trait is possessed by every person . . . [and yet] very few people make use of their creative potential" (Knecheges & Woods, 1973, p. 4). Raudsepp and Hough (1977) offer support to that notion by stating that "creativity is contingent upon the preservation of the curiosity and wonder we had in early childhood . . . [and that] unfortunately, . . . is the one thing that is conspicuous by its absence in most grownups" (p. 4).

Given the premise that most small children are very creative, one might wonder what helps or hinders creativity. Over time, the inhibition of creativity increases as children conform to the social pressures of the educational process and/or as they interact in society. Eventually, layers of behaviors are developed that thwart the creative potential. C.A. Doxidis (no date, p. 39) expands on this view and asserts, "Very often, a person's sense of creativity is not challenged.... The spark does not emit as much energy. This spark shrinks and shrinks until no radiation emits from it. If a person's creative spark is not challenged or if this energy is restricted, this confinement becomes tighter and tighter until the spark is finally extinguished."

Raudsepp and Hough (1977) propose that an individual's creativity never really becomes completely lost. "By retraining ourselves to unstifle creativity," they contend, "we can unearth our hidden potentials and bring them to the surface again to make use of them for a more creative and fulfilling life" (p. 7).

Unearthing and enhancing human potential such as the ability to create or innovate is critical for the human resource development (HRD) practitioner, who attempts to increase both individual effectiveness and organizational performance and productivity. Increasing individual effectiveness requires increasing creativity in addition to unlearning nonproductive and self-defeating behaviors in oneself and in others. Creativity can be reawakened; indeed, "studies have revealed that there are certain factors that block the creative process and that a conscious effort to avoid or overcome these blocks can enhance creativity" (Ross, 1981, p. 129).

One natural starting point for an intervention designed to tap or enhance creativity has been to attempt to measure one's present level of creative ability (Dellas & Gaier, 1970; Golann, 1963; MacKinnon, 1965; Roe, 1952). Another approach to intervention

has been to demonstrate and implement techniques that facilitate creative problem solving (Gordon, 1961; Osborn, 1953; Parnes & Brunelle, 1967). The identified studies reveal that both of these methodologies work. Yet both of these methods seem to put the cart before the horse. The literature clearly indicates that an alternative and, perhaps, more logical starting point might be the identification of specific barriers or blocks that inhibit an individual's creative effort. This information then can be used to prescribe strategies to reduce the immobilizing effects of such blocks. This approach enables individuals to free up their creative potentials by avoiding or altering blocking behavior and by implementing healthier and more creative alternatives.

THEORETICAL FRAMEWORK

The Inventory of Barriers to Creative Thought and Innovative Action was designed to identify and to measure the degree of inhibitors affecting a person's ability to create and innovate. Its underlying hypothesis is that creative and innovative behavior will increase as a result of feedback obtained from the instrument and the subsequent awareness and understanding of a person's identified inhibitors.

Investigations of the factors associated with the creative process and the individual originated with Rogers (1959), who attempted to correlate characteristics of the individual and the environment to creative performance. He asserted that a relationship exists between an individual's internal psychological makeup and creativity; for instance, individuals who display creative behaviors generally are open to experience, lack rigidity in thinking, have the ability to deal with conflicting information, and are not unduly influenced by criticism or praise.

In addition to these internal psychological characteristics, Rogers (1959) also postulated external environmental conditions that would affect an individual's creative ability. For example, creativity would be increased when the external environment provided for greater psychological safety and freedom for the individual. In essence, Rogers believed that this could be accomplished by accepting the individual, by removing external evaluation, by using empathy, and by providing freedom for the individual to think and feel.

Other empirical studies are consistent with Rogers' view (for example, Golann, 1962; Pankove, 1967; Welsh, 1959). Although these studies identify creativity enhancers rather than barriers to creativity, one can conclude that if the factors associated with increased creativity are lacking, creativity will be decreased or inhibited. The barriers to creative thought defined in the literature can be categorized into the following three major groups:

- *Perceptual blocks,* or the way a person sees things;

- *Cultural blocks,* or the way a person ought to do things; and

- *Emotional blocks,* or the way a person feels about things.

These common barriers, humorously and uniquely depicted in a film, "Imagination at Work," (Industrial Management, 1959), can be described further as follows:

Perceptual blocks include factors such as the following:

- Failure to use all the senses in observing
- Failure to investigate the obvious;
- Inability to define terms;
- Difficulty in seeing remote relationships; and
- Failure to distinguish between facets of cause and effect.

Cultural blocks include influences such as the following:

- A desire to conform to an adopted pattern;
- Overemphasis on competition or on cooperation;
- The drive to be practical and economical above all things;
- Belief that indulging in fantasy is a waste of time; and
- Too much faith in reason and logic.

Emotional blocks include elements such as the following:

- Fear of making a mistake;
- Fear and distrust of others; and
- Grabbing the first idea that comes along.

Adams (1979, p. 11) describes barriers to creativity as "mental walls that block the problem solver from correctly perceiving a problem or conceiving its solution." His work identifies two major categories of inhibitors: *structural barriers,* which include psychological, cultural, and environmental blocks; and *process barriers,* which include elements related to cognitive style. (For an overview of Adams' work, see Ross, 1981.)

Morgan (1968) contends that the barriers that frustrate writers prove to be the same as those that thwart creative people in business and industry. He describes the barriers as primarily emotional blocks that constitute the most serious inhibitors to creative functioning. He identifies the principal groups of barriers as follows:

- *Personal feelings of security,* such as low self-esteem, feelings of anxiety, fear of criticism, fear of failure, or lack of curiosity;
- *Need for superficial security,* such as lack of risk taking or not trying new things;
- *Inability to use the unconscious,* such as not using visualization or fantasy;
- *Inability to use the conscious mind effectively,* for example, inability to organize data;

- *Work-oriented barriers,* such as "keep trying," "always prepared," "ready?"; and

- *Environmental barriers,* such as the need to find the proper setting, and to give oneself every advantage.

The work of Morgan actually sparked the development of this instrument that identifies barriers to creative thought and innovative action. The theoretical underpinnings of the instrument itself systematically integrate the literature on barriers to creativity and enhancers to creativity to provide the necessary framework.

The instrument, "Inventory of Barriers to Creative Thought and Innovative Action," measures elements that are both internal and external to the individual based on, but not limited to, the work of Rogers (1959). This instrument identifies barriers that inhibit creative thought in a personal sense, issues related to self-esteem, elements that deal with self-confidence, and behaviors associated with risk taking. It also examines the barriers that the environment might impose, such as factors related to the availability and use of time, issues of privacy, imposition of limitations, and physical facilities.

Additionally, the instrument was designed to take into account the cognitive style of the individual. The instrument identifies variables related to intuitive right-brain thinking, as well as elements typically associated with systematic or logical left-brain thinking. These factors were assimilated into the instrument using the work done by Botkin (1976), Bruner (1965), Keen (1975), and McKenney and Keen (1974), among others.

The instrument also was intended to consider various elements associated with independence and the need to conform on an internal or personal level as well as in a group or work-related setting. Based on, but not limited to, the work of Roe (1952), these factors have been incorporated into the instrument.

THE INSTRUMENT

The instrument consists of thirty-six items, set up in a sixpoint Likert-scale format. These items identify and measure barriers in the following six categories or trait groups:

1. Barriers related to concept of self. These examine the variables most often associated with an individual's self-esteem, self-confidence, handling of rejection, and ability to confront differing opinions.

2. Barriers related to need for conformity. These examine the variables most often associated with an individual's inclinations to break away from tried and true patterns, to take risks, to express one's ideas, and to scrutinize traditional views and standard practices and policies.

3. Barriers related to ability to abstract. These examine the variables most often associated with an individual's tendencies to use the unconscious mind, to abstract, to view things in holistic or visual ways, and to rely on gut hunches or intuition.

4. Barriers related to ability to use systematic analysis. These examine the variables most often associated with an individual's tendencies to use the conscious mind, to apply logic, to think in linear or sequential ways, to organize oneself and one's ideas, and to rely on facts or data.

5. Barriers related to task achievement. These examine the variables most often associated with an individual's work patterns, persistence, attitudes toward others, and resourcefulness.

6. Barriers related to physical environment. These examine the variables most often associated with an individual's preferences as to physical surroundings, dealing with distractions, use of personal space, and need for privacy.

Validity and Reliability

The instrument has undergone statistical scrutiny and has been widely used in a variety of organizational settings with diverse populations. The instrument has a test-retest reliability of .89; it appears to have construct validity as demonstrated by factor analysis and content validity as demonstrated by expert ratings of the items as they pertain to the literature.

Administration

The following suggestions will be helpful to the facilitator who administers the instrument:

1. Distribute the instrument and read the instructions aloud as the participants follow on their copies.

2. Point out to the participants that the instrument is not a test that has right or wrong answers, but a device designed to indicate one's barriers to creative thought and innovative action.

3. Indicate to the participants that they should not spend a great deal of time pondering each response—the first guess is usually the best one.

4. When the participants have completed all of the items on the instrument, discuss the dimensions measured by the instrument. Have the participants estimate or predict the subscale categories in which they believe themselves to have barriers, as well as the categories in which they believe themselves to be relatively free of barriers.

Scoring

Each participant should be given a copy of the Barriers to Creative Thought and Innovative Action Scoring Sheet. The Scoring Sheet identifies six categories in columns labeled A through F. Each column contains the numbers of the items directly related to

that column. Each participant should transfer his or her scores to the scoring sheet and add all values in each column to obtain totals for each column.

Each participant should be given a copy of the Barriers to Creative Thought and Innovative Action Profile Sheet. The participants will plot their scores on the graph. The vertical axis represents the numerical scores; the horizontal axis, the categories of barriers. The participants then should draw lines connecting the plotted points. The final version will appear as a line graph; for example:

(A)	(B)	(C)	(D)	(E)	(F)
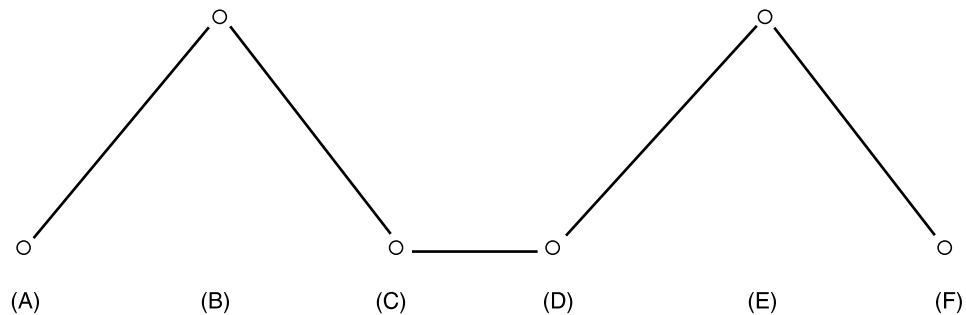
The high scores are the barriers or hurdles to overcome in order to increase one's creative thought and innovative action. For instance, in the example shown previously, Columns B and E are the two highest points on the graph and represent the barriers this individual needs to overcome.

Interpretation and Processing

When participants have identified their own individual barriers to creativity, this information can be interpreted and processed in two steps. First, the facilitator can publish his or her own scores for each subscale of the instrument. Participants then are asked to examine the column scores for significant divergence or variability among columns. For instance, the facilitator's scores might indicate a high degree of inhibition with regard to one column, with all other scores indicating relatively equal patterns. That score would be examined closely for its fit to reality and its significance for the facilitator.

Second, the participants are asked to form pairs and to exchange scoring sheets and profile sheets. The partners take turns interpreting each other's scores and follow this with a brief discussion of the instrument and the impact of the scores.

The participants may wish to post scores and discuss them as a group. Sample questions that might be asked include the following:

1. Which scores seem to fit? Which scores do not seem to fit?

2. Based on your knowledge of the other group members, which column scores would you have predicted? Which surprise you?

3. How can you use this information to work together more effectively?

Alternatively, each participant may be assigned a confidential code number. Graphs then are posted, identified only by code number. The group members choose the individual they think best fits that graph and offer a written or oral rationale for each selection. This activity offers an opportunity for further individual and group insight into the ways in which members stifle or cultivate their own or the group's creativity.

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INVENTORY OF BARRIERS TO CREATIVE THOUGHT AND INNOVATIVE ACTION

Lorna P. Martin

Instructions: For each of the statements in this inventory, refer to the following scale and decide which number corresponds to your level of agreement with the statement; then write that number in the blank to the left of the statement.

Strongly Agree	Agree	Agree Somewhat	Disagree Somewhat	Disagree	Strongly Disagree
1	2	3	4	5	6

_____ 1. I evaluate criticism to determine how it can be useful to me.

_____ 2. When solving problems, I attempt to apply new concepts or methods.

_____ 3. I can shift gears or change emphasis in the abstract.

_____ 4. I get enthusiastic about problems outside my specialized area of concentration.

_____ 5. I always give a problem my best effort, even if it seems trivial or fails to arouse enthusiasm.

_____ 6. I set aside periods of time without interruptions.

_____ 7. It is not difficult for me to have my ideas criticized.

_____ 8. In the past, I have taken calculated risks and I would do so again.

_____ 9. I dream, daydream, and fantasize easily.

_____ 10. I know how to simplify and organize my observations.

_____ 11. Occasionally, I try a so-called "unworkable" answer and hope that it will prove to be workable.

_____ 12. I can and do consistently guard my personal periods of privacy.

_____ 13. I feel at ease with colleagues even when my ideas or plans meet with public criticism or rejection.

_____ 14. I frequently read opinions contrary to my own to learn what the opposition is thinking.

_____ 15. I translate symbols into concrete ideas or action steps.

_____ 16. I seek many ideas because I enjoy having alternative   possibilities.

_____ 17. In the idea-formulation stage of a project, I withhold critical judgment.

_____ 18. I determine whether an imposed limitation is reasonable or is unreasonable.
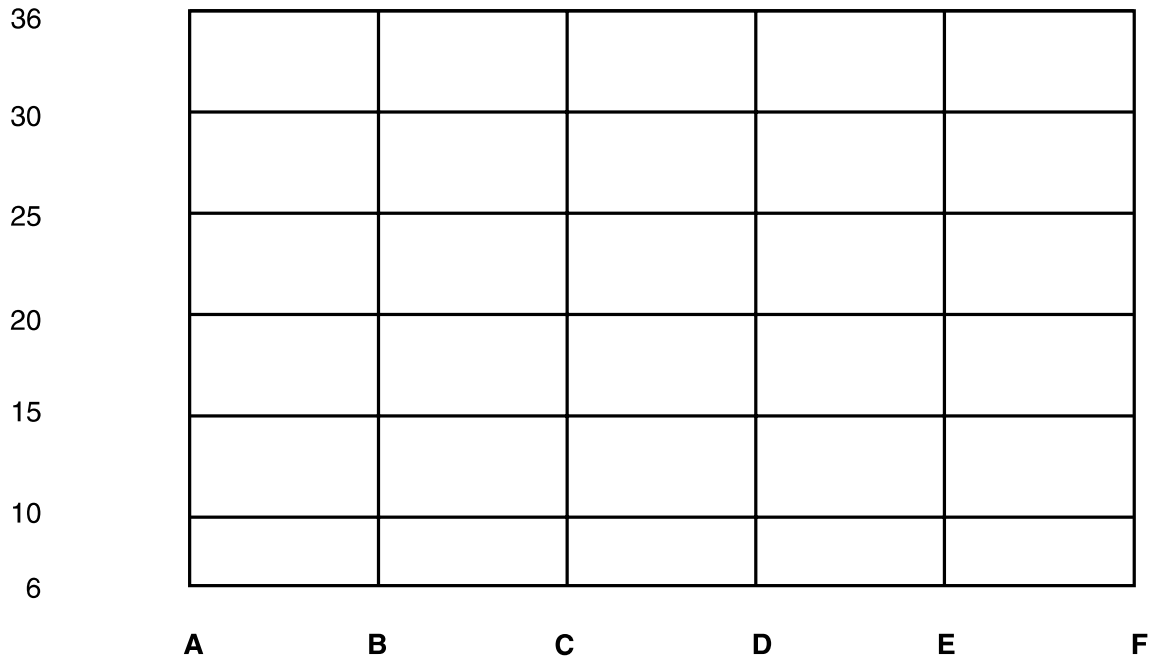
Strongly Agree	Agree	Agree Somewhat	Disagree Somewhat	Disagree	Strongly Disagree
1	2	3	4	5	6

___ 19. I would modify an idea, plan, or design, even if doing so would meet with opposition.

___ 20. I feel comfortable in expressing my ideas even if they are in the minority.

___ 21. I enjoy participating in nonverbal, symbolic, or visual activities.

___ 22. I feel the excitement and challenge of finding a solution to problems.

___ 23. I keep a file of discarded ideas.

___ 24. I make reasonable demands for good physical facilities and surroundings.

___ 25. I would feel no serious loss of status or prestige if management publicly rejected my plan.

___ 26. I frequently question the policies, objectives, values, or ideas of an organization.

___ 27. I deliberately exercise my visual and symbolic skills in order to strengthen them.

___ 28. I can accept my thinking when it seems illogical.

___ 29. I seldom reject ambiguous ideas that are not directly related to the problem.

___ 30. I distinguish between the trivial and the important physical distractions.

___ 31. I feel uncomfortable making waves for a worthwhile idea if it threatens the inner harmony of the group.

___ 32. I am willing to present a truly original approach even if there is a chance it could fail.

___ 33. I can recognize the times when symbolism or visualization would work best for me.

___ 34. I try to make an uninteresting problem stimulating.

___ 35. I consciously attempt to use new approaches toward routine tasks.

___ 36. In the past, I have determined when to leave an undesirable environment and when to stay and change the environment (including self-growth).

BARRIERS TO CREATIVE THOUGHT AND INNOVATIVE ACTION
SCORING SHEET

Instructions: Transfer your inventory responses to the appropriate blanks provided below. Then add the numbers in each column, and record the totals in the blanks provided.

	A	**B**	**C**	**D**	**E**	**F**
	1. _____	2. _____	3. _____	4. _____	5. _____	6. _____
	7. _____	8. _____	9. _____	10. _____	11. _____	12. _____
	13. _____	14. _____	15. _____	16. _____	17. _____	18. _____
	19. _____	20. _____	21. _____	22. _____	23. _____	24. _____
	25. _____	26. _____	27. _____	28. _____	29. _____	30. _____
	31. _____	32. _____	33. _____	34. _____	35. _____	36. _____
Column Totals	_____	_____	_____	_____	_____	_____

BARRIERS TO CREATIVE THOUGHT AND INNOVATIVE ACTION
PROFILE SHEET

Instructions: Plot the scores from your scoring sheet onto the following graph. The vertical axis, which represents your numbered scores, ranges from 6 to 36. The horizontal axis, which represents the columns on your scoring sheet, ranges from A to F. The key at the bottom of this page identifies the barriers in each column. Connect the points you have plotted with a line. The high points represent your barriers.

```
36 ┌─────┬─────┬─────┬─────┬─────┐
   │     │     │     │     │     │
30 ├─────┼─────┼─────┼─────┼─────┤
   │     │     │     │     │     │
25 ├─────┼─────┼─────┼─────┼─────┤
   │     │     │     │     │     │
20 ├─────┼─────┼─────┼─────┼─────┤
   │     │     │     │     │     │
15 ├─────┼─────┼─────┼─────┼─────┤
   │     │     │     │     │     │
10 ├─────┼─────┼─────┼─────┼─────┤
   │     │     │     │     │     │
 6 └─────┴─────┴─────┴─────┴─────┘
     A     B     C     D     E     F
```

Keys to Barriers

A = Barriers Related to Self-Confidence and Risk Taking

B = Barriers Related to Need for Conformity

C = Barriers Related to Use Of The Abstract

D = Barriers Related to Use Of Systematic Analysis

E = Barriers Related to Task Achievement

F = Barriers Related to Physical Environment

❚ LOCUS OF CONTROL INVENTORY

Udai Pareek

There are two contrasting attitudes regarding the way rewards and outcomes are determined. Some people believe that we can neither predict nor influence significant events, whereas others believe that we can do both. Issues related to prediction and causation of social and personal matters have intrigued philosophers, politicians, behavioral scientists, and psychologists alike.

REVIEW OF RESEARCH

One of the most popular terms developed for discussing these issues is locus of control. This was suggested by Rotter (1954) and subsequently generated a great deal of research. The concept is based on the extent to which people perceive the contingencies that affect outcomes. Individuals who have low perceptions of such contingencies are said to have an internal locus of control; they believe that their own actions produce outcomes. Those who have high perceptions of contingencies are characterized by an external locus of control; they believe that outcomes are the result of contingencies rather than of their own actions. Internal and external loci of control are represented by the terms internality and externality, respectively. Similarly, people with high internality are called internals; those with high externality, externals.

Internality is related to effectiveness and adjustment. When compared to externals, internals have been reported to be more sensitive to new information, more observant, more likely to attend to cues that help resolve uncertainties (Lefcourt & Wine, 1969), and more prone to both intentional and incidental learning (Wolk & DuCette, 1984). The association of internality with various aspects of learning (for example, curiosity, eagerness to obtain information, awareness of and desire to understand situations and their contexts, and the ability to process the available information) seems to make good sense. For example, in order to influence or control outcomes, the person with an internal approach must acquire as much information as possible and then process that information as quickly as possible. Evidence supports the assumption that an internal locus of control leads to academic achievement (Crandall, Katkovsky, & Crandall, 1965; Harrison, 1968; Lessing, 1969).

Some studies have also shown a high and positive correlation between internality and perseverance, which is characterized by extra time spent on work (Franklin, 1963), continued involvement in difficult and complex tasks, and willingness to defer gratification (Mischel, 1966). Lefcourt (1976) summarized the research on the relationship between internality and deferred gratification. Involvement in long-term

goals requires deferment of gratification; and persistence in effort requires undivided attention, which is not possible unless the temptation of immediate gratification is resisted. Because internals believe that their efforts lead to favorable outcomes, they can rely on their own understanding and predictability. In contrast, externals—perceiving a lack of personal predictability and fearing that unforeseen external factors will affect outcomes—may find it more attractive to seek immediate gratification than to try to achieve distant goals.

Internality was found to be an important characteristic of people with high achievement motivation (McClelland, 1961). It was further reported that internal locus of control generates moderate or calculated risk taking, and one study indicated that the correlation between achievement motivation and preference for moderate risk was significant and positive among internals but almost zero among externals (Wolk & DuCette, 1984).

Internality seems to be a cornerstone of the process of valuing, which includes awareness of one's own values, willingness to declare those values in public, and adherence to them and the behavior associated with them in spite of outside pressures. This process of developing ethical norms and using those norms even in periods of crisis has also been called inner-direction—the state of being directed by one's own, internalized standards rather than merely conforming to outside expectations, norms, or pressures.

Some studies have indicated a significant relationship between internality and morality, which leads to resistance of temptation (Johnson, Ackerman, Frank, & Fionda, 1968), helping others (Midlarski, 1971), and low Machiavellianism (Miller & Minton, 1969). Apparently internality is important in the development of standards for judging one's own behavior. Both personal autonomy and responsibility are involved in the process of valuing, which is necessary for the development of a healthy and proactive society.

One study (Mitchell, Smyser, & Wood, 1975) uncovered relationships between internality and certain organizational attitudes and behaviors. For example, internals experienced greater job satisfaction than externals did. Internals also preferred a participatory management style, whereas externals preferred a directive style. Further comparisons indicated that internals believed that working hard was more likely to lead to rewards and that they had more control over the ways they worked. Supervisors with an internal orientation believed that persuasive power was the most productive approach, whereas their external counterparts relied on coercive power. Furthermore, the use of rewards, respect, and expertise was seen by internally focused supervisors as the most effective way to influence subordinates; those with an external orientation saw coercion and their formal positions as most effective.

The sum of these findings indicates that internality plays an important role in human development and meaningful living. Nevertheless, the internal pays a price. Those who perceive their own abilities and actions as solely responsible for their failures are likely to experience stress and may become self punitive. Attribution of failure or

negative conditions to external factors can help people to cope with adverse experiences more effectively, to perceive social reality in the proper perspective, to fight injustice, and to rectify undesirable situations.

Rotter (1966) developed the first instrument to measure internality and externality. Although Rotter's instrument has been used extensively in research and training, his unitary concept of internality has been challenged. On the basis of factor analysis of the responses on Rotter's instrument, several studies found multidimensionality in Rotter's instrument, which seemed to contain items related to control ideology, personal control, system modifiability, and race ideology (Gurin et al., 1969; Guttentag, 1972; McDonald & Tseng, 1971; Minton, 1972; Mirels, 1970). Levenson (1972) questioned putting three external factors (chance, fate, and powerful others) together. Levenson also proposed a new scale to measure internality and externality; instead of viewing these elements along a continuum, Levenson proposed to measure both internality (I) and externality (E). Furthermore, Levenson proposed two subscales for externality: one to measure perceived influence of chance (EC) and the other to measure perceived influence of powerful others (EO). Gutkin, Robbins, and Andrews (1985) reported factoranalysis results of a health locus-of-control scale that revealed internal and external factors.

THE INSTRUMENT

Although Levenson's scale has been used in many organizational studies, the instrument was not developed specifically for organizations. Therefore, Levenson's (1972) concept of locus of control was used to develop the Locus of Control Inventory, which was designed to measure internality and externality in the organizational context. An earlier version of this instrument contained Levenson's six-point scoring system and twenty-four items (parallel to Levenson's instrument). The current five-point system appears to be a superior measure; and the thirty-item version contains ten statements each for internality (I), externality-others (EO), and externality-chance (EC).

A locus-of-control orientation is reflected in the way a person views what happens in an organization; that is, how much control the person believes that he or she has in important organizational matters, how much control the person believes is held by certain others, and to what degree the person believes events are a matter of luck. The Locus of Control Inventory links the locus of control to seven areas:

1. General
2. Success or Effectiveness
3. Influence
4. Acceptability
5. Career
6. Advancement
7. Rewards

Using the Instrument

The Locus of Control Inventory can be used for both research and training purposes in human resource development, organization development, or training packages. It was developed, however, primarily for training purposes.

Scoring

Numbers that respondents have assigned to the instrument items are transferred to the scoring sheet and a total is computed for each column. Scores will range from zero to forty for each of the three columns (Internality, Externality-Other, and Externality-Chance).

Norms

Based on data from more than three hundred managers, mean and standard deviation (SD) values are presented in Table 1. High and low scores were calculated by adding or subtracting one-half SD value to or from the mean, respectively. Similarly, very high and very low scores were obtained by adding or subtracting one SD value to or from the mean. Such norms can be worked out for specific organizations for interpretation purposes.

Table 1. Mean and Standard-Deviation Values

	Mean	SD	Very High	High	Low	Very Low
I	25	8	33	29	21	17
EO	25	9	34	29.5	20.5	16
EC	19	9	28	23.5	14.5	10

Reliability

Levenson (1972) reported moderately high internal consistency, with Kuder-Richardson reliabilities (coefficient alpha) of .64, .77, and .78 and split-half reliabilities of .62, .66, and .64 for I, EO, and EC, respectively. Retest reliability for a one-week period for the three subscales were .64, .74, and .78, respectively. Reliabilities of the Levenson instrument were also moderately high in another study (Sen, 1982) in India.

Split-half reliability coefficients for the earlier version of the Locus of Control Inventory were .43, .45, and .55, and even-odd reliability coefficients were .41, .48, and .54 for I, EO, and EC subscales, respectively. The current version has similar reliability coefficients.

Validity

There was a high correlation (.89) between Levenson's instrument and the Locus of Control Inventory in a sample of twenty-six bankers. This finding indicates the validity of the Locus of Control Inventory. Using Levenson's scale, Surti (1982) reported a highly significant coefficient of correlation (.70) between EO and EC in a sample of 360 professional women and correlation values of .00 and .06 between I and EO and between I and EC, respectively. This finding shows the validity of Levenson's two-factor concept.

Twenty-seven managers responded to the Locus of Control Inventory, to Rotter's instrument of locus of control and an adaptation of that instrument (Rotter, 1966), and to Valecha's (1988) adaptation of Rotter's instrument. The data indicated acceptable validity of the Locus of Control Inventory, and other data have established construct validity for the instrument.

Correlates of Internality and Externality

In a study of four hundred bankers using Levenson's instrument, Sen (1982) found a high positive correlation (significant at the .001 level) between internality and role efficacy (see Pareek, 1980a and 1980b, for the concept) and a negative correlation (significant at the .01 level) between I and both EO and EC. Surti (1982) reported similar results when 320 professional women completed the instrument.

There is some evidence that externals, especially those who believe things are controlled by powerful others, experience higher role stress. When forty women entrepreneurs completed the Levenson instrument, Surti (1982) found positive correlation (significant at the .01 level) between EO and the following role stresses: interrole distance, role overload, result inadequacy, resource inadequacy, role inadequacy, and total entrepreneurial role stress. See Pareek (1990a) for the concept of entrepreneurial role stress. There were significant positive correlation (at the .01 level) between EC and interrole distance and between EC and role overload. Surti also reported positive and negative correlations, respectively, between EC and avoidance style and between EC and approach styles (both significant at the .05 level). See Pareek (1987) for the concept of coping styles.

Using the Motivational Analysis of Organizations—Behavior (Pareek, 1986), Sen (1982) found positive correlations between internality and operational effectiveness of five motives. The levels of significance are shown in parentheses: achievement (.001), influence (.003), extension (.05), affiliation (.01), and dependence (.001). He also reported significant negative correlations (most of them significant at the .001 level) with both EO and EC and operational effectiveness of all six motives. This indicates that internals use the motivational behavior more effectively in organizations than externals do.

Using the Locus of Control Inventory with 212 managers in engineering firms, Keshote (1989) found negative correlations (significant at the .05 level) between both

EO and EC and interpersonal trust, measured by the Rotter (1967) scale. Externals seem to have low interpersonal trust.

Keshote, using the Locus of Control Inventory and the Pareek (1990b) instrument to measure perception of and the need for coercive and persuasive power, found positive correlation (significant at the .01 level) between I and perception of having persuasive power and between EO and perception of having coercive and persuasive power. The EC scores had positive correlation (significant at the .05 level) with perception of having persuasive bases of power. These correlations indicate that internal managers use more persuasive bases of power, EO managers use more coercive bases, EC managers use less persuasive bases, and externals of both types want more coercive power.

When using the Locus of Control Inventory and an instrument to measure styles of managing conflict (Pareek, 1982a, 1983), Keshote found significant positive correlation between negotiation style and internality. Externals of both types showed preference for other styles. Regarding interpersonal styles (Pareek,1984), EO managers were found to have lower operating effectiveness on task orientation; and EC managers, lower operating effectiveness on regulating, task-innovative, and confronting styles.

In summary, internal managers tend to have higher role efficacy, to experience less role stress, to use problem-solving approaches to stress and conflict, to use their motivational behavior more effectively, and to use more persuasive bases of power in working with their employees. Externals seem to do the opposite and to have lower interpersonal trust. Externals want more coercive power; EOs use more coercive bases of power while working with their employees, and ECs useless persuasive bases.

Development of Internality

Organizational climate and environments seem to influence the development of internality. Baumgartel, Rajan, and Newman (1985), using four indices of organizational environment (freedom-growth, human relations, performance pressure, and person benefit) with a group of 3,200 student respondents (78 percent men, 22 percent women) in a center for postgraduate management education in India, found clear evidence of the influence of organizational environments on locus of control as measured by the Levenson instrument. However, this effect was more striking for female than for male postgraduates. Regression analysis (based on data from 320 professional women) that used role efficacy as a variable indicated that out of the fourteen variables that finally emerged in the stepwise regression, organizational climate alone explained about 34 percent of the variance, showing a very large effect on role efficacy (Surti, 1982).

ADMINISTERING THE INSTRUMENT

The respondents complete the instrument by evaluating each statement according to a five-point scale ranging from zero (seldom or never agree) to five (strongly agree). The responses must be transferred to the scoring sheet, which presents three scores (internality, externality-others, and externality-chance).

If possible, the scoring sheets should be completed in advance, so that the mean and standard deviation can be calculated prior to a discussion of the scores. Norms can be created as demonstrated in Table 1.

The facilitator leads a discussion based on the concepts and findings included in this article. Respondents are asked to predict their own levels (high, medium, or low) of the three dimensions. In very open groups, each member of a trio can estimate the levels of the other two trio members.

Completed scoring sheets are distributed to the respondents, as well as copies of the interpretation sheet. Trios are formed to discuss discrepancies between actual scores and both self-predicted and other-assessed levels. The discussions should be based on observed behavior.

The facilitator presents implications of internality for employee effectiveness and leads a discussion on how to increase internality and reduce externality.The discussion should include which organizational practices promote I, EO, and EC. Table 2 shows which of the thirty items in the Locus of Control Inventory are related to each of the seven areas addressed by the instrument.

Table 2. Distribution of Items in Locus of Control Inventory

	Internality	Externality (Others)	Externality (Chance)
General	1, 27	4, 30	7, 24
Success or Effectiveness	3, 10, 16	6, 19, 22	9, 13, 21
Influence	28	17	26
Acceptability	25	29	18
Career	2	5	8
Advancement	23	11	14
Rewards	20	15	12

Another important discussion would deal with how to increase internality among the employees (Pareek, 1982b). Material that would help the facilitator lead this discussion includes Baumgartel et al. (1985), Richard (1975), Mehta(1968), and DeCharms (1976).

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LOCUS OF CONTROL INVENTORY

Udai Pareek

Instructions: The following thirty statements represent employees' attitudes toward their work in an organization. Read each statement carefully; then indicate the extent to which you agree with it by writing a number in the blank provided. There are no right or wrong choices; the one that is right for you is the correct answer. If the responses do not adequately indicate your own opinion, use the number closest to the way you feel. Use the following key:

Strongly Agree	Generally Agree	Agree Somewhat	Agree Only Slightly	Seldom or Never Agree
4	3	2	1	0

___ 1. I determine what matters to me in the organization.

___ 2. The course of my career depends on me.

___ 3. My success or failure depends on the amount of effort I exert.

___ 4. The people who are important control matters in this organization.

___ 5. My career depends on my seniors.

___ 6. My effectiveness in this organization is determined by senior people.

___ 7. The organization a person joins or the job he or she takes is an accidental occurrence.

___ 8. A person's career is a matter of chance.

___ 9. A person's success depends on the breaks or chances he or she receives.

___ 10. Successful completion of my assignments is due to my detailed planning and hard work.

___ 11. Being liked by seniors or making good impressions on them influences promotion decisions.

___ 12. Receiving rewards in the organization is a matter of luck.

___ 13. The success of my plans is a matter of luck.

___ 14. Receiving a promotion depends on being in the right place at the right time.

Strongly Agree	Generally Agree	Agree Somewhat	Agree Only Slightly	Seldom or Never Agree
4	3	2	1	0

____ 15. Preferences of seniors determine who will be rewarded in this organization.

____ 16. My success depends on my competence and hard work.

____ 17. How much I am liked in the organization depends on my seniors.

____ 18. Getting people in this organization to listen to me is a matter of luck.

____ 19. If my seniors do not like me, I will not succeed in this organization.

____ 20. The way I work determines whether or not I receive rewards.

____ 21. My success or failure in this organization is a matter of luck.

____ 22. My success or failure depends on those who work with me.

____ 23. Any promotion I receive in this organization will be due to my ability and effort.

____ 24. Most things in this organization are beyond the control of the people who work here.

____ 25. The quality of my work influences decisions on my suggestions in this organization.

____ 26. The reason I am acceptable to others in my organization is a matter of luck.

____ 27. I determine what happens to me in the organization.

____ 28. The degree to which I am acceptable to others in this organization depends on my behavior with them.

____ 29. My ideas are accepted if l make them fit with the desires of my seniors.

____ 30. Pressure groups in this organization are more powerful than individual employees are, and they control more things than individuals do.

LOCUS OF CONTROL INVENTORY
SCORING SHEET

Instructions: The numbers below correspond to the numbers of the items in the Locus of Control Inventory. Please transfer the numbers you assigned by writing them in the appropriate blanks below. Then total the numbers you transferred to each column.

Item Number	Number You Assigned	Item Number	Number You Assigned	Item Number	Number You Assigned
1	_____	4	_____	7	_____
2	_____	5	_____	8	_____
3	_____	6	_____	9	_____
10	_____	11	_____	12	_____
16	_____	15	_____	13	_____
20	_____	17	_____	14	_____
23	_____	19	_____	18	_____
25	_____	22	_____	21	_____
27	_____	29	_____	24	_____
28	_____	30	_____	26	_____
Column Total	_____	**Column Total**	_____	**Column Total**	_____
	I		**EO**		**EC**

LOCUS OF CONTROL INVENTORY
INTERPRETATION SHEET

The following information will be helpful in interpreting your scores. These scores represent the way you view what happens in your organization; therefore, no score has to be permanent. If you are not happy with the way you have marked the answers, you may create an action plan that will help to change the way you look at things.

Select the column with the highest total. Then read the section below that pertains to that column. Next read the section pertaining to your lowest total. Then read the remaining section. The paragraph on ratios may also be helpful.

I (Internal)

A person with an internal orientation believes that his or her future is controlled from within. A total I score of 33 or above indicates a very high internality tendency. It represents selfconfidence in a person's ability to control what happens to him or her in an organization. However, this person may sometimes be unrealistic in assessing difficulties and may ascribe personal failure to situations over which he or she had no control.

A score from 29 to 32 shows high trust in one's ability and effort and is likely to lead to effective use of these. A score of 18 to 21 indicates that the individual lacks such selftrust and needs to examine his or her strengths by using feedback from others.

A low score (17 or less) in this area represents little selfconfidence and could hinder a person from utilizing his or her potential.

EO (External-Others)

A person with an external-others orientation believes that his or her future is controlled by powerful others. Very high EO scores (30 or higher) indicate dysfunctional dependence on significant other people for achieving one's goals. A score of 21 to 29 reflects a realistic dependence on supervisors, peers, and subordinates. A score of 17 to 20 shows an independence orientation, and a score below 17 indicates counterdependence.

EC (External-Chance)

A person with an external-chance orientation believes that his or her future is controlled primarily by luck or chance. To an extent, the lower the EC score, the better, because a person with a low EC orientation is more likely to utilize another potential in trying to achieve goals. However, a score of 10 or below may reflect problems in coping with frustrations when unforeseen factors prevent achievement of goals.

Ratios of Scores

The ratio of your I and E scores can also provide information about your orientation. If your I/totalE ratio is more than one (that is, if your I score is greater than the total of your E scores), you have an internal orientation. If your EO ratio is more than one, you have more internality than externality$_{other}$. If your I/EC ratio is greater than one, you are more internal than external$_{chance}$. Ratios greater than one are beneficial, and action plans can be created to change ratios that are lower than desired.

❚ PHASES OF INTEGRATED PROBLEM SOLVING (PIPS)

William C. Morris and Marshall Sashkin

Studying here-and-now processes in groups is one major use of instruments, although a seemingly uncommon one in practice, at least in the sense of using a carefully prepared paper-and-pencil instrument in the here-and-now process of group dynamics training. This is the use for which Phases of Integrated Problem Solving (PIPS), a group-process skill-development instrument, is designed.

The basic purposes of such use are twofold. First, an experiential learning approach to group problem solving facilitates the development of small-group problem-solving process skills among group members. Second, such learning has greatest impact when it occurs in the context of real and relevant content issues.

Any facilitator who has tried to work on process issues during "on-line" group content work sessions knows that such a task-process combination often presents major difficulties. Sometimes group members may fear dealing directly with sensitive process issues and may become enmeshed in the content, ignoring process work altogether. Alternatively, when the content is so threatening that dealing with anything else is more desirable, a group may get stalled on process issues.

One common approach taken by group facilitators is to have group members develop process skills as they work on a simulated problem, thereby eliminating any content threat and allowing the facilitator to devote full energies toward guiding the development of process skills. While this training approach is appropriate for many situations, its danger is that group members will not be able to transfer their skills to real life.

This instrument was developed in order to help the facilitator develop group members' process skills in the context of a real group problem, while minimizing the danger of facilitator overload and maximizing the likelihood that skills learned will be transferred.[1] By making it difficult for the group to avoid dealing with process issues or to escape from content work and by providing the group with a structure, the six-phase instrument frees the facilitator to watch for serious group-process problems and to direct more energy toward the skill development of individual members.

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[1] Floyd C. Mann and William C. Morris created an earlier group problem-solving process instrument. The instrument published here relies on their original training concept but is different in format, framework, and content.

THE INSTRUMENT (PIPS)

Phases of Integrated Problem Solving (PIPS) provides a rather simple sequential task structure for a basic problem-solving model. Different sets of problem-solving steps have been developed (see Kepner & Tregoe, 1965; Maier, 1966), but all such approaches are similar. All start with defining the problem and gathering information about it and then proceed to generating solution alternatives, determining the characteristics of good solutions (goals or objectives) based on the problem definition, evaluating the solutions generated and selecting one to try out, developing implementation plans (as well as plans for tracking and evaluating results), carrying out implementation plans, and conducting a final evaluation. This sequence is detailed here in six phases:

Phase	Activities
Phase I: Problem Definition	Explaining the problem situation, generating information, clarifying, and defining the problem.
Phase II: Problem-Solution Generation	Brainstorming solution alternatives; reviewing, revising, elaborating, and recombining solution ideas.
Phase III: Ideas to Actions	Evaluating alternatives, examining probable effects and comparing them with desired outcomes, revising ideas, developing a list of final action alternatives, and selecting an alternative for trial.
Phase IV: Solution-Action Planning	Preparing a list of action steps, with the names of persons who will be responsible for each step; developing a coordination plan.
Phase V: Solution-Evaluation Planning	Reviewing desired outcomes and developing measures of effectiveness; creating a monitoring plan for gathering evaluation data as the solution is put into action; developing contingency plans; assigning responsibilities.
Phase VI: Evaluation of the Product and the Process	Assembling evaluation data to determine the effects of actions and the effectiveness of the group's problem-solving process.

Because of the nature of group processes and of group members' interaction process skills, however, group problem-solving discussions rarely proceed so neatly. For example, one very basic process issue is the separation of idea generation from idea evaluation. Yet many real-life groups critique and work on one idea at a time, an approach that has been proven less effective in both experimental research studies and real-life tests (Maier, 1970).

In an effort to ensure more effective group behavior, PIPS guides group members through a number of group-process issues with a series of "key questions." For each of the six problem-solving phases, five process questions and five problem-solving task activities are presented. It was found that the most important issues could be covered in five questions, and research shows that most people can comfortably attend to about five different things at any one time (Miller, 1967). The two sets of items are presented in a likely sequence, but it is not possible to sequence group problem-solving work perfectly. The critical point is that the group deal with all the issues—task and process—in each phase before moving to the next problem-solving phase.

Each of the six phases in PIPS is introduced with a question designed to ensure that everyone is aware of the focus of the phase. Similarly, each phase concludes with "publication" of the product—a written, shared activity ensuring that all group members agree on what was decided. This activity also provides a sense of closure to the phase and prepares group members for the next phase.

Technical Considerations

The instrument is normative (value based) to the degree that the authors' beliefs about how groups *should* work are incorporated in it. It is, however, also descriptive in that it is based on laboratory and field research. To the extent that it (1) accurately reflects valid research findings and (2) is used appropriately, it will prove a "valid" instrument. The research base was developed from the theory and training writings of Maier (1966, 1967).

The instrument is self-administering and self-scoring; all items use five-point Likert scales. The items are "transparent" in the sense that the activities being observed and measured are clearly described and more or less desirable states are self-evident. The fact that the facilitator can add to or challenge the item ratings of group members, in addition to the immediacy of the behavior being described, reduces the likelihood of false answers.

USING PIPS

This instrument has been used with diverse groups, including school teachers, administrators, research scientists, youth workers, and physicians. Perhaps the most important prerequisite is group members' commitment to try the instrument. This commitment will come more easily if the facilitator is able clearly to describe the nature

of the instrument and its aims. A brief lecturette on group problem solving (see Maier, 1967) followed by a reading and review of the PIPS instructions is often helpful.

Due to the nature of PIPS, not all of the seven steps in using an instrument detailed by Pfeiffer, Heslin, and Jones (1976) are fully appropriate. Of those steps, *theory input, posting,* and *processing* are most important in using PIPS.

Phases of Integrated Problem Solving is designed to be used *during* group problem solving, rather than afterwards. It is an instrument guide, not a style test or attitude measure. One advantage is that it does not have a personal focus; thus, individual group members are not threatened in any way. A disadvantage is that group members may react negatively to it because of unfamiliarity with it or because they fear it will take too much time.

Sometimes, a group requires proof that working on group-process skills is needed. In that case, PIPS can be used to evaluate a recent group problem-solving discussion. Each group member rates the group's discussion according to the questions in Phase I; members then share and discuss their ratings. This procedure is repeated for each phase. Often this process will dramatically highlight the need for an improved problem-solving process.

Although every group member should have a copy of the instrument, it is unrealistic to expect all group members to actively use it throughout a discussion. Instead, the facilitator can ask two members to take the responsibility for monitoring the group's discussion process and for ensuring that group members are made aware (1) when the group moves inappropriately from one phase to another and (2) when one of the steps in a phase is not fully accomplished. One person can watch the task items while the other keeps track of the process items. In order that everyone can share in the experience and no one is left out of the group discussion, assignments should be rotated among group members for each phase.

The instrument is designed for use with small groups—from five to fifteen people. With smaller groups, the facilitator might serve as one of the observers and ask only one group member to use PIPS. In larger groups, three or four group members at a time could use the instrument. With a group of ten or more, two subgroups can be formed; one can carry on the problem-solving discussion while the other uses PIPS to observe the discussion. Roles are switched with each phase, so that everyone participates in the task work and in the process-kill learning. In this application the facilitator must help the group discuss the process observations at the conclusion of a phase. It also can be helpful to use an "open chair" technique during the discussion. That is, one of the observers may move into the problem-solving half of the group by taking a chair left vacant for this purpose. The observer, by raising some particular process point or issue that seems particularly important, can learn how difficult it is to persuade a task-involved group to look, however briefly, at process issues.

The Role of the Facilitator

The facilitator plays a key role in the use of PIPS The instrument was designed as a training aid, not as a procedural crutch that could mechanically improve a group's problem-solving work. Essentially, it is the responsibility of the facilitator to follow up on group-process issues that are brought out by PIPS and to ensure that all group members have an opportunity to practice the interaction-process skills important for effective group problem solving. The facilitator must guide the group in using PIPS, particularly in discussing process issues at the close of each phase and in evaluating the group's use of the instrument (the process part of the final phase).

After a few uses of PIPS, the problem-solving approach that it embodies, both in structure and in process, will be internalized by the group members, who have learned how an "idealistic" problem-solving approach can work if members have the needed interaction-process skills.

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PHASES OF INTEGRATED PROBLEM SOLVING (PIPS)

William C. Morris and Marshall Sashkin

How To Use This Instrument

The following six-phase instrument is a tool to be used *during* a group problem-solving discussion. Unlike most questionnaires, it does not ask for ideas or opinions; each question identifies an important step that must occur for effective problem solving to come about. On the left-hand side of each page are questions that review *what* should happen (tasks). On the right, coordinated with each task question, is a process question, reviewing *how* the task should be done.

You should have your own copy of the instrument to help guide the discussion. If at any time you feel that a step is being left out or improperly performed, interrupt whatever discussion is taking place and bring your observation to the attention of all group members. To use the instrument, each group member reads each question in turn and rates the group on that item. If anyone rates the group below "5" ("This step was f*ully* accomplished"), the group as a whole reviews that step. Only when everyone agrees that the step was f*ully* accomplished does the group move on to the following step.

Doing this is not as complicated as it might sound at first. You will have to look at only *one* page—thirteen questions—at any one time, and the questions are in sequence. That is, the activity described in question 2 should occur *before* the group attempts to respond to question 3.

You might also think that going through each step and taking the discussion time needed to do so will be a lengthy process. However, although the group will probably take more time than usual to solve a problem, the extra time will not be a great deal. And, if prior group discussions have been *extremely* poor, you might actually find that this procedure saves time. In any case, as the group gets better at solving problems and eventually dispenses with this tool, the time required will diminish and there will also be a clear payoff in effective, quickly implemented solutions.

Each of the six phases follows a basic problem-solving format:

Phase I: *Problem Definition.* Often we assume that we know what the problem is, but just as often we are wrong and are looking only at a symptom or, at best, only part of the problem. The questions in Phase I are designed to guide the group in fully exploring, clarifying, and defining the problem.

Phase II: *Problem-Solution Generation.* People tend to be solution minded, rather than problem oriented. Phase II is designed to prolong the idea-generating process and to prevent premature decisions. Although often the solution we choose is the first or one of the first suggested, research has shown very clearly that solutions can be greatly improved by

looking at as many alternatives as possible. The more ideas we consider, the more likely we are to come up with a greater number of *good* ideas.

Phase III: *Ideas to Actions.* Now the group is ready to evaluate the ideas and come up with a final solution. Even though an idea may not work alone, it may have a good "part"; time can be taken to combine these good parts of various ideas and even to classify solution ideas into "sets." Each alternative can then be carefully, critically evaluated. People will be more able to help and participate if they do not feel attacked or threatened; rather than weeding out poor alternatives (and making those who suggested them feel defensive), it is better to select the *best* ones and concentrate on those until everyone can agree on one or two solutions.

Phase IV: *Solution-Action Planning.* There is now a solution to try out, and the chances are that it will work more smoothly if the actions needed to put it into operation are carefully planned. This means looking for problems in advance, planning to involve those persons whose support will be needed, and assigning and accepting action responsibilities. Only if the group determines *who* is to do *what* and *when* can the solution have a fair test.

Phase V: *Solution-Evaluation Planning.* Unfortunately, most groups stop at Phase IV, losing the chance to learn from experience. Even if a solution is a tremendous success, it is useful to know *exactly* what it was about the actions taken that made the solution work so well. It can then be repeated more easily. If a solution is a total disaster, we may feel like hiding the fact that we had anything to do with it. But it is necessary to know exactly what went wrong so that the same things can be avoided in the future. Of course, in real life, solutions generally work moderately well—they are neither spectacular successes nor spectacular failures. Keeping track of exactly what is happening allows minor improvements or adjustments that will help significantly in solving the problem. This is best done not by guesswork or trial and error, but on the basis of hard, accurate information about the effects of actions. This phase offers the greatest potential for learning to solve problems. Again, *what* kind of evaluation information is needed, *who* will obtain it, and *when* must be specified.

Phase VI: *Evaluation of the Product and the Process.* When there is enough information to evaluate how well and to what degree the solution worked, it is time for another group meeting for final evaluation. At this point it is possible to see what the outcomes were and whether the problem was solved. If the problem or some part of it remains, the group can "recycle"—look at the information it has, perhaps even redefine the

problem, and come up with new ideas or try out a previously chosen alternative. It will be necessary to repeat the steps in Phases III to V. If the problem was solved, it is important to consider what actions are necessary to keep it from reappearing. This is also the time to review and evaluate how well the group worked together.

The key to using the problem-solving procedure detailed here is to follow each step in each phase to the point at which everyone can agree that the step—and the phase—is *fully* accomplished. One group member could be designated a "special observer" for the five task steps and another for the five process steps in each phase. These duties should be rotated among group members from one phase to another. Then no one will be a nonparticipant, and everyone will have the chance to develop some group-observation skills that are important for effective group problem solving. Before starting to work with the instrument, the group will need:

1. A copy of the instrument for each group member.
2. Paper and pencils.
3. Large sheets of paper, masking tape, and marking pens (or a large chalkboard and chalk).

Each group member must first do two things:

1. Read these instructions carefully.
2. Make a clear, verbal commitment to try out the suggestions and to put forth the effort necessary to learn to solve problems better.

The Tasks
of
Problem Solving

ACT: WHAT

To What Extent Has the
Step Been Accomplished?

FULLY
MOSTLY
PARTLY
SLIGHTLY
NOT AT ALL

The Processes
of
Problem Solving

INTERACT: HOW

1. Is the problem stated in such a way that everyone understands what the group will work on? ① ② ③ ④ ⑤
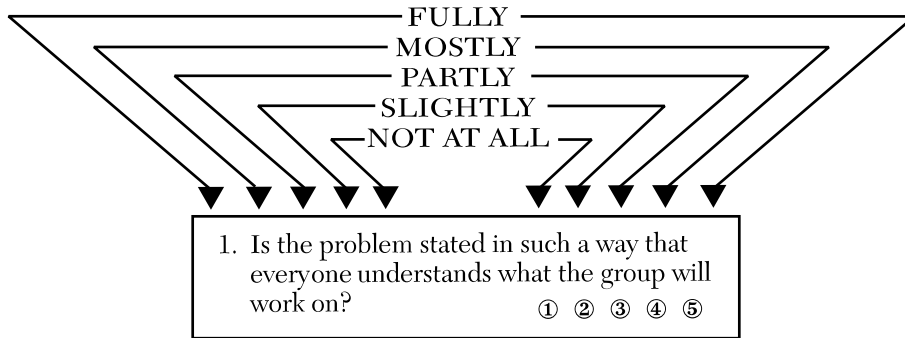
2. To what extent have information resources been sought out? Is everyone who might have relevant data present or represented at the meeting?* → 5 4 3 2 1

2. Are those persons most directly involved in the problem encouraged by the leader and group members to participate in giving information?

3. Is all of the available information about the problem brought to light and discussed?* → 5 4 3 2 1

3. Is there an "atmosphere" that encourages openness and sharing? Do all group members feel free to speak?

4. Is the group taking the information relating to the stated problem and considering how it all "fits together"? → 5 4 3 2 1

4. Are all persons encouraged to make susgestions about how the information fits together to define the problem?

5. Is there consideration of what the situation would be like if the problem were solved? → 5 4 3 2 1

5. Are group members keeping the discussion problem centered, avoiding consideration of solution alternatives?

6. Has the problem finally been stated in such a way that everyone understands and agrees to a common problem definition? → 5 4 3 2 1

6. Has every person been asked about his or her agreement with the final problem statement as writtten and posted?

1 2 3 4 5 ←
1 2 3 4 5 ←
1 2 3 4 5 ←
1 2 3 4 5 ←
1 2 3 4 5 ←

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*If additional information is found to be necessary, it should be obtained before going further with the discussion.

Record in detail the final problem statement on a separate sheet of paper.

The Tasks
of
Problem Solving

ACT: WHAT

FULLY
MOSTLY
PARTLY
SLIGHTLY
NOT AT ALL

The Processes
of
Problem Solving

INTERACT: HOW

7. Is the change from problem definition to solution generation clearly stated so that all group members understand the new task?
① ② ③ ④ ⑤

8. Have the rules of brainstorming (all ideas accepted and posted; no criticism; repetition and "piggybacking" on other ideas OK) been reviewed and posted before beginning? → 5 4 3 2 1

8. Are the leader or other group members taking time to encourage those wo might be slower at giving out ideas, pausing and asking for more ideas when necessary? ← 1 2 3 4 5

9. Are as many ideas generated as possible, using all the resources of the group? → 5 4 3 2 1

9. Are all ideas recognized and welcomed regardless of their content (e.g., including even ideas that seem "foolish")? ← 1 2 3 4 5

10. When all ideas are out, is the list reviewed in detail, clarifying items when necessary and expanding or adding to the ideas generated? → 5 4 3 2 1

10. Is criticism tactfully discouraged and are evaluative comments postponed (e.g., asking for another alternative instead of criticism)? ← 1 2 3 4 5

11. Is the group taking time to examine the list and combine various ideas into "sets" of alternatives? → 5 4 3 2 1

11. Is the group able to prevent any one member from dominating the discussion or imposing his/her frame of reference on the group? ← 1 2 3 4 5

12. Has the group developed a list of at least several clearly stated alternatives? → 5 4 3 2 1

12. Have all final alternatives been posted (on chalkboard or newsprint) for everyone to see? ← 1 2 3 4 5

Record the list of solution alternatives on a separate sheet of paper.

The Tasks
of
Problem Solving

ACT: WHAT

*To What Extent Has the
Step Been Accomplished?*

FULLY
MOSTLY
PARTLY
SLIGHTLY
NOT AT ALL

The Processes
of
Problem Solving

INTERACT: HOW

13. Is it clear to everyone that the work is changing from idea getting to evaluating those ideas?

① ② ③ ④ ⑤

14. Is each solution idea discussed thoroughly in terms of the information which would support or contradict the idea? 5 4 3 2 1   1 2 3 4 5   14. Is the group able to critically evaluate ideas without attacking individuals who propose or support those ideas?

15. How well is the group doing in modifying and combining alternatives into an improved final set of potential solutions? 5 4 3 2 1   1 2 3 4 5   15. Are group members giving support to persons whose ideas are being evaluated, reducing feelings of rejection?

16. Is the group examining the alternatives in terms of human and material costs associated with each and in terms of new problems which might result? 5 4 3 2 1   1 2 3 4 5   16. Is the group focusing on identifying and selecting the best alternatives rather than identifying and rejecting poor solutions?

17. Is one or a set of alternatives selected for trial and thoroughly discussed as to potential outcomes? 5 4 3 2 1   1 2 3 4 5   17. Are differences of opinion and personal preferences taken into account and worked through to mutual satisfaction?

18. How well has the chosen solution been related to the problem statement and group objectives discussed earlier? 5 4 3 2 1   1 2 3 4 5   18. Has there been final consensus on a trial solution or, if not, has the extent of agreement among group members been clearly established?

Record in detail the final trial solution on a separate sheet of paper.

The Tasks
of
Problem Solving

ACT: WHAT

To What Extent Has the
Step Been Accomplished?

FULLY
MOSTLY
PARTLY
SLIGHTLY
NOT AT ALL

The Processes
of
Problem Solving

INTERACT: HOW

19. Is it clear to everyone that the work is changing from WHAT is to be done in HOW this is going to happen?
① ② ③ ④ ⑤

20. Is the group preparing a list of sequenced action steps which will be needed to implement the solution, including a realistic time schedule? → 5 4 3 2 1

20. Are all group members involved in the discussion, particularly in giving information needed to define action steps and ensure that critical steps are not left out?
1 2 3 4 5 ←

21. Is the group able to identify and list various forces which might help or hinder the action process being planned? → 5 4 3 2 1

21. Is the group able to use the brainstorming process effectively, first generating and later evaluating these forces?
1 2 3 4 5 ←

22. Are all of the needed resources (material as well as human, and including persons not present) for accomplishing each of the action steps being clearly identified? → 5 4 3 2 1

22. Are group members able to openly identify persons whose support will be needed but may be withheld or persons who will have to take part in certain actions but may not choose to do so?
1 2 3 4 5 ←

23. Is the group able to clearly assign responsibilities for carrying out specific action steps and for coordinating that process? → 5 4 3 2 1

23. Is each person who accepts a task responsibility asked to, and willing to make a clear commitment to carry out that responsibility?
1 2 3 4 5 ←

24. Have all materials (lists, etc.) been collected and responsibilities taken for recording and disseminating the work of the group? → 5 4 3 2 1

24. Have all group members agreed to allow these materials (the specific details of the action plan) to be shared with other concerned parties?
1 2 3 4 5 ←

Record on a separate sheet of paper the sequence of action steps agreed to, who accepted responsibility for each step, and the time schedule for actions.

The Tasks
of
Problem Solving

ACT: WHAT

To What Extent Has the
Step Been Accomplished?

FULLY
MOSTLY
PARTLY
SLIGHTLY
NOT AT ALL

The Processes
of
Problem Solving

INTERACT: HOW
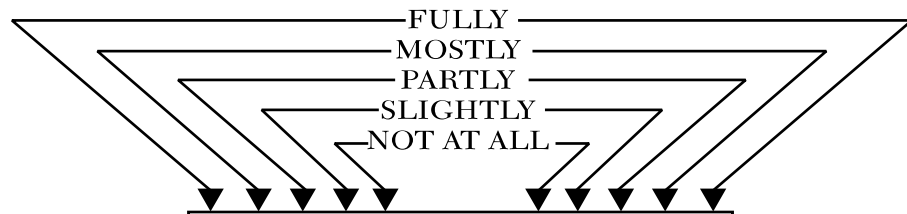
25. Is the transition from planning for action to planning for evaluation being made clearly with the awareness and consent of all group members?   ① ② ③ ④ ⑤

26. Is the group reviewing the desired solution outcomes and developing measures for each action step, which would indicate the degree of success in attaining the outcomes? ——→ 5 4 3 2 1 | 1 2 3 4 5 ←—— 26. Are any differences among group members regarding definitions and measures of success openly discussed, explored, and resolved?

27. Is a timetable developed for step-by-step interim evaluation (monitoring of effects as action plans are implemented)? ——→ 5 4 3 2 1 | 1 2 3 4 5 ←—— 27. Are group members free in expressing concern or support for the details of the time schedule?

28. Are responsibilities clearly assigned for gathering evaluation data and preparing reports? ——————→ 5 4 3 2 1 | 1 2 3 4 5 ←—— 28. Do the persons accepting these responsibilities express clear commitment to their accomplishment?

29. Are contingency plans outlined for critical steps (such that the overall plan could continue with modification but without major interruption)? ——→ 5 4 3 2 1 | 1 2 3 4 5 ←—— 29. Are all group members involved in giving ideas for meeting such contingencies (particularly, those who have action responsibilities for the critical steps)?

30. Have plans been made for dissemination of interim results, and has a final evaluation meeting date been set? ——→ 5 4 3 2 1 | 1 2 3 4 5 ←—— 30. Has everyone agreed to these plans and the data; have any reservations been openly expressed and resolved?

Record on a separate sheet of paper the solution-evaluation criteria, the specific evaluation plan (actions, timetable, and responsibilities) and the final evaluation meeting date.

The Tasks
of
Problem Solving

ACT: WHAT

To What Extent Has the
Step Been Accomplished?

FULLY
MOSTLY
PARTLY
SLIGHTLY
NOT AT ALL

The Processes
of
Problem Solving

INTERACT: HOW
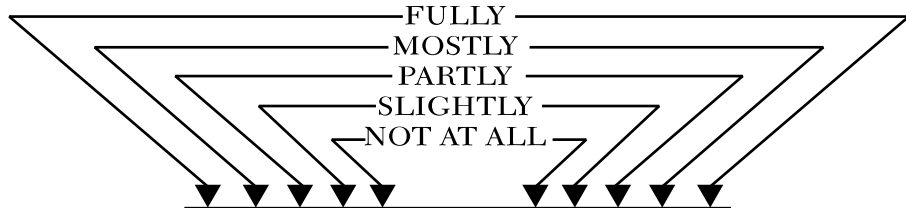
31. Is the evaluation meeting being held on schedule with all involved parties present? ① ② ③ ④ ⑤

32. Has information about the effects of actions been collected as planned and made available to all group members? → 5 4 3 2 1 | 1 2 3 4 5 ← 32. Have all group members been involved in influencing both what the group does and how the group operates?

33. Is the group able to compare, in detail, the outcomes with the objectives, set earlier? → 5 4 3 2 1 | 1 2 3 4 5 ← 33. To what extent have communications in the group been open, expressive of real feelings, and understood by all group members?

34. Can the group determine whether any new problems have been created and then set plans to deal with these new issues? → 5 4 3 2 1 | 1 2 3 4 5 ← 34. Have group members been supportive of the ideas and feelings of one another throughout the problem-solving process?

35. If, based on the evaluation, the problem has not been resolved, does the group return to earlier proposed solutions and set new action plans? → 5 4 3 2 1 | 1 2 3 4 5 ← 35. At various appropriate points throughout the session, have group members openly discussed and critiqued *how* the group has been working (i.e., critiquing the process)?

36. If, based on the evaluation, the problem has been successfully resolved, has the group considered what further actions, if any, will be needed to keep the problem from reappearing? → 5 4 3 2 1 | 1 2 3 4 5 ← 36. To what extent has the group learned to solve problems with the process detailed in this questionnaire? Will the group be able to effectively use this problem-solving process in future work?

37. Overall, how satisfied are you with the way your group solves problems?

❚ PROBLEM-ANALYSIS QUESTIONNAIRE

Barry Oshry and Roger Harrison

Research indicates that those factors that sustain problem situations in organizations can be categorized into two types: rational-technical failures and failures in openness. Further, these two types of failures can be found in three areas: in others, in the organization, and in oneself.

Others		Organization		Self	
Rational-Technical	Closed	Rational-Technical	Closed	Rational-Technical	Closed

RATIONAL-TECHNICAL FAILURES

In the area of *others,* rational-technical failures include lack of initiative, unwillingness to devote sufficient time and effort to the problem, inadequate ideas, and a tendency not to confront issues.

In the *organization,* this type of failure includes excessive demands, insufficient time to complete tasks, refusal to consider the problem important, and inadequate guidance or assistance.

For *self,* rational-technical failures consist of inadequate initiative, inadequate planning, poor communication, unrevealed desires and objectives, and unclear analysis of the problem.

FAILURES IN OPENNESS

In *others,* failures in openness can be seen when people are resentful of outside suggestions or attempts to help, unwilling to cooperate, unwilling to adjust to the realities of the situation, resistant to changing their ways, not sensitive to the effects of their actions on others, difficult to approach, and unwilling to listen to others' viewpoints.

Failures in openness in the *organization occur* when the organization becomes inflexible, has old-fashioned or outdated ideas, resists suggestions, is unwilling to adapt to the demands of new situations, or resists experimentation.

Examples of failures in openness that relate to the *self* occur when a person is difficult to approach, is insensitive to others' needs and goals, resists others'

suggestions, expects too much of others, is competitive, is not objective, is resistant to change, and is unwilling to understand the other person's point of view.

THE PROBLEM-ANALYSIS QUESTIONNAIRE

This questionnaire has the following purposes:

1. It is intended to help the respondent analyze the reasons for the problem he or she has identified.

2. It offers an instrument to be used to survey and analyze a commonly agreed-on problem.

3. It functions as a tool to evaluate the effects of training.

Preliminary research results indicate an order of expected responses, ranging from high to low:

Others/Rational-Technical
Others/Closed
Organization/Rational-Technical
Organization/Closed
Self/Rational-Technical
Self/Closed

In other words, people tend to blame others most for problems, then the organization, and only lastly themselves.

However, it also seems apparent that human relations training effects a shift toward higher Self scores, indicating more ownership of one's behavior and its effects, and toward lower Organization and Others scores, a result that suggests that as individuals take more responsibility for their problems, they tend to blame outside influences less.

PROBLEM-ANALYSIS QUESTIONNAIRE

Barry Oshry and Roger Harrison

This questionnaire asks you to consider in detail a meaningful human relations problem with which you are confronted in your work. The problem that you select should meet the following criteria:

    a. *You* are directly involved in the situation.

    b. The problem is presently *unresolved.*

    c. You are *dissatisfied* with the situation and would like to change it.

    d. The situation is *interpersonal,* involving your relationship with some other person or persons.

    e. The problem is *important* to you.

  Some typical work problems follow:

- A manager is dissatisfied with the quality of a subordinate's work and with that person's apparently negative attitude.

- A chief engineer thinks that the plant superintendent is not effective in resolving a persistent conflict between the engineering and manufacturing departments.

- A staff specialist believes that his or her services are being resisted or not adequately used by the administration.

- A subordinate has been unable to convince his or her superior that certain policy changes are needed.

- A marketing manager thinks that the staff is overly competitive, more interested in destroying one another than in collaborating.

To give this questionnaire maximal value, first select the *most critical interpersonal problem* confronting you at work. Then consider each of the following forty-eight possible factors. Indicate the degree to which you think each has contributed to the problem by writing in front of each item the number corresponding to your feelings about the importance of this causative factor.

    1. It is *totally unimportant* in creating or maintaining this problem.

    2. It is *relatively unimportant* in creating or maintaining this problem.

    3. It is *moderately important* in creating or maintaining this problem.

    4. It is i*mportant* in creating or maintaining this problem.

    5. It is *very important* in creating or maintaining this problem.

In the questionnaire the term "others" or "the other persons" means those with whom you are directly involved in the problem. The term "organization" means aspects of the work situation other than "the other persons" directly involved. The

"organization" includes policies and procedures, structure, and decisions of groups and persons not directly involved in the problem.

_____ 1. I have not let the others know just where I stand on this problem.

_____ 2. The organization demands too much of me to be able to handle this problem adequately.

_____ 3. I have been relatively difficult to approach.

_____ 4. There is a great deal of organizational bureaucracy.

_____ 5. The other persons are resentful of any outside suggestions or attempts to help.

_____ 6. The other persons have not planned adequately.

_____ 7. I have not taken as much initiative as I should have to remedy this situation.

_____ 8. The organization does not allow me enough time to handle this problem adequately.

_____ 9. I have been insensitive to the needs and goals of the others.

_____ 10. The organization has become inflexible.

_____ 11. The other persons directly involved in the problem are unwilling to cooperate.

_____ 12. The other persons are lacking in initiative.

_____ 13. I have tended to let the problem slide rather than attack it directly.

_____ 14. The organization is lax in taking corrective action.

_____ 15. I have tended to resist suggestions from others.

_____ 16. Organizational policies have not changed sufficiently with the times to handle this type of problem.

_____ 17. The other persons are unwilling to adjust to the realities of the situation.

_____ 18. The other persons do not carry their share of the load.

_____ 19. I have not planned adequately to meet this situation.

_____ 20. Organizational policies and procedures are not adequate guides for dealing with this situation.

_____ 21. I have tended to expect the other persons to go my way more than is reasonable.

_____ 22. The organization resists suggestions aimed at producing change.

_____ 23. The other persons overestimate their own abilities.

_____ 24. The other persons are unwilling to devote enough time and effort to solve this problem.

_____ 25. I have not been clear in communicating my own position to the other persons.

_____ 26. The organization does not consider this type of problem sufficiently important to provide the means for solving it.

_____ 27. I have been competitive, thus hindering the solution of the problem.

_____ 28. The organization is unwilling to adjust to the demands created by new situations.

_____ 29. The other persons resist changing their ways of doing things.

_____ 30. The other persons have not suggested ideas to solve this problem, or their suggestions have been inadequate.

_____ 31. I have tended to keep my own desires and objectives hidden.

_____ 32. The organization does not offer help on this type of problem.

_____ 33. Because of my own interests, I have been unable to look at the problem objectively.

_____ 34. The organization resists attempts to experiment with new ways of solving problems.

_____ 35. The other persons are not sensitive to the effect of their actions.

_____ 36. The other persons are not willing to devote the money or other resources needed to solve this problem.

_____ 37. I have not experimented with new ways of handling the situation.

_____ 38. The organization does not provide adequate resources for dealing with this kind of problem.

_____ 39. I have resisted changing my usual patterns of action.

_____ 40. It is difficult to get some favorable action from authorities in the organization.

_____ 41. The other persons are unwilling to listen to others' points of view.

_____ 42. The other persons do not give a high priority to solving this problem.

_____ 43. I have not adequately analyzed the situation.

_____ 44. The situation is not receiving sufficient guidance from authorities in the organization.

_____ 45. I have been unwilling to make an effort to understand the other persons' viewpoints.

_____ 46. Policies and procedures of the organization do not permit the changes needed to deal with this problem.

_____ 47. The other persons have been difficult to approach.

_____ 48. The other persons have let the problem slide.

PROBLEM-ANALYSIS QUESTIONNAIRE
SCORING SHEET

Instructions: Transfer your responses to the forty-eight questionnaire items to the appropriate spaces that follow and sum each of the six columns.

	Others		Organization		Self	
Item	Rational-Technical	Closed	Rational-Technical	Closed	Rational-Technical	Closed
1.					_____	
2.			_____			
3.						
4.				_____		
5.		_____				
6.	_____					
7.					_____	
8.			_____			
9.						
10.				_____		
11.		_____				
12.	_____					
13.					_____	
14.			_____			
15.						
16.				_____		
17.		_____				
18.	_____					
19.					_____	
20.			_____			
21.						
22.				_____		
23.		_____				
24.	_____					
25.					_____	

Item	Others		Organization		Self	
	Rational-Technical	Closed	Rational-Technical	Closed	Rational-Technical	Closed
26.						
27.						
28.						
29.						
30.						
31.						
32.						
33.						
34.						
35.						
36.						
37.						
38.						
39.						
40.						
41.						
42.						
43.						
44.						
45.						
46.						
47.						
48.						

	Others		Organization		Self	
	Rational-Technical	Closed	Rational-Technical	Closed	Rational-Technical	Closed
Raw Scores						
Average Importance Scores*						

*Divide each raw score by 8.

PROBLEM-ANALYSIS QUESTIONNAIRE PROFILE SHEET

Instructions:

1. In the boxes below the graph, copy your average importance scores from the Scoring Sheet.

2. Shade in the bar above each score to the level indicated by that score.

3. Compare your profile with those depicted below.
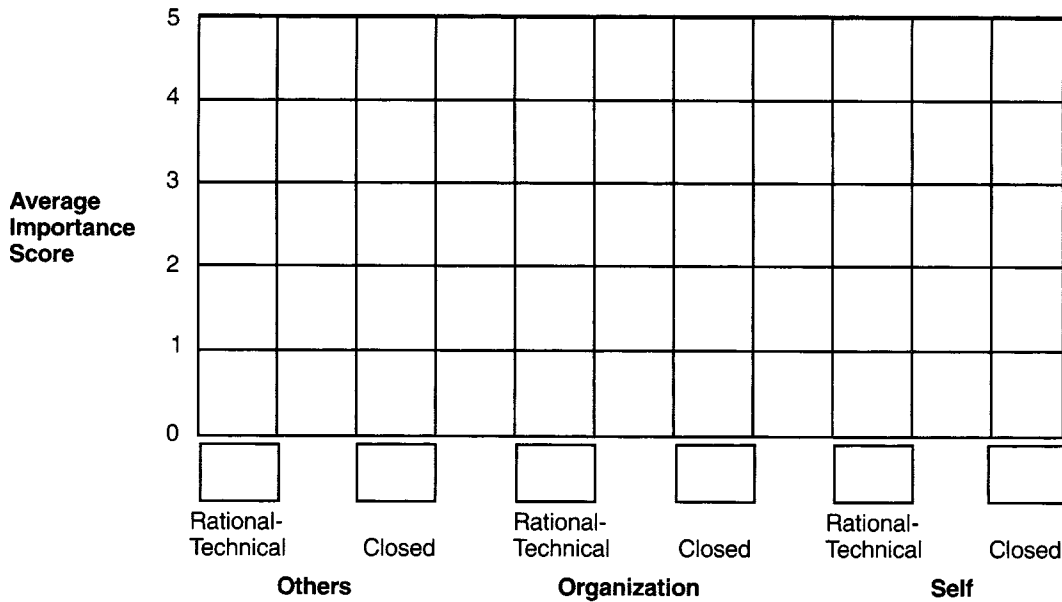
NORMATIVE DATA
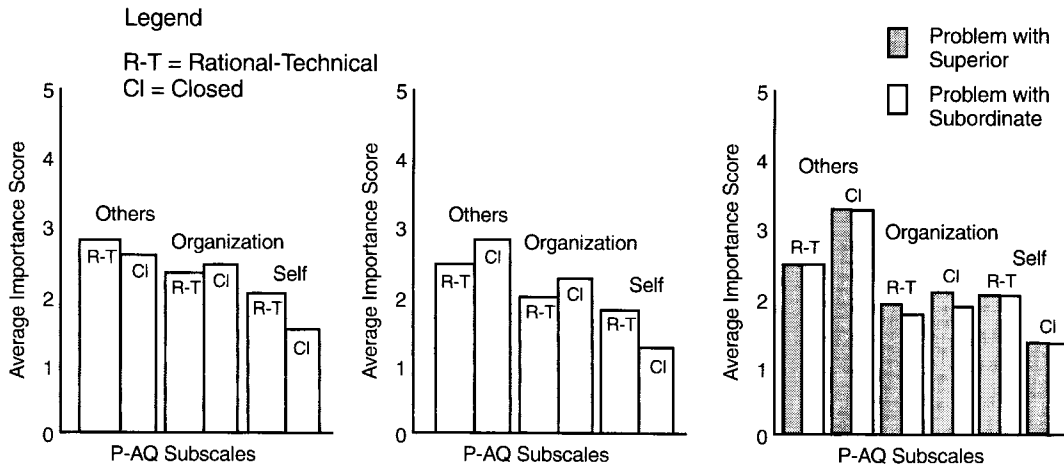
Figure 1. Diagnostic Scores for 167 Managers in Manufacturing Organizations

Figure 2. Diagnostic Scores for 87 Civil Service Middle Managers

Figure 3. Diagnostic Scores for 50 Managers in Manufacturing Organizations

◼ ROLE PICS: MEASURING STRATEGIES FOR COPING WITH ROLE STRESS

Udai Pareek

When individuals and organizations experience role stress, they adopt ways of dealing with it. Neither an individual nor an organization can remain in a continual state of tension, so even if a deliberate and conscious strategy is not utilized to deal with the stress, some strategy is adopted. For example, the strategy may be to leave the conflicts and stress to take care of themselves. This is a strategy, although the individual or the organization may not be aware of it. We call such strategies "coping styles."

The word "coping" has been used in several ways; two meanings predominate in the literature. The term has been used to denote general ways of dealing with stress and also has been defined as the effort to "master" conditions of harm, threat, or challenge when a routine or automatic response is not readily available (Lazarus, 1974). In this article, we shall use the first meaning: dealing, consciously or unconsciously, with stress experienced.

It is useful for individuals and organizations to examine what strategies they are using to cope with stress. If no coping strategy is adopted, lack of effectiveness may result. Hall (1972) has reported that the act of coping itself, as opposed to noncoping, is related to satisfaction and is more important than any particular coping strategy.

Lazarus (1974) emphasizes the key role of cognitive processes in coping activity and the importance of coping in determining the quality and intensity of emotional reactions. As Monat and Lazarus (1977) point out, there is impressive anecdotal and research evidence that we are continually "self-regulating" our emotional reactions, e.g., escaping or postponing unpleasant situations, actively changing threatening conditions, deceiving ourselves about the implications of certain facts, or simply learning to detach ourselves from unpleasant situations. Lazarus' emphasis is on the individual (i.e., the self) actively appraising the situation and what he or she can do, rather than on the environmental contingencies that presumably manipulate the individual's behavior.

A link between styles of living, coping, and somatic illness has been suggested by Friedman and Rosenman (1974), who argue that a primary cause of heart disease is a distinctive pattern of behavior. They call this "Type A" behavior; it involves continual, pressured interactions with the environment and a compelling sense of time urgency, aggressiveness, competitiveness, and generalized hostility. In a sense, this pattern is a mode of coping with societal values of achievement and the work ethic in which these values have been internalized by the Type A person.

Two different approaches to the study of coping have been pursued by various investigators. Some (e.g., Byrne, 1964; Goldstein, 1973) have emphasized coping traits,

styles, or dispositions. This approach, often used by researchers in the study of personality, assumes that an individual will utilize the same coping strategy (such as repression or sensitization) in most stressful situations, creating for the individual a stable pattern or style. A person's coping style or disposition typically is assessed by means of personality tests, not by observing what the person says or does in a particular situation.

Other researchers (e.g., Cohen & Lazarus, 1973; Katz, Weiner, Gallagher, & Hillman, 1970; Wolf & Goodell, 1968) have studied active, ongoing, coping strategies in particular stress situations. According to Cohen and Lazarus (1973), many psychological traits, including coping styles, show very limited generalities and, thus, are poor predictors of behavior in any given situation. Therefore, they prefer to observe an individual's behavior as it occurs in a stressful situation and then infer the coping processes implied by the behavior. This approach has been relatively neglected in the study of coping; the Role Pics instrument is allied to this approach.

STRATEGIES FOR COPING WITH STRESS

Lazarus (1975) has suggested a classification of coping processes that emphasizes direct actions and palliative modes. *Direct* actions include behaviors or actions that, when performed in the face of a stressful situation, are expected to bring about a change in the stress-causing physical or social environment. *Palliative modes* are those thoughts or actions whose purpose is to relieve the emotional impact of stress, be it bodily stress or psychological stress.

Pareek (1976) proposed two types of coping strategies that people generally use to deal with stress. One is that the person may decide to suffer from, accept, or deny the experienced stress or to blame somebody (self or other) or something for the stressful situation or the individual's being in it. These are *passive* or *avoidance* strategies and are referred to as "dysfunctional" ways of coping with stressful situations. A second type of strategy is the decision to face the realities of the situation and to take some form of action to solve the problems, either individually or with the help of others. The active, *approach* style is regarded by social scientists as a "functional" way of dealing with stress.

People do not restrict themselves to using one type of coping strategy exclusively, and different people employ complex and varied combinations of strategies to deal with the same kinds of stress.

THE ROLE PICS INSTRUMENT

Role Pics (Projective Instrument for Coping Styles) is a semi-projective instrument for assessing the strategies or styles used by respondents to cope with role stress. The instrument has three forms. Form O (the one presented here) is to be used to assess coping styles in a relation to stress resulting from *organizational* or job related roles.

The instrument presents illustrations in which a role occupant is involved in conversation with another person and one of them makes a statement about a situation

involving role stress. To maximize projection, the illustrations are presented in cartoon form, similar to the Rosenzweig Picture-Frustration Study (Rosenzweig, 1978). The respondent is required to write how the person to whom the statement is made would respond. It is presumed that the responses will be projective expressions of the way in which the respondent would cope with the particular role stress.

The instrument depicts eight role stresses: role overload, role ambiguity, role stagnation, role isolation, self-role distance, interrole conflict, role inadequacy, and role erosion (for definitions of these, see Pareek, 1982). Table 1 provides an analysis of the statements presented in the Role Pics instrument (indicated by numerals from 1 to 24) in relation to the various role stresses that they indicate and whether the statement is made *by* the role occupant or to the role occupant.

Table 1. Analysis of Role Pics Statements

Type of Role stress	Role occupant to		Role occupant from		
	Colleague	Supervisor	Colleague	Supervisor	Spouse
1. Role Overload		9	1	17	
2. Role Ambiguity		10	2,18		
3. Role Stagnation	11		3	19	
4. Role Isolation	12			20	4
5. Self-Role Distance		5	13	21	
6. Interrole Conflict	6		14		22
7. Role Inadequacy	23	15	7		
8. Role Erosion		16	8	24	
Total	4	5	8	5	2

Role Pics Categories

The scoring of responses utilizes a system of categorization that employs a two-by-two cube; that is, the scoring system has three dimensions, and each dimension has two aspects. The three dimensions are as follows:

1. *Externality.* This dimension measures the degree to which the person places the responsibility for the role stress on external factors, resulting in aggression toward and blame placed on such external factors. This may include the tendency to expect the solution to the stress to come from external sources. Externality is measured as high or low.

2. *Internality.* This is the opposite of externality. One may perceive oneself as responsible for the stress and may therefore express aggression toward or blame oneself. Similarly, one may expect that the solution to the stress should come from oneself. Internality is measured as high or low.

3. *Mode of Coping.* There are two modes: avoiding the situation (a reactive strategy) or confronting and approaching the problem (a proactive strategy). McKinney (1980) has proposed the concept of engagement style, differentiating the perception that one has of oneself as "doing" (agent) or "being done to" (patient).

Combining the two aspects of each of the three dimensions results in eight possible strategies to cope with stress. Concepts have been borrowed from Rosenzweig (1978) to name the various strategies.

The *avoidance* mode is characterized by (a) aggression and blame, (b) helplessness and resignation, (c) minimizing of the significance of the stressful situation by accepting it with a sense of resignation, or (d) denying the presence of stress or finding an explanation for it. All these behaviors "help" the individual to *not* do anything in relation to the stress. The categorization scheme uses Rosenzweig's term "punitive" (e.g., *impunitive*) to denote three of the strategies in the avoidance mode. "Defensive" is used to denote the fourth strategy. These strategies are abbreviated with capital letters (M, I, E, and D).

The *approach* mode is characterized by (a) hope that things will improve, (b) effort by the individual to solve the problem, (c) the expectation that others will help or asking for help, and (d) doing something about the problem jointly with others. Rosenzweig's term "persistive" is used to denote the four strategies in this mode. These strategies are abbreviated with lowercase letters (m, i, e, and n).

These eight strategies (M, I, E, D, m, i, e, and n) are further explained in the section on scoring the instrument.

ADMINISTERING THE INSTRUMENT

Role Pics can be administered individually or in a group setting, but each respondent should work independently in formulating the replies. Completing the form takes about twenty minutes.

The instrument depicts twenty-four situations; in nine of these the role occupant expresses some dissatisfaction to colleague or boss. In fifteen situations a colleague or boss or spouse makes a statement to the role occupant regarding some area in which the role occupant appears to be experiencing role stress. For each situation, the respondent is to write *on the picture* how the person *to whom the statement has been made* would reply.

After distributing the Role Pics Instrument (the series of pictures) the facilitator should describe it, announce the instructions, and then tell the respondents to read the instructions on the front of their instrument packages. The facilitator should announce that the instrument may result in new self-awareness but that it is not a "test." Respondents should be advised to attempt to *identify with* (rather than to judge) the stressed person in each role situation and to write the reply that he or she (the respondent) would give in that situation. The respondents also should be told to write down their first responses to each situation and not to take the time to evaluate or censor their responses. A response must be provided for each situation, in the order in which they appear.

SCORING THE INSTRUMENT

If the respondents are being trained to administer this instrument, they may score their own answers or one another's answers. In some situations, however, the facilitator may wish to have the instrument scored by someone who is not acquainted with the respondents.

After the respondents have completed the instrument, letters should be assigned to the responses as indicated in the following paragraphs.

Scoring "Avoidance" Responses

Impunitive (M). This is a combination of low internality, low externality, and avoidance. Responses that indicate either simple admission of the stress or that the stress is unavoidable and that nothing can be done about it are scored as M to reflect this style. A fatalistic attitude falls in this category.

Intropunitive (I). This is characterized by high internality, low externality, and avoidance. Blame and aggression are directed by the respondent toward himself or herself. Responses that indicate self-blame, remorse, or guilt are scored as I.

Extrapunitive (E). This is characterized by low internality, high externality, and avoidance. Responses that indicate irritation with the situation and/or aggression and blame toward outside factors and persons are scored as E.

Defensive (D). This is characterized by high internality, high externality, and avoidance. With the involvement of both oneself and others, but in the avoidance mode, one avoids aggression or blame by using defense mechanisms. Responses that deny the stress, rationalize the stressful situation, or point out benefits of the stress are scored as D.

Scoring "Approach" Responses

Impersistive (m). This strategy is characterized by low internality, low externality, and the approach mode. Rosenzweig's "impersistive" category relates to "expression given to the hope that time or normally expected circumstances will bring about the solution of a problem; patience and conformity are characterized." Responses are scored m if they indicate this interpretation.

Intropersistive (i). This strategy is characterized by high internality, low externality, and approach. Statements indicating that the respondent would take action in response to a stress are scored i.

Extrapersistive (e). This strategy is characterized by low internality, high externality, and approach. Statements of request made to someone to solve the problem or those indicating the expectation that the solution will come from other people are scored e.

Interpersistive (n). This strategy is characterized by high internality, high externality, and approach. It is the opposite of the defensive (D) style. This strategy is indicated by statements that suggest joint effort, by the respondent and some others, to deal with the stress.

Some statements may be indicative of two or three categories. In such cases, it is best to select the two most appropriate categories and to assign a half score (0.5) to each.

After letters have been assigned to the twenty-four responses, the letters are transferred to the "Item Scores" section of the scoring sheet. Capital letters are recorded in the "Avoidance" column, and lower-case letters are recorded in the "Approach" column. A tally is made of the letters in the following manner:

1. Count the number of times each letter appears in items 1 through 12. In the sample scoring sheet in Figure 1, the M appears two and one-half times (once for item 3, once for item 11, and a half point for item 12, which was split between M and i). Record each total in the appropriate box in the "Profile" matrix on the scoring sheet.

2. Repeat step 1 for items 13 through 24.

3. Record totals as indicated on the profile matrix.

The dominant style is the strategy with the highest score. The back-up style is the strategy with the next highest score. These styles should be recorded in the appropriate blanks on the scoring sheet.

An interpretation sheet is provided for the respondents.

Trends

Some individuals switch strategies while responding to Role Pics. For example, after responding to eight pictures, a person may decide that the selected strategies are not "right" and may start using other types of strategies. Trends are calculated by comparing the response patterns in the first half of Role Pics (situations 1 through 12) with those of the second half (situations 13 through 24).

The formula for calculating the value of a trend is $(a - b) \prod (a + b)$, where "a" is the total number of times that a strategy was used on the first half of Role Pics and "b" is the number of times the strategy was indicated in the second half of the instrument. If the value of "a" is greater than the value of "b," the trend is positive. If the value of "b" is greater than that of "a," the trend is negative. To be significant, a trend must be based on at least four responses scored as that strategy.

ITEM SCORES

	Avoidance	Approach			Avoidance	Approach
1.	D	_____		13.	M	_____
2.	D	_____		14.	D	_____
3.	M	_____		15.	M, D	_____
4.	D	_____		16.	_____	e
5.	_____	e		17.	_____	i
6.	D	_____		18.	M	e
7.	D	i		19.	M	e
8.	D	_____		20.	D	_____
9.	_____	i		21.	M	_____
10.	_____	e		22.	M, D	_____
11.	M	_____		23.	E	_____
12.	M	i		24.	E	_____

PROFILE

		Avoidance		Approach	
		Low Externality	High Externality	Low Externality	High Externality
Low Internality	1-12	M 2 ½	E 0	m 0	e 2
	13-24	M 4	E 2	m 0	e 2
High Internality	1-12	I 0	D 5 ½	i 2	n
	13-24	I 0	D 3	i 1	n 0

Totals from Profile:

Avoidance 1-12 _____8_____   Approach 1-12 _____4_____

Avoidance 13-24 _____9_____   Approach 13-24 _____3_____

Total Avoidance:_____17_____   **Total Approach:** _____7_____

STYLES

Dominant: _____Defensive_____   Back-up: _____Impunitive_____

TRENDS

.23
$\longrightarrow$ M   (a − b) ÷ (a + b)   .29
$\longleftarrow$ D

Figure 1. Sample Role Pics Scoring Sheet

USES FOR THE ROLE PICS INSTRUMENT

In using Role Pics as a feedback instrument, the facilitator can report to each individual on his or her scores for the various coping styles and can also present information about the

relationship between coping styles and personality and role dimensions. The feedback itself may help the respondents to examine the implications of their behavior and to make some plans for change. Individuals and groups can also develop strategies for moving from one coping style to another. A highly significant positive relationship has been reported between approach styles and internality and between avoidance styles and externality (Sen, 1982; Surti, 1982). Approach styles have a high correlation with optimism and a negative correlation with alienation (Sen, 1982). Findings in relation to organizational roles indicate that approach styles have a significant positive relationship with role efficacy and effective role behavior involving needs such as achievement, power, extension, control, and dependency (Sen, 1982). There also is a significant positive correlation between approach styles and job satisfaction (Sen, 1982).

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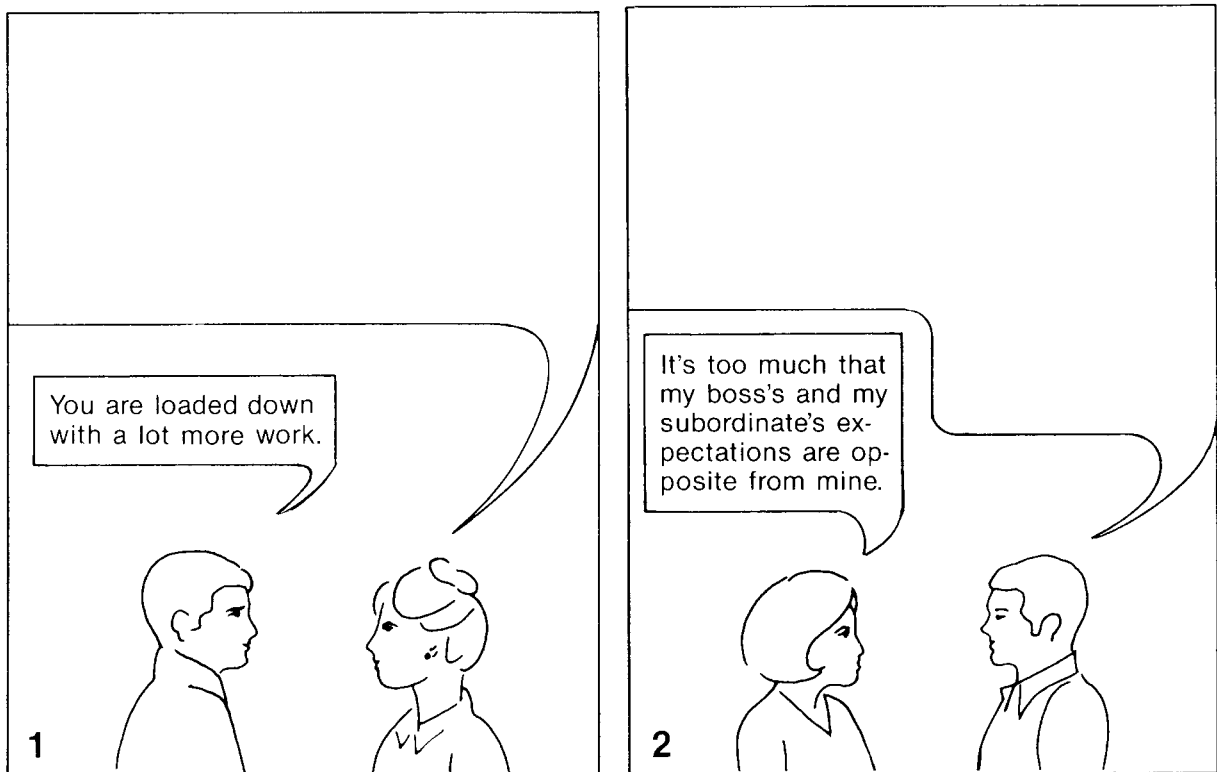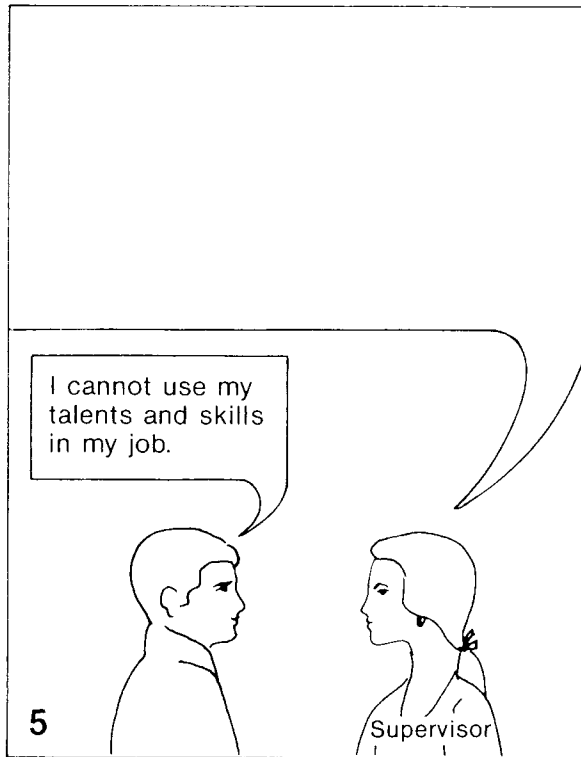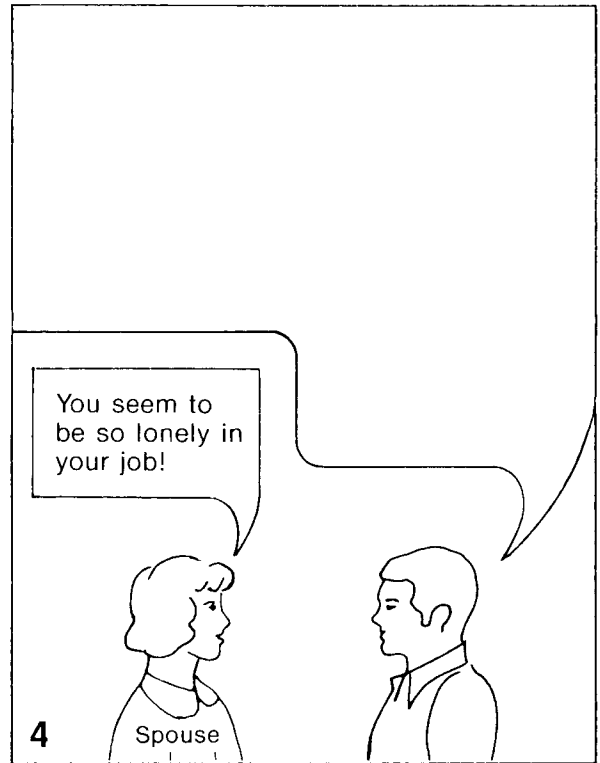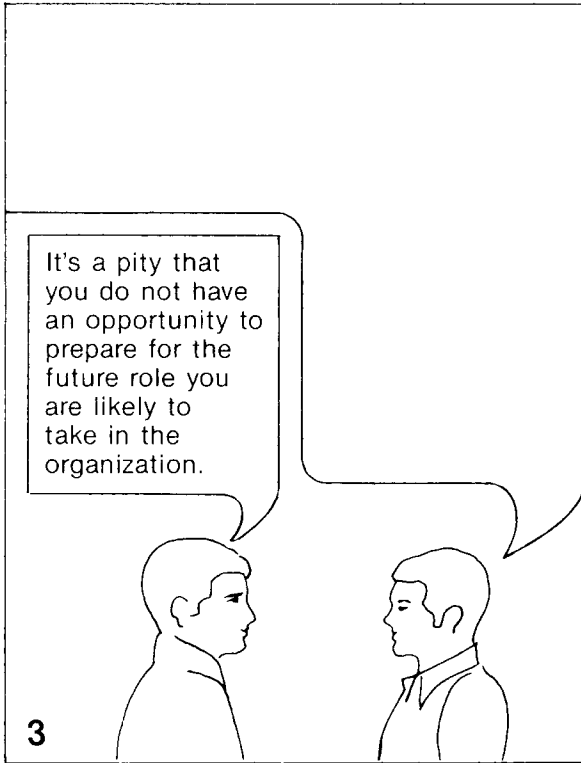
ROLE PICS[1]

Udai Pareek

Instructions: The purpose of this instrument is to discover how different persons perceive different situations involving organizational roles. There are no right or wrong answers.
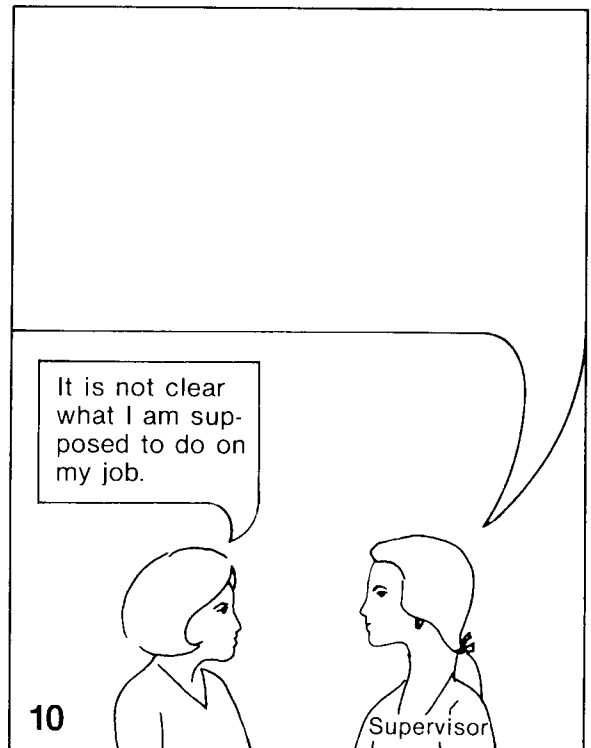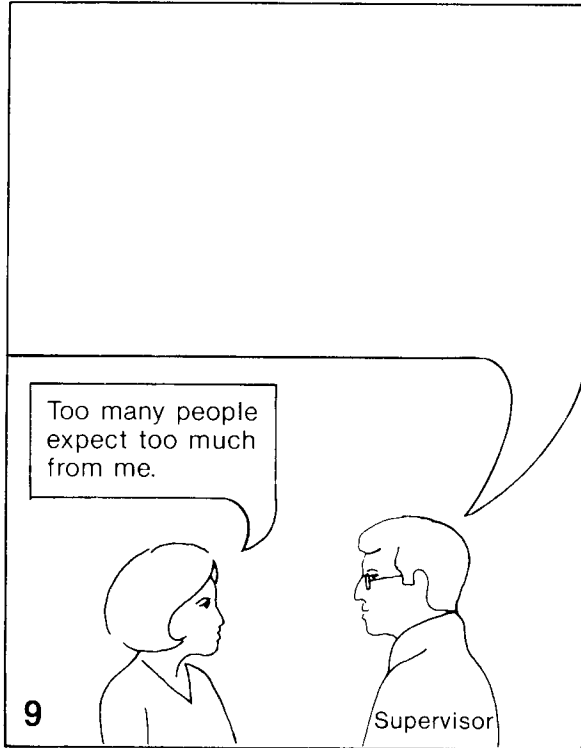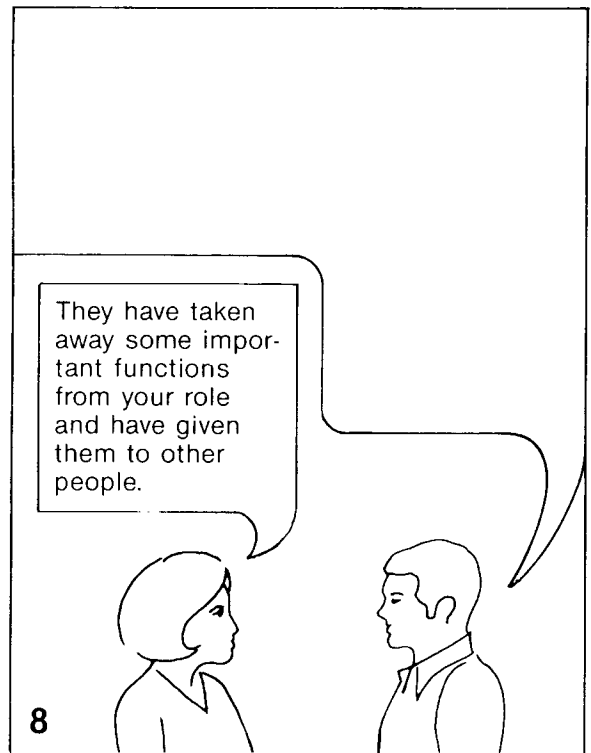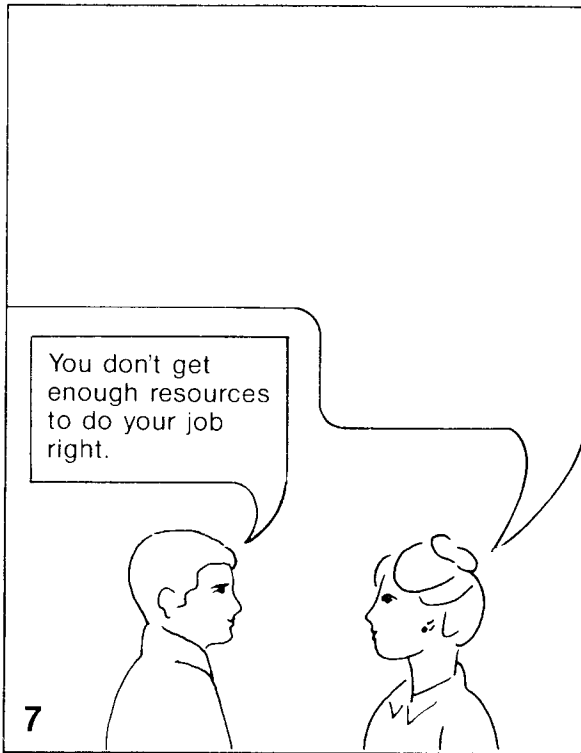
Twenty-four situations are depicted. In each picture, two people are talking; the statement made by the first person is printed, and the space for the response made by the second person is blank. For each situation (picture), imagine what the second person is saying and write this response in the blank space.

Write down your first reactions to each situation. Do not leave any picture blank, and go on to each new situation as soon as you have responded to the previous one.
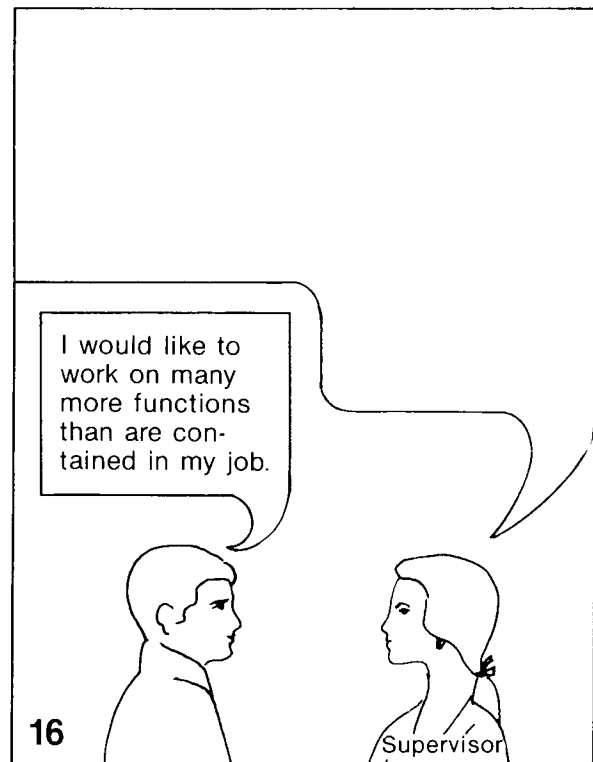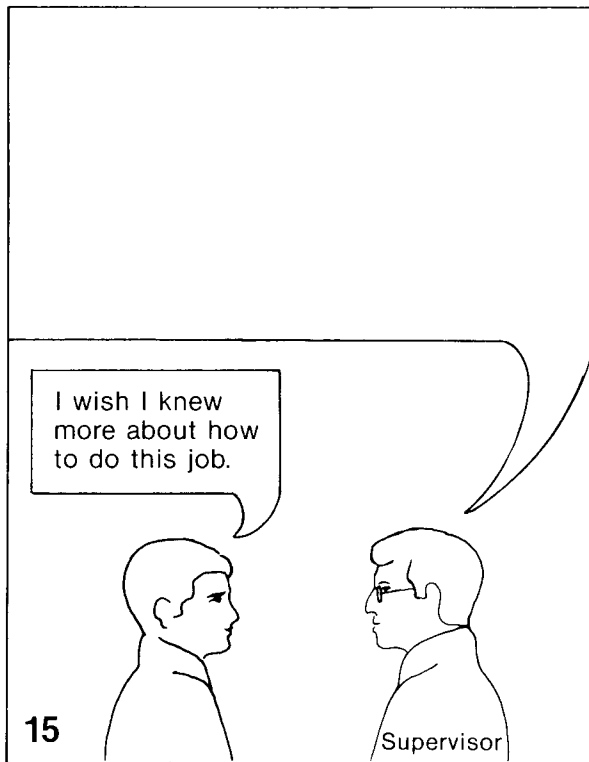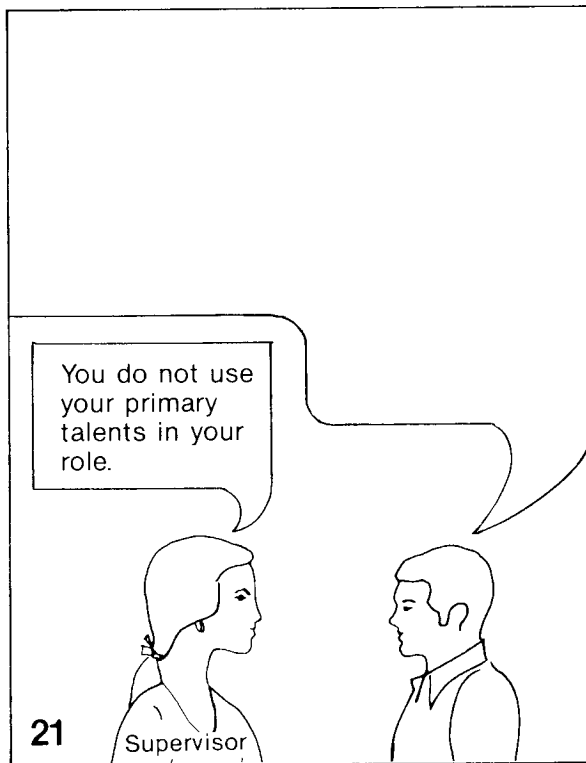

Panel 23: "You do not have the necessary technical knowledge and experience for the job."

Panel 24: "I am afraid that the specific function you wanted to perform must be assigned to some other person." Supervisor
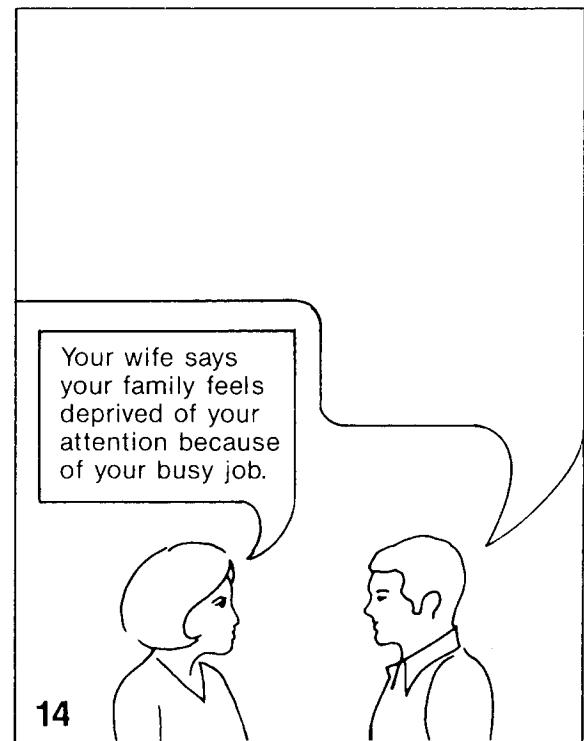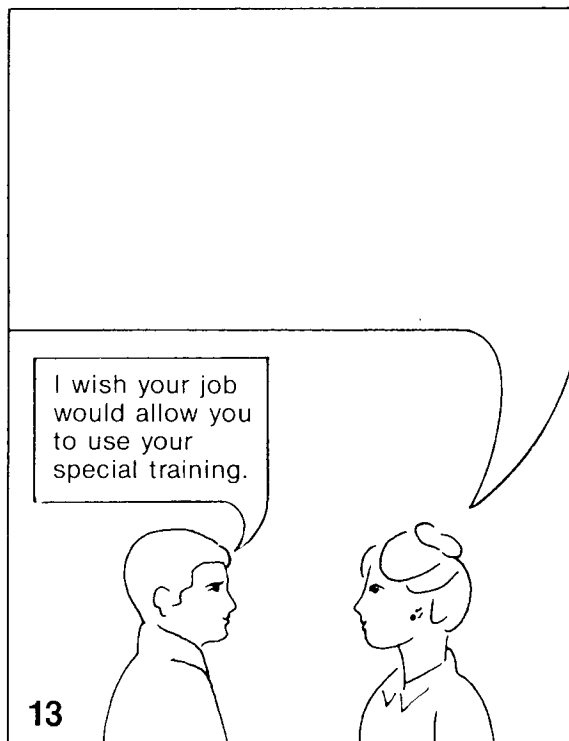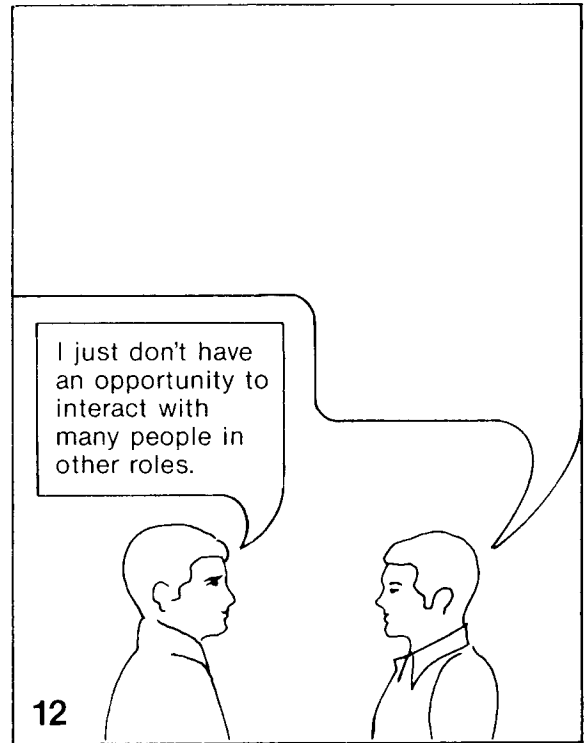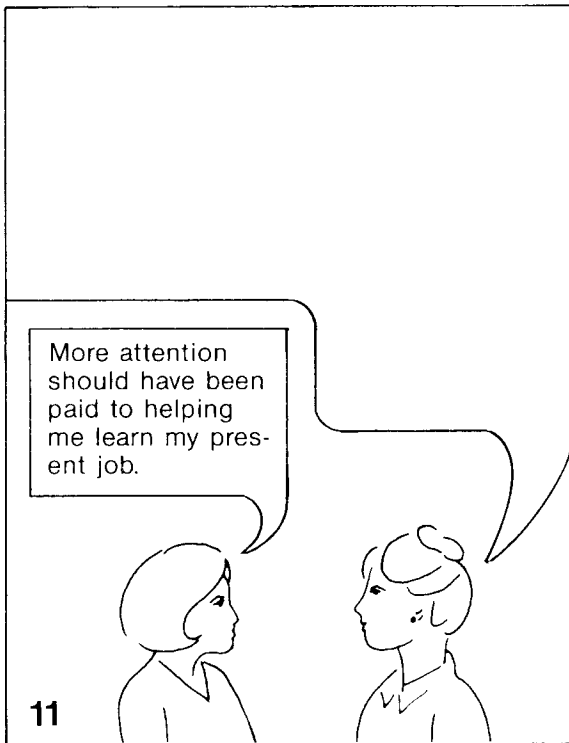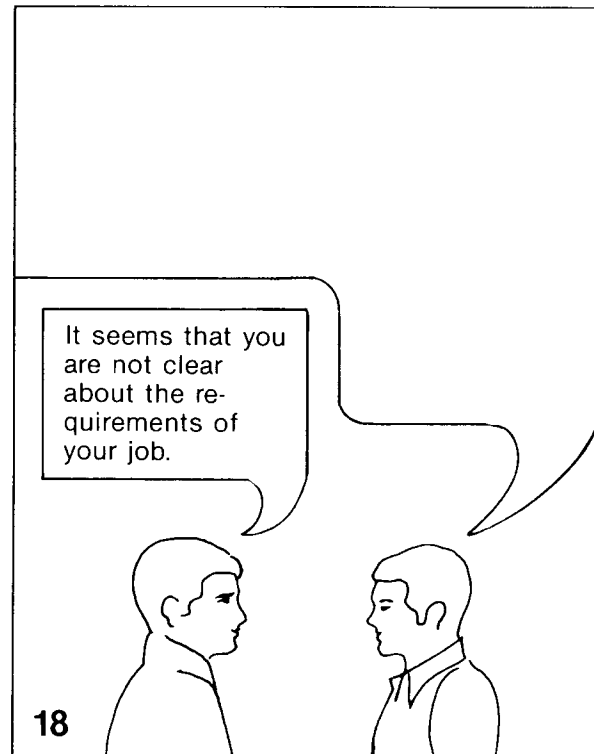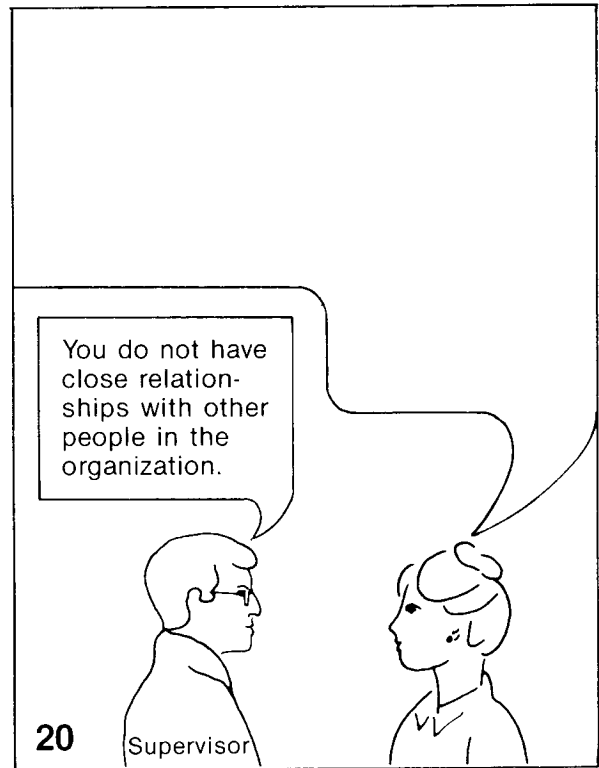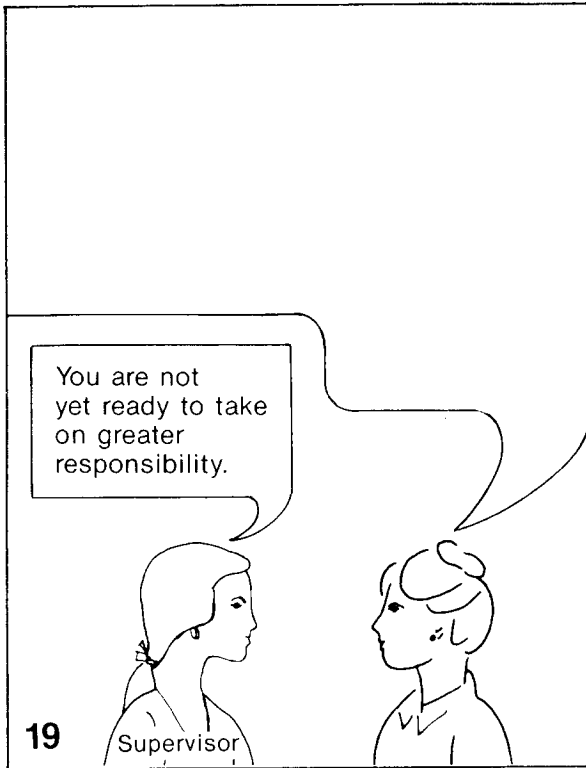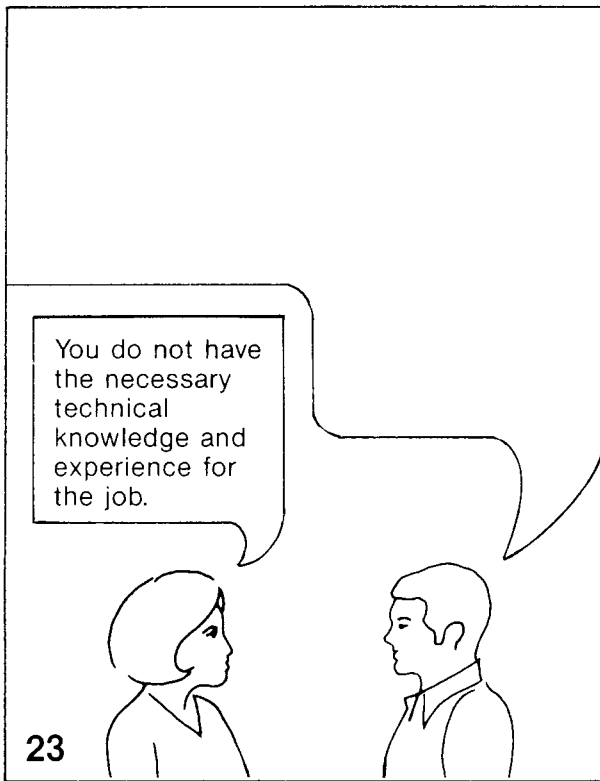
ROLE PICS SCORING SHEET

Instructions: The facilitator will give instructions to the person responsible for scoring the responses. This person may or may not be the respondent. After this person assigns a letter to each of the twenty-four responses, transfer those letters to the "Item Scores" section of the scoring sheet. Make sure you record capital letters in the "Avoidance" column and lowercase letters in the "Approach" column.

Count the number of times each letter appears in items 1 through 12. Record each total in the appropriate box in the "Profile" matrix. Then count the number of times each letter appears in items 13 through 24 and write those totals on the profile. Calculate other totals as indicated from the profile.

Your dominant style is the letter with the highest score. Your backup style is the letter with the next highest score. Record these styles in the appropriate blanks. The facilitator will explain the concept of "trends." The formula for calculating a trend is (a b) $\prod$ (a + b), where "a" is the total number of times a strategy was used on the first twelve role pics and "b" is the total number of times the strategy was used on the other twelve role pics.

Name_____ Date_____

ITEM SCORES

	Avoidance	Approach		Avoidance	Approach
1.	_____	_____	13.	_____	_____
2.	_____	_____	14.	_____	_____
3.	_____	_____	15.	_____	_____
4.	_____	_____	16.	_____	_____
5.	_____	_____	17.	_____	_____
6.	_____	_____	18.	_____	_____
7.	_____	_____	19.	_____	_____
8.	_____	_____	20.	_____	_____
9.	_____	_____	21.	_____	_____
10.	_____	_____	22.	_____	_____
11.	_____	_____	23.	_____	_____
12.	_____	_____	24.	_____	_____

PROFILE

		Avoidance		Approach	
		High Externality	High Externality	Low Externality	High Externality
Low Externality	1-12	**M**	**E**	**m**	**e**
	13-24	**M**	**E**	**m**	**e**
High Externality	1-12	**I**	**D**	**i**	**n**
	13-24	**I**	**D**	**i**	**n**

Totals from Profile:

Avoidance 112:_____   Approach 112:_____

Avoidance 1324:_____   Approach 1324:_____

TOTAL AVOIDANCE:_____   TOTAL APPROACH:_____

STYLES

Dominant:_____   Backup:_____

TRENDS

$$(a - b) \div (a + b)$$

ROLE PICS INTERPRETATION SHEET

Your dominant style reflects the strategy that you use most of the time. It is indicated on your scoring sheet by the letter that appears most frequently. The letter that appears with the next highest frequency indicates your backup style. When a person is under stress or working in an emergency situation, he or she generally uses the backup style more than the dominant style.

Following are interpretations of the various strategies:

Impunitive (M). This is a combination of low internality, low externality, and avoidance. Responses that indicate either simple admission of the stress or that the stress is unavoidable and that nothing can be done about it are scored as M to reflect this style. A fatalistic attitude falls in this category.

Intropunitive (I). This is characterized by high internality, low externality, and avoidance. Blame and aggression are directed by the respondent toward himself or herself. Responses that indicate self-blame, remorse, or guilt are scored as I.

Extrapunitive (E). This is characterized by low internality, high externality, and avoidance. Responses that indicate irritation with the situation and/or aggression and blame toward outside factors and persons are scored as E.

Defensive (D). This is characterized by high internality, high externality, and avoidance. With the involvement of both oneself and others, but in the avoidance mode, one avoids aggression or blame by using defense mechanisms. Responses that deny the stress, rationalize the stressful situation, or point out benefits of the stress are scored as D.

Impersistive (*m*). This strategy is characterized by low internality, low externality, and the approach mode. Rosenzweig's "impersistive" category relates to "expression given to the hope that time or normally expected circumstances will bring about the solution of a problem; patience and conformity are characterized." Responses are scored m if they indicate this interpretation.

Intropersistive (*i*). This strategy is characterized by high internality, low externality, and approach. Statements indicating that the respondent would take action in response to a stress are scored i.

Extrapersistive (*e*). This strategy is characterized by low internality, high externality, and approach. Statements of request made to someone to solve the problem or those indicating the expectation that the solution will come from other people are scored e.

Interpersistive (*n*). This strategy is characterized by high internality, high externality, and approach. It is the opposite of the defensive (D) style. This strategy is indicated by statements that suggest joint effort, by the respondent and some others, to deal with the stress.

❚ THE TEM SURVEY

George J. Petrello

The "knowledge worker," as defined by Peter Drucker (1969), is usually college educated, with expertise in some technical, professional, or administrative field. People who have freedom to control their time within their work environments are knowledge workers, in contrast to people who work on production lines, whose activities are controlled by the movement of the work along the line. Job success for knowledge workers depends largely on how effectively they use the time available to them.

BACKGROUND AND SUPPORTING THEORY

The literature on time management indicates that effective usage of time is greatly dependent on people's ability to pace themselves and their levels of recognizing and controlling human energy flows. Industrial psychologists have found that theories concerning "night people" and "morning people" are true for the vast majority of cases. In its simplest form, energy-level theory suggests that people realize, through self-observation, when they are at their best for physical activities such as dealing with people, presentations, and meetings and when they are at their best for mental activities such as writing, reviewing reports, and preparing budgets. If time is used for work that complements a person's energy flows, the use of time becomes more effective.

The literature indicates that effective time management also is greatly dependent on the individual's ability to process and retrieve information through a personal memory system. "Memory improvement" refers to the use of simple mechanical aids to help the person to store and retrieve information, rather than relying on the person's ability to remember in the traditional sense. Memory improvement involves careful record keeping through the use of diaries, project sheets, schedules, and so on. Thus, effective time management is linked to the individual's energy level and memory system. Research confirms that people can be taught to use their time more effectively. Sometimes the teaching does not involve communicating techniques but, rather, changing poor attitudes. Many people know or can learn what they should be doing to use their time more effectively, but they are not motivated to apply the techniques. Some people have attitudinal problems that are rooted in their environments or histories. Most people are able to change their attitudes and habits and to attain more effective use of their time.

The statements in the TEM Survey (time, energy, and memory) are derived from the author's experience in presenting time-management seminars and from the professional literature in the field. About 60 percent of these statements reflect

knowledge and about 40 percent reflect attitudes. Reddin's Management Style Diagnosis Test (Reddin, 1977) was used as a model in the design of the instrument.

The author has used the TEM Survey with over three hundred knowledge workers. In posttest surveys, participants were asked if they thought that the instrument accurately described their attitudes and knowledge about time, energy, and memory. Eighty percent of the participants said that the survey was accurate; 12 percent of the participants said that they were not sure; and 8 percent of the participants said that the survey was not accurate. In almost all cases, the participants thought that the survey was an excellent way to introduce a seminar on time management.

Administration and scoring of the instrument take thirty to forty minutes. It can be used as the basis of a one- or two-hour session, or it can be used to introduce a longer seminar. It also can be used for personnel screening and as a prescriptive device.

INSTRUCTIONS FOR ADMINISTRATION

After distributing copies of the TEM Survey, the facilitator should instruct the participants to read the instructions carefully, but not to read the statements until they are instructed to do so. When all participants understand the instructions, the facilitator tells them to begin and allows twenty or thirty minutes for them to complete the instrument.

When all participants have completed the instrument, the following instructions for scoring it are given:

1. Add all the "A's" in Columns 1 and 3 of the TEM Survey Answer Sheet (Step I). Insert the totals on the proper lines of Step II. Add these totals and insert this sum on the blank line for Attitude Raw Score.

2. Add all the "B's" in Columns 2 and 4 of the TEM Survey Answer Sheet (Step I). Insert the totals on the proper lines of Step III. Add these totals and insert this sum on the blank line for Knowledge Raw Score.

3. Convert the Attitude Raw Score and Knowledge Raw Score to Graph Values (Step IV) and shade in the Attitude and Knowledge Graphs that appear in Step V to the appropriate levels.

4. To find your TEM Profile, total the Raw Scores from Steps II and III and find the Range into which this total Raw Score falls. The Range indicates your potential as a Waster, User, or Achiever.

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THE TEM SURVEY
An Assessment Of Your Effectiveness In Managing Your Time, Energy, And Memory

George J. Petrello

Managers, administrators, professional practitioners, and educators are defined by Peter Drucker as "knowledge workers." These professionals are not expected to punch time clocks, nor are they expected to be clock watchers, but their use of time, energy, and memory (TEM) determines to a great extent how successful they will be in a work environment that is limited by hours, human energy, and the capacity to retain information. Many people have inefficient attitudes about time, energy, and memory management or they do not know how to become more effective users of these precious resources.

Most people can be defined as WASTERS, USERS, or ACHIEVERS in terms of their use of time, energy. or memory. The TEM Survey will help you to ascertain whether you need to improve your attitude or increase your skills in this area.

Instructions: Following are fifty sets of statements concerning attitudes or knowledge about time, energy, and memory management. Each set contains two statements, one in Column A and one in Column B. Read each set carefully, select what you believe to be the best answer, and indicate your choice on The TEM Survey Answer Sheet by writing in an "A" or a "B" in the appropriate space. Note that the items go across the answer sheet, not down. Many of the statements in the sets are unrelated. Try not to let this frustrate you in your effort to select the best of the two statements. Although some alternatives may not apply to your work environment, select the best answer as if all statements did apply.

	A	B
1.	Your time is your responsibility.	We can always control our time.
2.	Committee meetings usually are a waste of time.	Most managers could not do their jobs well without meetings.
3.	In order to better manage out time, we need to learn to set priorities.	Training people to save time is really a waste of time.
4.	Time spent waiting is unproductive but a necessary evil.	On certain days at certain times, instruct your secretary to hold all non-emergency calls so that you have a quiet time for thinking and planning.
5.	Your time is your tool.	The individual controls time and energy; environment has little to do with it.

	A	**B**
6.	Time analysis usually is an exercise in wasting time.	Your time is a company resource.
7.	Analyze and suggest ways to help your boss make better use of your time.	Chasing time (leg work) usually is a time saver in the long run.
8.	Prepare a weekly "to do" list in order to plan work week ahead.	As others "What can I do to help you to make better use of your time?"
9.	We have two choices: to control the amount of work for which we are responsible or to expand the amount of time that we spend doing the work.	Schedule recreation for weekends and evenings.
10.	Have subordinates evaluate for you how wisely you use your time.	The skill of delegation is difficult, to learn.
11.	Prepare a job description of your work and relate it to your own use of time. Have you subordinates do the same.	Avoid taking notes while talking in person to others; it is threatening to them.
12.	Do not expect a secretary to be more than a typist and a file clerk.	Delegate work, not the job of figuring out what the work is.
13.	We cannot always control out time because we often do work that involves other people.	Telephones usually are time wasters.
14.	As a participant in a meeting, you are unable to save time.	Committee meetings are different from staff meetings.
15.	Outline important telephone conversations in advance.	Luncheon meetings are often the most productive.
16.	Handle business in person whenever possible.	Attempt to cut down on travel through the use of conference calls.
17.	The telephone can be a great intruder on out time if we permit it to be.	Avoid meetings as often as possible.
18.	Do not let courtesy stand in the way of good time management.	Control your work; do not allow your work to control you.
19.	Proper training of subordinates usually is an important time saver.	Keep your appointment calendar in one central location, usually with your secretary.
20.	Have a secretary take notes after each major appointment that you have.	Ending telephone conversations is difficult for most people.

A	B
21. Generally. "do it now" is the best philosophy in handling paperwork.	Generally, "do it now" is the best philosophy in making people or dollar decisions.
22. Train yourself in memory techniques to rely on instant recall.	Document telephone conversations while they are in progress.
23. Have your own special filing system.	Having subordinates present written proposals to you is unwise because it discourages creativity.
24. Handle minor decision-making problems while waiting for airplanes or such things as the dentist.	Use your watch as time message for those who take up your time.
25. Most people are ill-equipped to manage their time.	Leave all files to you secretary or assistant to manage. Do not waste your time on them.
26. The larger the organization, the less actual time the chief executive will have.	Time spent truly relaxing is of no value to your career.
27. Take as long as time permits make an important decision.	Require a secretary or assistant to schedule all your appointments.
28. Use discretionary on-the-job time to catch up on work-related reading.	Keep the ball in the other person's court as a way of keeping the paperwork moving meaningfully.
29. In trying to control time, there is a clear danger that one may cut back tasks and activities too drastically.	The best advice one can give a manager or executive is to plan one' work carefully and in advance, each and every day.
30. Think of work time as separate and distinct from personal time.	Interpersonnel problems may be a symptom of overstaffing.
31. Require completed work from your subordinates.	Carefully plan each day's schedule of activities as tightly as possible at the beginning of the day.
32. Visit with coworkers to get the job done right and quickly.	Use the telephone as a time-saving tool.
33. Try to increase your work pace from time to time.	Executives should avoid most time commitments that are nonproductive.

	A	**B**
34.	Be careful of setting deadlines for yourself and others; it can become too autocratic.	Concentrate only on one thing at a time.
35.	Logging important meetings and conversations by date and title is a very effective means of memory control.	Plan routines for processing communication and be sure that those around you know them and follow them.
36.	Keep meetings flexible; do not lock yourself into a specific agenda in advance.	Carry a pocket calendar and record all appointments.
37.	Expect something useful to come out of every meeting.	Doing something yourself is often the best way to save time.
38.	As a general rule, meetings should be 50 percent structured and 50 percent free to allow for creativity.	Inevitably, some portion of your time will be spent on activities outside your control.
39.	Use a dictation machine as a memory log.	Answer or move on all correspondence within twenty-four hours.
40.	Keep all short-term paperwork in neat piles on your desk.	After each important meeting, have the minutes printed and distributed.
41.	Expect constant interruptions during your working hours.	"Know Thyself" and "Know Thy Time" are both difficult to impossible for human beings.
42.	Concentrate on details. Remember, the whole is made up of many parts.	Time analysis, like financial analysis, depend on carefully documented historical data.
43.	Cut off nonproductive activities as quickly as possible.	When pushing paper, handle each piece of paper only once.
44.	Wise use of small portions of time, as opposed to wise of fairly large portions of time, is key to managerial effectiveness.	Select the best time of day for the type of work required.
45.	Do not allow immediate time demands to deter you from long-term goals.	Discretionary time available to executives is usually much greater than we think.

A	**B**
46. As a general rule, catch your supervisor in a casual relaxed atmosphere to discuss important work issues.	There is always enough time for the important things.
47. On a large project, start with the easiest tasks.	Breakfast meeting and late afternoon meetings are nonproductive and should be avoided.
48. Take a memory course for the purpose of developing the skill of holding more data in your head.	On a large project, start with the most satisfactory tasks.
49. Few executives use delegation to a great extent as a time saver.	When tense, visit colleagues for a few minutes in their offices for a change of pace.
50. Committees should meet on a regular schedule.	Handle interruptions as rapidly and as thoughtfully as possible.

THE TEM SURVEY ANSWER SHEET

Instructions:

1. Add all the "A's" in Columns 1 and 3 of The TEM Survey Answer Sheet (Step I). Insert the totals on the proper lines of Step II. Add these totals and insert this sum on the blank line for Attitude Raw Score.

2. Add all the "B's" in Columns 2 and 4 of The TEM Survey Answer Sheet (Step I). Insert the totals on the proper lines of Step III. Add these totals and insert this sum on the blank line for Knowledge Raw Score.

3. Convert the Attitude Raw Score and Knowledge Raw Score to Graph Values (Step IV) and shade in the Attitude and Knowledge Graphs that appear in Step V to the appropriate levels.

4. To find your TEM Profile, total the Raw Scores, from Steps II and III, and find the Range into which this total Raw Score falls. The Range indicates your potential as a Waster, User, or Achiever.

STEP I

Column 1	Column 2	Column 3	Column 4
1 _____	2 _____	3 _____	4 _____
5 _____	6 _____	7 _____	8 _____
9 _____	10 _____	11 _____	12 _____
13 _____	14 _____	15 _____	16 _____
17 _____	18 _____	19 _____	20 _____
21 _____	22 _____	23 _____	21 _____
25 _____	26 _____	27 _____	28 _____
29 _____	30 _____	31 _____	32 _____
33 _____	34 _____	35 _____	36 _____
37 _____	38 _____	39 _____	40 _____
41 _____	42 _____	43 _____	44 _____
45 _____	46 _____	47 _____	48 _____
49 _____	50 _____		
A Total _____	**B Total** _____	**A Total** ____	**B Total** ____

STEP II

_____ + _____ = _____
A Total   **A Total**   **Attitude**
Column 1   **Column 3**   **Raw Score**

STEP III

_____ + _____ = _____
B Total   **B Total**   **Attitude**
Column 1   **Column 3**   **Raw Score**

STEP IV

Raw Score:	0-5	6-10	11-15	16-20	21-25
Conversion Index	20	40	60	80	100

STEP V

Attitude		Knowledge
100	Excellent	100
80	Good	80
60	Average	60
40	Below Average	40
20	Very Poor	20

TEM PROFILE

STEP VI

_____ + _____ = _____
Step II   **Step III**
Total   **Total**

Your potential level of effectiveness in the management of time, energy, and memory:

RANGE

0-30	31-41	42-50
Waster	User	Achiever