A. TO IDENTIFY THE AIM OF THIS PROGRAM AS: INTRODUCING THE STUDENT
    TO A BASIC SCIENTIFIC ANALYSIS OF BEHAVIOR BY TEACHING THE STUDENT
    SKILL IN THE EVERYDAY APPLICATION OF THESE CONCEPTS.

    You might feel that your college courses have little to do
with your everyday existence. The program you are starting is
geared to help you understand why people in the world behave as
they do. This is not to say that your professor or other psy-
chologists have all the answers. They can't. Much of behavior
is complexly determined, but the basic laws or principles are
easy enough, once you get the hand of them.

    (A) Axelrod was a highflying senior who had early in his
    career latched on to what he believed to be the secret of
    getting by in school.
         1. Hang loose until the day before a test.
         2. Pull an all-nighter in order to study.
         3. Read through everything quickly. Skip everything
             that doesn't look really important.
         4. Reread any summaries a couple of times.
         5. Skip any other classes the day of the exam.
    That was his secret. Then he took the course you're taking
    now. Before two weeks had passed, his goose was cooked.
    His duck was dead. His gander was gone.
        His fate needn't be your fate, but take a tip and don't
    use his method.

B. TO RECOGNIZE A BEHAVIORAL OBJECTIVE AS A STATEMENT OF WHAT THE
    STUDENT SHOULD BE ABLE TO DO AFTER INSTRUCTION.

    Once upon a time in college courses the professor expected
students to 'know', 'understand', and 'appreciate' information
contained in the textbook or given in lectures. Unfortunately,
'knowing', 'understanding', 'appreciation' and other similar
terms represent states of being which are very difficult to
directly observe. A behavioral objective points to some action
on the part of the student that can be seen or heard and speci-
fies what the acceptable action is.

    (B) Babs had a little lightbulb appear over her head as
    she exclaimed "I think I see how behavioral objectives
    can be a big help to the student!"
        "Whisker my timbers", shivered her professor, "Won't
    you please tell us all?"
        "Instead of the student trying to figure out what's
    important and what isn't in all of the crud the prof
    assigns, you can just study from the behavioral objectives.
    You know beforehand everything that's going to be on the
    test, so all you have to do is study it until you can do
    all the objectives and then go in and get an 'A' on the
    test."
        "That's absolutely right", said the professor while
    wondering how such a stacked body like Babs could have
    any room for brains.

C. TO IDENTIFY THE APPROACH BEING USED IN THIS PROGRAM AS A
MASTERY APPROACH WITH AN ABSOLUTE GRADING SCALE.

With behavioral objectives being used, each student is ex-
pected to be able to do what all of the objectives specify.
This requires mastery of the material. Unlike traditional
courses where something like 70% correct may be good for a
'C', in the mastery approach any performance below 90% is
a failure. Use of an absolute grading scale means that
grades are not based on a curve. With an absolute scale,
all class members could get an 'A'. Everyone could get an
'F', too, but naturally we don't expect that to happen.

(C) Clem had a question. He asked whether all of the
behavioral objectives would be tested, or whether just
a sample of them would be on the exam.
The instructor answered that all would be included,
including the objectives from Part 0 that weren't on the
pretest.
"What was the pretest for?" asked Clem.
"In order to find out whether learning is really taking
place, we want to know how well each student does before
having the course. We can then compare that score with
the posttest score to determine how much was learned."

D. TO IDENTIFY THE FORMAT USED IN THIS PROGRAM AS: BEHAVIORAL
OBJECTIVE, EXPLANATION, CODED EXAMPLE.

In each part of the program, a letter of the alphabet is
followed by a behavioral objective in capital letters. The
objective tells what the student should be able to do. A
paragraph follows which tries to explain the idea behind the
objective. Finally an example or problem is presented, using
someone whose name begins with the same letter as the letter
of that particular objective.

(D) "Wait a minute", said Dot heatedly. "You mean I'm
being used in this example only because my name starts
with a 'D'?"
"Did you think it was because of your great body?
That would be a sexist exploitation", typed the author.
"Most of the time our failure to remember something we
have read or learned is due to the lack of an appropriate
retrieval cue. It's like a library with a million books.
Each book has a code number and can be located if you
know the code (unless the book has been lost or something).
If there wasn't any code, think of what a problem you'd
have trying to find one book out of a million. Our memories
seem much the same. A retrieval cue is a code which hope-
fully enables you to locate what you want to remember."
"I don't remember whether I'm real or just a figment
of your imagination", sobbed Dot, with tears forming in
her eyes, "but if I'm real I'm going to sue your nose off."*

*Although this case is still under litigation in the courts,
I have been advised by my lawyer to declare that all persons
in these examples are ficticious and any resemblance to per-
sons living or dead is purely coincidental.

A. TO DEFINE A 'BEHAVIORAL DEFINITION' AS THE SPECIFICATION OF A
    BEHAVIOR SO THAT WHEN IT OCCURS, IT CAN BE RELIABLY COUNTED.

    Much of our language in everyday life is inexact and am-
biguous. A science of behavior requires some greater degree
of precision than ordinary language. Behavioral definitions
are an example of greater preciseness. To be able to count
a behavior reliably, we need to know what it is we're counting,
and a behavioral definition thus tells us what to count.

    (A) Armadilla claimed that one of her pupils, little Alex,
    had a bad attitude toward school. How can we count "a
    bad attitude"? We can't, really, unless Armadilla could
    specify the behavior or behaviors Alex engages in which
    lead her to label his attitude as "bad". We could then
    focus on one of these behaviors and specify it so that it
    could be reliably counted.
        "He wee-wees on my desk", says Armadilla.
        "Great!" we tell her. "Now that's something we can count."
    We have specified a behavior so that when it occurs, it can
    be counted.

B. TO IDENTIFY A BOI AS A BEHAVIOR OF INTEREST WHICH HAS BEEN
    BEHAVIORALLY DEFINED.

    Accounting for everything we humans do would be a very large
order for a fledgling science like psychology. We therefore
start with one individual and look at one behavior of that
individual. This behavior is what we call the "behavior of
interest", or BOI. A BOI should always be behaviorally defined.

    (B) Boscoe Tonshunk was a six-foot ten-inch defensive
    tackle and placekicker for the Binghamton Goes. While
    Tonshunk, who weighed 408 pounds, had a lot of natural
    attributes, he also had a lot to learn. The coaching
    staff didn't want to overwhelm the little lad, so they
    set up just one BOI for him: the number of times he
    tackled the ballcarrier in a two-hour practice session.
    This is a behavior he could reliably count and thus
    satisfies the requirement of a behavioral definition.
    By counting this BOI at each practice session, anyone could
    determine whether it was increasing, decreasing, or staying
    about the same.

C. TO DISTINGUISH BETWEEN BEHAVIORAL DEFINITIONS AND NON-BEHAVIORAL
    DEFINITIONS WITH 100% ACCURACY.

     To figure out whether a definition is behavioral, simply ask:
"Does it specify a behavior that I could count?" The use of
behavioral definitions tends to build consistency and to en-
hance communication. A specified behavior, such as "touches
beard with either hand" can be reliably counted, either by the
same individual at different points in time (consistency), or
by different people at different points in time (communication).
In contrast, "looking thoughful" is too vague to be consistently
counted, and could be interpreted very differently by different
individuals.

        (C) Crystal is about as clear-headed as they come. She
     gathered the following definitions. You should be able
     to label them correctly.

                    LABEL EACH DEFINITION:
                      B FOR BEHAVIORAL
                    NB FOR NON-BEHAVIORAL

        1. clear-headed: thinks straight most of the time
        2. aggressive: touches another individual
        3. dependent: asks another person for help
        4. loose: has a bad reputation
        5. strong: person lifts a 300 pount weight off floor
        6. odd: does goofy sorts of things 30% of the time
        7. tired: goes to bed before 10:30 p.m.
        8. help: says "Yes" when spouse asks a question

D. GIVEN ANY BEHAVIOR, BE ABLE TO SET UP A BEHAVIORAL DEFINITION
    FOR THAT BEHAVIOR.

     A behavior can be behaviorally defined in a very large
number of different ways, any one of which is correct, as
long as the particular definition specifies the behavior
in such a way that it can be reliably counted when it
occurs.

        (D) Dooby Huss was supposed to generate his own example
     of a behavioral definition for the behavior "lucks out".
     Dooby wasn't used to doing his own thing. He asked four
     different classmates for their definition. Below is what
     he came up with.

        1. runs red light without being killed
        2. buys lottery ticket and wins
        3. kisses person and doesn't get mono
        4. asks for answer on exam and gets caught

Which of the examples he received is correct?

E. TO DESCRIBE IN YOUR OWN WORDS THE CONCEPT OF PARSIMONY AS IT
IS USED IN SCIENCE.

There are many things in the universe which we cannot yet
explain. Some phenomena are complex and may require complex
explanations. Any hypothesis proposed, however, should be
as simple as possible and yet still fit the facts. That is
the basic idea of parsimony. If eight different explanations
are proposed to explain a fact, we should investigate the
simplest one first, and if that particular explanation is
ruled out, then we should investigate the next simplest next,
etc.

(E) As Emily sat in her rocker reading her Fanne Foxe
recipe book, there was a loud crash somewhere in the
apartment. Being a timid soul who lived alone, she at-
tempted to form several possible explanations of what had
happened without going off her rocker. Apply your powers
of scientific parsimony to rank her hypotheses from most
to least parsimonious.
1. The place had been hit by a meteorite from outer
space.
2. A burglar had entered surreptitiously and then
run into a wall.
3. The tape support of a recently-hung painting had
become unglued and allowed a picture to fall.
4. Two ants had met head-on in a collision on the
kitchen floor.

F. TO DESCRIBE IN YOUR OWN WORDS THE CONCEPT OF DETERMINISM AS IT
IS USED IN SCIENCE.

Although there are many things in the universe which we can't
yet explain, a very basic assumption in science is that there
does exist an explanation for every effect. Another way of
saying this is that there is a cause for every effect: even
though a situation may seem chaotic, there are reasons for
what happens.

(F) Fred Freakus entered what is sometimes referred to as
the "funny farm" under the unfunniest of conditions - a
police escort. Hospital intake personnel learned that
Fred had gone 'bezerk', wildly throwing and attempting to
smash every bottle of cola in a large metropolitan super-
market. Applying your knowledge of scientific determinism,
respond 'yes' to each of the following statements if the
statement is consistent with the assumption of determinism.
Respond 'no' if the statement violates the assumption of
determinism.
1. There is a reason for all behavior, even bizarre,
destructive behavior such as Fred's.
2. Fred's acts were random, completely unpredictable,
and unamenable to scientific analysis.
3. Since Fred's behavior was so 'wild' and 'crazy',
there were probably no causal factors behind it.
4. There are causes for all behaviors of all organisms.
5. 'Crazy' behavior has causes just as 'normal' behavior
has causes.

G. TO DESCRIBE IN YOUR OWN WORDS THE CONCEPT OF EVENT MANIPULATION AS IT IS USED IN SCIENCE.

One way in which a scientist looks for cause and effect relationships is by event manipulation. The basic procedure consists of observing and measuring some sequence of events, then hypothesizing a cause-and-effect relationship between two events, next changing or manipulating the causal event and finally measuring the effect. If the 'effect' event is affected by changing the 'causal' event, a scientist is on the way to demonstrating a cause-and-effect relationship between the two events.

(G) Gladiola, a Ph.D. research scientist, observed that her son George drank a 32-oz. glass of Twang for breakfast every morning and exhibited no colds nor other respiratory ailments for a one-year period. She hypothesized that the 32-oz. glass of Twang was the cause for the measured effect of zero colds.
1. Suggest a change or manipulation to the hypothesized of drinking the 32-oz. of Twang.
2. How would you suggest measuring the effect of the change?

If you found that the change you suggested did have a measurable effect, you'd be on the way toward demonstrating a cause-and-effect relationship. You would have completed only the first step, however. You'll learn more about the entire process later.

H. TO DESCRIBE IN YOUR OWN WORDS THE CONCEPT OF CORRELATION AS IT IS USED IN SCIENCE.

There are many events which occur closely together in time with great consistency. Such events are said to be correlated. A correlation means that there is a relationship between two events. The relationship, however, may not necessarily be a cause-and-effect relationship. A correlation tells us only that a relationship exists between two events. A correlation cannot tell us whether or not event 'A' causes event 'B' or whether or not event 'B' causes event 'A'.

(H) Hector the Corrector, a prison warden, obtained some correlations having to do with the penal system. After each correlation, he presents his conclusion. Using your knowledge of correlation and the pitfalls to be avoided when talking about correlations, 'agree' or 'disagree' with each of Hector's conclusions:
1. The no. of guards is correlated with the no. of escape attempts in a prison; the more guards there are, the greater the no. of attempted escapes. Conclusion: increasing the no. of guards causes more escapes to be attempted.
2. A correlation exists between the no. of years a person is incarcerated and the no. of crimes that person commits; the longer the time served, the fewer the crimes committed. Conclusion: all sentences should be lengthened since this would cause the no. of crimes to go down.

I. TO DESCRIBE IN YOUR OWN WORDS THE CONCEPT OF EMPIRICISM AS IT IS USED IN SCIENCE.

There are many things in the world which we accept on faith, from comments on car performance to statements about caring and love. In science, however, empiricism replaces faith. Empiricism is looking and seeing rather than simply nodding and accepting. An empiricist won't accept a conclusion without checking on the facts, and the checking may involve finding the facts for oneself rather than accepting the facts compiled by someone else. This demand to see in order to believe separates science from superstition.

(I) Ingrid had heard that goldfish have hearts of gold. She purchased 400 of them at a garage sale and then cut each one open with a pair of scissors. She found that goldfish don't have gold hearts. Ingrid was a really first-class empiricist. Too bad the S.P.C.A. had her locked up. It was a good break for her husband. Ingrid's mother told Ingrid that her husband didn't have an ounce of brains. Ingrid was going to take her scissors and find out but they locked her up too soon.

J. TO CORRECTLY DECIDE WITH AT LEAST 90% ACCURACY WHETHER ANY STATEMENTS FROM ANY LIST OF STATEMENTS VIOLATE THE SCIENTIFIC CONCEPTS OF PARSIMONY, EMPIRICISM, CORRELATION, OR DETERMINISM.

As consumers, all of us are exposed to many messages every day which attempt to change our behavior, whether it be changing deodorant, convincing us to run to the grocery with a coupon to buy a bargain item, or thinking more favorably of some political candidate. One way to critically evaluate statements or messages is to combine one's own beliefs with scientific concepts of determinism, correlation, empiricism, and parsimony.

(J) Jimbo Jinxle became so fired-up over the idea of applying science to his own attitudes that he started a special project. He wrote down any statements or beliefs that he either heard, saw, or thought of, and then tried to apply the notions of science to each. A small number of them appear below:

1. Always take for truth anything which a professor says since you really don't have time to check things out.
2. Since a lot of smart men are atheists, one can conclude with certainty that there is no God.
3. It is apparent without a lot of research that cigarettes cause cancer.
4. A genius is almost always a stranger than people of average intelligence.
5. There are things so mysterious that they are beyond the realm of science forever.
6. High I.Q. scores may not be a cause of success in life.
7. Astrology is the most parsimonious explanation for why we act as we do.

What is your response to each? Can you see how each one ties in with a concept of science?

A. TO DISTINGUISH BETWEEN ANTECEDENT EVENTS AND CONSEQUENT EVENTS
IN 100% OF THE ORIGINAL EXAMPLES GIVEN TO YOU.

Once a BOI has been behaviorally defined, two classes of stimulus
events can be distinguished, and these two classes are based on
whether the event comes before or after the BOI. Happenings in
the environment are termed stimuli, and they can occur before or
after the BOI.

Those events which occur before the BOI are labeled antecedent
events. In contrast, a consequence is any stimulus, behavior, or
event which follows a BOI or the beginning of a BOI.

(A) Abercrombie had a Shreiksberg Quadraphonic Sound System in
his plushly set pad. One evening he rang his doorbell, un-
locked his door, and went in. His alarm clock suddenly went off.
Then the phone rang. He turned on his Quadraphonic Sounds and
lay down in his hammock to listen. As the music got heavier,
the windows suddenly shattered, and his neighbor came running
through the cardboard wall of the apartment, fists waggling
overhead and his face livid with rage.

The BOI is Abercrombie listening to his Quadraphonic.

LABEL EACH OF THE FOLLOWING EVENTS:
A for ANTECEDENT
C for CONSEQUENCE
X for UNKNOWN

1. alarm goes off
2. neighbor runs thru wall
3. rings doorbell
4. firetruck goes by outside
5. windows shattered
6. unlocks door
7. turns on Quadraphonic

B. TO DEFINE A 'CONTINGENCY' AS A RELIABLE RELATIONSHIP BETWEEN A BOI
AND A CONSEQUENCE.

When a consequence regularly or reliably follows a specific
BOI, a contingency is said to be in effect. A contingency is a
reliable relationship between a BOI and a consequence. Not all
consequences are reliably related to a BOI.

(B) Beanie learned about contingencies the hard way. Her
father, Bert, told her before every date that if she wasn't
home by 9:15 p.m., then she would have to babysit for her
two-year old brother, Bert Jr. the next night. Her father
wasn't kidding. Every time she got home after the specified
time, she had to babysit the next night. The BOI was
Beanie coming in after 9:15 p.m. The consequence was baby-
sitting the next night. There was a contingency between the
BOI and the consequence, because every time the BOI occurred,
the consequence followed.

C. TO DEFINE 'NON-CONTINGENT' AS THE LACK OF ANY RELIABLE RELATIONSHIP BETWEEN A BOI AND A CONSEQUENCE.

Any consequence which is not reliably related to a specific BOI is said to be 'non-contingent'. Thus a non-contingent relationship is one in which there is no reliable pattern between the BOI and the consequences involved.

(C) Cookimonga, Eskimo medicine-man, had an unquenchable lust for chocolate-chip cookies, which he would munch in bed. Inasmuch as his bed was on the floor of his igloo, a problem developed with ants. Cookimonga began stomping on them with his sealskin hushpuppies, muttering unprintable unheard-of expletives as he followed their trail out the door. The commotion immediately drew everyone's attention. "What in the polar...?" could be heard mumbled by many members of the tribe. Suddenly it began to snow.

"The latest snowdance", announced the redoubtable muncher. "It's all the rage at Miami Beach". The BOI is stomping on the ground. The consequence is snow. Now we know that there wasn't really any connection between the stomping and the snow, so you would classify these two events as 'non-contingent'.

(Did you spot the one obvious inaccuracy in this example? Right. Everybody knows polar ants don't like cookies. They only eat popsicles.)

D. TO DISTINGUISH BETWEEN CONTINGENT AND NON-CONTINGENT RELATIONSHIPS WITH 100% ACCURACY, GIVEN TIME RELEVANT INFORMATION.

If a contingency exists between a BOI and a consequence, then there is some connection between the two. If a consequence follows a BOI but there is no connection between the two events, they are non-contingent.

In many cases not enough empirical information is available to determine whether a reliable relationship exists between a BOI and a consequence. In such situations we can only say that more research is needed before any distinction between contingent and non-contingent can be made.

(D) Daisy Daffodil, the darling of the flower people, started a list of BOIs and their consequences. See if you can help her label her list.

LABEL EACH PAIR OF EVENTS:
T for contingent relationship
N for non-contingent relationship
M for more information or research needed

BOI	CONSEQUENCE
1. wears tight sweater	wolf-whistles
2. winds and sets alarm-clock	alarm goes off as set
3. inserts and turns ignition key	starter works
4. buys lottery ticket	wins million dollars
5. sticks hand in flame	hand is burned
6. puts on sunglasses	sneezes
7. wears pink hat	cat is stolen
8. studies all night	fails exam

E. TO STATE THE REASON FOR EMPHASIZING BOIs AND CONSEQUENCES:
    BEHAVIOR IS A FUNCTION OF ITS CONSEQUENCES.

The statement 'x is a function of y' means that x is affected
by y. Considerable empirical evidence has accumulated to allow
us to make the statement that 'behavior is a function of its
consequences'. Therefore, when we specify a BOI, we are also
interested in looking at the conseqeunces of that behavior,
since a BOI is affected by its consequences.

(E) Exra felt confused. "How can a BOI be affected by its
consequences? Consequences come after the BOI, and by then
the behavior has happened. For example, my BOI is kissing
beautiful women. Yesterday I saw a super-jive chick in a
peek-a-boo blouse and hip-huggers. I did my BOI and then
came the consequences. She let out a judo yell, then a
karate cry, and I knew I was in trouble but the BOI had al-
ready happened and that's why I have these casts on both arms
and my left leg. How can a BOI be affected by its consequences?"

"Are you going to continue your BOI in the future?" asked
his professor.

"Is Smokey the Bear a giraffe?" answered Ex sarcastically.

"Consequences affect the future probability of a BOI", the
prof went on. "Whether your BOI increases or decreases in its
frequency of occurrence tomorrow depends on what the conse-
quences the BOI occurs. This is what we mean when we say that
behavior is a function of its consequences."

"Right on", said Exra archaically.

F. TO DEFINE A 'CONSEQUENCE' AS ANY STIMULUS, BEHAVIOR, OR EVENT
    WHICH FOLLOWS A BOI OR THE BEGINNING OF A BOI.

Consequences can be contingent or non-contingent, and the
effects of consequences can be classified in three ways. Some
consequences increase a BOI, some consequences decrease a BOI,
and some consequences have no effect on the BOI.

(F) Fifi hated the neighborhood cat, whose name, ironically,
was also Fifi, except it was spelled 'Wfifi' with a silent
'w'. Fifi's flower garden had a hedge around it but on the
average of four times a day the cat stole in, stooled, and
stole out. The BOI is the cat stooling in the garden. Fifi
tried to set up some consequences that would decrease the
BOI. At first, every time she saw the cat stool, Fifi would
jump out of the third-story window and swoop down over the
garden on a rope, screaming at the top of her voice. This
consequence had no effect on the BOI, since Wfifi continued
her four-a-day pace. The next week, after every BOI, Fifi
would grab the cat and make her drink some prune juice. For
some reason this consequence increased the BOI to an average
of eight a day. Fifi gave up. She changed the sign in the
front of her shop from "Fifi's Manicure" to "Fifi's Manure
and Manicure" and grossed out a tidy profit.

G. TO DEFINE A REINFORCER AS AN EVENT WHICH (1) FOLLOWS A BOI AND
(2) INCREASES THE PROBABILITY OF THE BOI OCCURRING IN THE FUTURE.

Those consequences which increase the probability of a BOI
are referred to as "reinforcers". Regardless of whether the
consequence is contingent or non-contingent, if it increases
the probability of the BOI, it is a reinforcer.

(G) Gaylord was having trouble with his pet shark, "Swaj".
Swaj was supposed to keep uninvited people out of Gaylord's
olympic-size heated pool, but the first dozen unwelcome
strangers didn't know Swaj was in there, until it was too
late. The BOI is Swaj making 'beep-beep' noises. Gaylord
noted that Swaj averaged only 3 of these noises per day.
Thinking that fresh shrimp would be a reinforcer, Gaylord
would dump in a pound immediately after Swaj made a beep-
beep. To his surprise, Swaj's beeps dropped to one a day.

In this instance the consequence was not a reinforcer.
We must avoid using the term "reinforcer" for a consequence
that we think will increase a BOI. Before being termed a
reinforcer, a consequence must actually increase the BOI.

H. TO DEFINE A PUNISHER AS AN EVENT WHICH (1) FOLLOWS A BOI AND
(2) DECREASES THE PROBABILITY OF THE BOI OCCURRING IN THE FUTURE.

Those consequences which decrease the probability of a BOI
are referred to as "punishers", regardless of whether the con-
sequence is contingent or non-contingent.

(H) Henrietta was a corporation vice-president on her way
up. She had a spacious office on the ninety-sixth floor
of the Omar Building. One day the elevator became stuck
while she was alone on it and it took rescuers 11 hours
to free her. Henceforth she has refused to ride on any
elevator and is now unemployed. The BOI is Henrietta
riding elevators. We would label the consequence of
getting stuck that one day as a punisher, because it
decreased the BOI from that point on.

Would you say that the punisher was contingent? Very
probably not, since it would seem unlikely that there was
a reliable relationship between the BOI, Henrietta riding
elevators, and the punishing consequence, the elevator
becoming stuck. Therefore, we could call the event of the
elevator getting stuck a non-contingent punisher.

I. TO IDENTIFY A 'PRESENTED STIMULUS' AS ANY OBJECT OR EVENT WHICH
    COMES ABOUT OR IS PROVIDED TO THE BEHAVIOR OR BEHAVERS.

   Happenings in the environment are termed stimuli, and they
can occur before or after the BOI. We shall distinguish be-
tween a 'presented stimulus' and a 'removed stimulus'. The
difference is exactly what one would guess and should be clear
from this and the 'J' objective which follows. Remember that
any stimulus can be classified as an antecedent or a consequence
depending on whether it occurs before or after the BOI.

   (I) Ichabod was bugged by the following dilemma: If one
   talks about 'presented' stimuli and 'removed' stimuli, how
   do you classify what is left? Some things exist in the en-
   vironment before the BOI occurs and continue to exist during
   the BOI and after the BOI. What are these things?

   The answer is that since these things do exist, but
   since they don't change, they can probably best be termed
   'static' stimuli. We thus define the whole unchanging en-
   vironment as "a collection of static stimuli".

J. TO IDENTIFY A 'REMOVED STIMULUS' AS ANY OBJECT OR EVENT WHICH
    INVOLVES AN ELIMINATION, WITHDRAWAL, EXTRACTION, OR DEPARTURE
    FROM THE BEHAVER'S ENVIRONMENT.

   A stimulus can be either an antecendent or a consequence and
it can be either presented or removed. As has been stated be-
fore, we are generally more interested in consequences than
in antecedents, because "behavior is a function of its con-
sequences". Some consequences increase a BOI, some consequences
decrease a BOI, and some consequences have no effect on the BOI.
These consequences are called, based upon their respective
effects, "reinforcers", "punishers", and "unchangers".

   (J) Jack wanted to summarize types of stimulus change so
   he composed the box below where a number of relationships
   can be seen at a glance.

If stimulus occurs... ___ BOI,	and stimulus was.... _____ ,	call it a.... _____ .
before	presented	presented stimulus antecedent
before	removed	removed stimulus antecedent
before	constant	static stimulus
after	presented	presented stimulus consequence
after	removed	removed stimulus consequence
after	constant	static stimulus

K. TO DEFINE AN UNCHANGER AS A CONSEQUENCE WHICH NEITHER INCREASES NOR DECREASES THE PROBABILITY OF THE BOI OCCURRING IN THE FUTURE.

Once consequences are classified based on their effects, as reinforcers, punishers, and unchangers, the final step in their classification is to combine the effect with the type of stimulus change. The following combinations are arrived at: presented stimulus reinforcers, presented stimulus punishers, presented stimulus unchangers, removed stimulus reinforcers, removed stimulus punishers, and removed stimulus unchangers.

(K) Kim Laconic passionately loathed talkative people. She herself, to be consistent, always said as little as possible. At her suggestion, we condensed the above combinations into abbreviations, which are also easier to write.

Classification	Abbreviation
presented stimulus reinforcer	PSR
presented stimulus punisher	PSP
presented stimulus unchanger	PSU
removed stimulus reinforcer	RSR
removed stimulus punisher	RSP
removed stimulus unchanger	RSU

L. TO RECOGNIZE ANY CONSEQUENCE AND CLASSIFY IT AS (1) CONTINGENT OR NON-CONTINGENT, (2) A PRESENTED OR REMOVED STIMULUS, AND (3) A REINFORCER, PUNISHER, OR UNCHANGER.

Reinforcers, punishers, and unchangers (all of which can be either presented or removed) can also be either contingent or non-contingent. Very possibly, behaviors which are called "superstitious" behaviors are the result of non-contingent reinforcers or punishers. For example, suppose you step on a crack in the sidewalk and seconds later, your mother breaks her back. If your BOI is 'steps on cracks' and now the probability of your BOI decreases, that BOI has been affected by a non-contingent consequence, a presented event (mother breaks back), which turns out to be a punisher. We label non-contingent consequences with an 'N'.

(L) Luke Warm was becoming extremely apprehensive. "All these terms and their abbreviations", he moaned. "What's the use of it all?"

"May I show you the relevancy?" asked his prof. "You are now on the verge of being able to analyze everyday behaviors. Try the example above. How would you describe the situation?"

"Well, the BOI was stepping on a crack", mused Luke. "The broken back came after the BOI, so we're talking about a consequence rather than an antecedent. I don't see any cause-and-effect relationship between the BOI and the consequence, so I'd say it was non-contingent. The broken back was an event that occurred and therefore a 'presented stimulus', and since the stepping on cracks decreased, the BOI was affected by a non-contingent presented stimulus punisher, which would be N-PSP. Wowie zow!" exclaimed Luke, trembling with excitement.

"Steady, Luke", calmed his professor. "Keep a cool hand".

M. TO IDENTIFY EXTINCTION AS STOPPING A REINFORCER, WITH THE RESULT
   BEING A DECREASE IN THE FUTURE PROBABILITY OF THE BOI.

A consequence is a presented or removed stimulus which comes
after the BOI or the start of the BOI. After a particular con-
sequence has been presented, it is termed a PSR if the BOI
increases and if the consequence was contingent upon the BOI.
Suppose at some point after the BOI has increased, that the
PSR no longer follows the BOI. When the BOI occurs, no PSR
follows. Under these circumstances the BOI will decrease to
its original probability, and the procedure is termed
'extinction'. Extinction can also be used after an RSR has in-
creased the probability of a BOI. Again, in the extinction
procedure, no consequence follows the BOI, and the BOI's
probability decreases.

(M) Mandrake the Beautician, who specialized in Afros, was
hopeful of getting more individuals to try the style. He
decided to present a free shampoo after giving each Afro.
The BOI was the request of an Afro by a customer. The
number requested for April was 2 per day. On May 1, he be-
gan giving the free shampoo. At the end of the month, the
average for the month was 8 per day. The shampoo apparently
served as a PSR. On June 1, he stopped giving the free
shampoo after the BOI. At the end of June the average for the
month was 3 per day. Mandrake had extinguished the BOI back
to its original rate by stopping the PSR.

N. TO IDENTIFY "PROGRAM ARRANGEMENT" AS A SPECIFIC PLAN TO CHANGE
   A BOI.

Many of the consequences which follow a BOI are of such a
nature that a person can control whether or not they are presented
or removed. For some consequences, of course, this is not the
case. An individual may have neither power nor authority (nor
perhaps either) in a particular situation to arrange a consequence
to follow a BOI. In such a case, it may be possible to try some
antecedent, but we'll talk about that later. When you are
attempting to change a BOI, and you're in a position where you
can change or manipulate antecedent and consequent stimuli, the
specific plan you set up is referred to as a "program arrangement".
We identify it as such to distinguish it from cases where the
BOI may change unintentionally.

O. TO IDENTIFY "BASELINE" AS THE RECORD OF A BOI BEFORE STARTING
    A PROGRAM ARRANGEMENT.

    After a BOI has been specified, which is the first step in
    setting up a program arrangement, the next step is to look and
    see how frequently the BOI is occurring. To determine a
    frequency, all you need to do is count how many times the BOI
    occurs in a given amount of time. In other words, frequency
    has two dimensions: number and time. Frequency is specified
    as a ratio: how many times the BOI occurred divided by how
    long a time it was counted. A "baseline" is the frequency of
    a BOI before any "program arrangenent" is started. We should
    note that sometimes an accurate baseline as defined above is
    very difficult to obtain because the very act of counting the
    BOI, if the behavior knows it is being counted, is a consequence
    of the BOI.

        (O) "Well, what then?" asked Orvil Opollo, flexing the
        precious fibers around his fibula. The reporter from
        Nowsweek quietly pushed the stem of her wrist counter once
        as she replied.
            "You still count the BOI, even if the behavor knows
        you are counting."

P. TO STATE THE IMPORTANCE OF COUNTING THE BOI AND MAKING A RECORD
    OF THE RESULTS: YOU HAVE TO KNOW THE BASELINE RATE OF A BOI IN
    ORDER TO TELL WHETHER A CONSEQUENCE IS ACTUALLY CHANGING ITS
    PROBABILITY OF OCCURRENCE

    A map is no good when you're lost until you can find out
    where you are. Likewise, recording the frequency of a BOI
    for a baseline period is finding out where you are before
    you begin the "program arrangement". If you didn't have a
    baseline for comparison purposed, a particular consequence
    that you tried in the program arrangement couldn't be called
    a reinforcer, a punisher, or an unchanger, because you
    wouldn't know whether the BOI increased, decreased, or stayed
    the same.

Q. TO IDENTIFY A 'COMPARISON DESIGN' AS A PROCEDURE WHICH MEASURES
    AND COMPARES A BASELINE BOI TO THE SAME BOI AFTER A CHANGE.

    Once a baseline has been obtained for a BOI, the next step
    in a program arrangement is to try some consequence. Whenever
    the BOI occurred in this stage, a stimulus would immediately be
    either presented or removed. As in the baseline stage, you
    would keep count of the number of times the BOI occurred and
    you would keep track of the time spent counting. The number of
    counts divided by the time spent counting would yield the fre-
    quency of the BOI, and the comparison of the frequency of the
    BOI during baseline to the frequency of the BOI after starting
    the program arrangement constitutes a "comparison design".

R. TO IDENTIFY A 'REVERSAL DESIGN' AS A PROCEDURE WHICH MEASURES
    AND COMPARES A BASELINE BOI TO THE BOI AFTER CHANGE, AND THEN
    TO THE REINSTATED BASELINE BOI.

    In a "reversal design", there are three steps. The first two
    are identical to a comparison design: obtain a baseline fre-
    quency of the BOI, and then consequate the BOI, measuring its
    frequency under the program arrangement. The third step in a
    reversal design is to stop consequating the BOI and obtain
    another baseline frequency for that BOI. The logic in the
    reversal design is that if a consequence is affecting the BOI,
    and that consequence is terminated, then the BOI should increase
    or decrease to its original baseline frequency.

S. TO CATEGORIZE WITH 100% ACCURACY ANY GIVEN DESIGNS AS COMPARISON, REVERSAL, OR NEITHER OF THE ABOVE.

   To meet the above objective, the following sequence of questions should be answered concerning the program arrangement: (1) Is a BOI stated? (2) Is an original baseline frequency taken? (3) Is a programmed arrangement frequency taken after the baseline? (4) Is a second baseline frequency taken after the programmed arrangement? If the answer to any of the first three questions is 'no', then the correct categorization is "neither of the above". The first three questions must all be answered "yes" if either a comparison or reversal design are involved. Then if the answer to question four is 'yes', the category is "reversal". If the answer is 'no', the category is "comparison".

T. TO RESTATE IN YOUR OWN WORDS HOW A BEHAVIORAL SCIENTIST WOULD DEMONSTRATE THAT AN EVENT WAS A REINFORCER, OR THAT AN EVENT WAS A PUNISHER.

   First, a reversal design is necessary to demonstrate that the frequency of a BOI has been changed by a consequence, so one should begin by saying "Use a reversal design". A consequence that increases the probability of a BOI is a reinforcer, and a reversal design helps to show that the particular consequence used was responsible for the increased probability of the BOI, by utilization of the reinstated baseline. If a particular consequence increases the BOI over the original baseline, then discontinuing that consequence should result in the BOI frequency returning to its baseline frequency. If, when the consequence was discontinued, the BOI frequency did not go back to baseline, one could not be certain that the particular consequence was what changed the frequency of the BOI.

   (T) Trog LaDite was a French-Canadian lumberjack who liked to keep things in his life simple. In his own words, here is how he answered the above objective:

   "Use a reversal design. Get a BOI and see how often it happens. Then try something, and see if the BOI increases or decreases. If it does, then stop what you tried, and see what happens to the BOI. If BOI went up when you tried something and went down when you stopped, then that something was a reinforcer. If BOI went down when you tried something and went back up when you stopped, then the something was a punisher."

U. TO CATEGORIZE WITH 100% ACCURACY ANY CONSEQUATION SCHEDULE AS
    EITHER A CONTINUOUS, AN INTERMITTENT, OR AN EXTINCTION SCHEDULE.

    In a continuous consequation schedule, any time the BOI
    occurs, the consequence follows. In an extinction schedule,
    no matter how many times the BOI occurs, the consequence
    never follows. In an intermittent consequation schedule,
    sometimes the BOI is followed by the specified consequence,
    and sometimes it isn't. If you can identify the BOI and the
    consequence, then this is a rather easy categorization.

V. TO IDENTIFY IOB AS "INCOMPATIBLE OTHER BEHAVIOR".

    An IOB is the reverse of a BOI in the sense that if the
    BOI is one action, then the IOB is some other action which an
    individual cannot do while engaged in the BOI. Likewise, if
    the individual is performing the IOB, it would be impossible
    for that individual to do the BOI at the same time. Thus,
    incompatible behaviors are behaviors which cannot be done
    at the same time by an individual.

W. TO GIVE AN APPROPRIATE IOB, GIVEN ANY BOI.

    The only problem involved here is coming up with a behavior
    that can be specified and reliably counted, which is incompat-
    ible with the BOI which has been given. Remember that
    incompatible means that the behaviors specified cannot both be
    done at the same time.

X. TO STATE HOW TO DECREASE A BOI USING A REINFORCING CONSEQUENCE:
    REINFORCE AN IOB.

    In setting up a program arrangement, one can frequently use
    the idea of IOB to help consequate a BOI. When a BOI is oc-
    curring at a high rate and one is interested in decreasing that
    rate, a way of doing this is to set up an IOB and reinforce
    that IOB. The IOB will increase, and since the BOI can't take
    place at the same time as the IOB, the BOI is likely to decrease.
    The alternative way of decreasing a BOI, mentioned previously,
    is to consequate the BOI with a punisher. In the alternative
    method described above, a BOI is decreased by following the IOB
    with a reinforcer.

Y. TO STATE HOW TO INCREASE A BOI USING A PUNISHING CONSEQUENCE:
    PUNISH AN IOB.

    When one decides to consequate a BOI in order to increase the
    frequency of the BOI, a PSR or RSR could be used. Another way
    of increasing a BOI doesn't involve any consequation of the BOI,
    but instead involves consequating an IOB. Any behavior that is
    followed by a punishing consequence (a PSP or an RSP) will de-
    crease. Thus if one specifies an IOB to the BOI and punishes
    the IOB, the IOB will decrease. As the behavior incompatible
    to the BOI decreases, the BOI increases. Thus, punishing an
    IOB is an alternative way of increasing a BOI.

Z. TO IDENTIFY ANTECEDENT CONTROL AS DIFFERENTIAL RATES OF A BOI
    IN RESPONSE TO DIFFERENT STIMULUS ANTECEDENTS.

    A point developed earlier was that behavior is a function of
    its consequences (part 2E). Because of this emphasis on what
    comes after the BOI, what comes before the BOI has not re-
    ceived much of our attention until now. Antecedent stimuli
    can be combined with consequent stimuli in the following man-
    ner. Suppose we have a BOI which is occurring at some
    frequency with static antecedent stimuli. If we specify a
    particular antecedent stimulus, the BOI will be consequated
    only in the presence of this antecedent. With any other
    antecedent stimuli present but this one missing, the BOI will
    not be consequated if it occurs. With this type of a setup,
    the BOI rate will begin to show differences in the presence
    of different stimulus antecedents.