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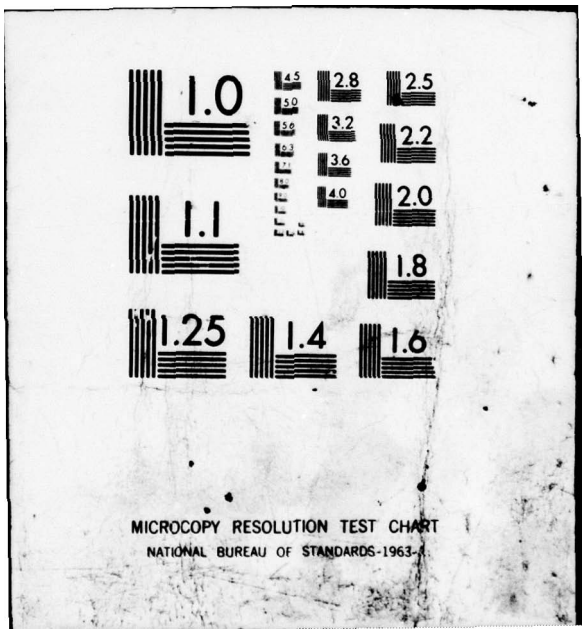
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VARIABLES IN HUMAN CONSEQUATION/FEEDBACK

H. McIlvaine Parsons

Technical Report No. 1
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This report presents salient variables in consequation or feedback processes that affect human behavior. As comprehensive a compilation has not been hitherto attempted for these significant psychological processes. The variables in consequation/feedback itself are categorized with regard to extent and amount, comparison, type, source, and medium, as well as context. Other variables involve the actions that are consequated and the potentiators that

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make consequators effective, in each case listed according to the aspects that characterize them and their relationships with consequators; another category consists of the purposes and effects of consequated actions. The compilation draws variables from both cognitive research in information processing (knowledge of results, information feedback) and behavioral research in operant conditioning (positive and negative reinforcement and punishment).

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VARIABLES IN HUMAN CONSEQUATION/FEEDBACK

Introduction

This report presents, in four tables, an assemblage of variables in human consequation/feedback. As comprehensive a collection has not been hitherto attempted, though two recent publications (Meister, 1976, and Pritchard and Mantagno, 1978) have ventured further than most. Partial treatments have been published also by Annett (1969), Bilodeau (1966), Glaser (1971), Nuttin and Greenwald (1968), Shinar (1971), Tapp (1969) and others. Lists of "rewards" for organizational and "most valued outcomes" for military activities have been compiled by Pritchard and Shaw (1978) and Eaton (1978); because they are readily available in those reports, they are not included in the four tables, which have been derived primarily from a considerable variety of research reports as well as the above authors.

The diversity of the assemblage in this report can be traced to the project of which it is a by-product, an experimental study of how various kinds of verbal reactions to errors in information processing tasks affected the frequency with which human subjects made such errors. The verbal reactions (presented in writing by the experimenter) varied in the degree to which they had unfavorable affective components. The research represented a combination of information processing and operant conditioning approaches. When these are mixed in investigations with human subjects, it becomes particularly important to consider a great number of variables that might influence the outcome.

The notion that what people do is influenced by what happened to them after what they did earlier is a simple one--as simple and as revolutionary as were, in their time, the concepts that the earth was round and circled the sun. How can an event after some behavior affect behavior? Yet the apparent simplicity conceals a vast complexity. It is that complexity which this report tries to demonstrate.

To be sure, to contemporary psychologists the idea I have stated is not novel. They use terms to describe it like information feedback, reinforcement (positive or negative), effect, outcome, success, failure, extinction, knowledge of results, incentive, disincentive, utility, disutility, aversive consequence, reward, and punishment. These last two terms are found also in folk wisdom. But these words don't all mean the same thing. Another term seems needed, to encompass all the processes all of them imply. I prefer "consequation," though some might simply like to borrow "feedback" from control theory, and for that reason I include it in my title. For instances of consequation, I will use "consequator," rather than "consequence." Though the latter has achieved some vogue, I feel it fails to suggest key features of consequation: contingency and subsequent action.

Not everything that happens to us after we do something affects what we do in the future. By itself that temporal relationship has as little importance as its converse. Not everything that happens before we do something affects what we do. We should be grateful, for otherwise, in either case, life would be most confusing.

In some fashion an event becomes linked with the action that preceded it, and in turn this linkage determines future action. Since not all events become linked with preceding actions, there must be certain circumstances-- certain contingencies--that bring about that linkage. Since future action results from it, we can speak of further contingencies--the dependence of future action on what occurred before. Contingencies are best expressed as "if....then...." relationships. The first type of contingency is: if a particular action occurs, then a particular event occurs--otherwise it will not. The second type of contingency is: if a particular action and a particular event have occurred, then a particular action occurs--otherwise it will not. The circumstances responsible for each type of contingency are largely what psychologists investigate to find out how behavior is acquired, maintained, changed, or lost.

Such is the basic process of consequation. The "event" (external or internal) is labelled a "consequator." Future action is contingent on its occurrence, and its occurrence is contingent on prior action. With sufficiently broad interpretations of "action," I believe this paradigm can fit the terms and implied processes that psychologists have used to describe the notion that what people do is influenced by what happened to them after what they did earlier.

However, two sets of other influences must be added. Both of these precede the action that is consequated (and the action that occurs subsequently). One is called "potentiation." A potentiator establishes and strengthens a consequator. Another is called "discrimination." A discriminator is something that occurs before an action that is consequated and thereby is linked to it. Its subsequent reoccurrence influences future action. Potentiators have variously been called drives, needs, deprivations, aversive conditions, goal or goal-setting, commands, entreaties. Discriminators have been called cues, discriminative stimuli, information, signals, instruction, and visual or auditory environments.

Despite the significance of consequation or feedback for human behavior, there has existed no comprehensive taxonomy or listing of all the variables it involves, their states and relationships. The partial assemblages have already been noted. One reason all are partial is the diversity of fields of psychology in which consequation is investigated and described to explain human behavior: educational, industrial, engineering (human factors), psychomotor, information processing, biofeedback, operant and behavior analysis, learning, training, microeconomics, and others. Few publications about consequation extend across all or most of these.

To do a proper job of setting forth all of the variables, their states, and their relationships in human consequation would require a far more substantial treatment than this report, which is limited to lists and some commentary. The items listed concern <u>human</u> consequation. That means that many of the items are <u>verbal</u> and have descriptive labels that have verbal (and thus "cognitive") implications. They would not be found in a treatment of consequation in infrahuman organisms. Human verbal consequation is frequently called "information feedback" or "knowledge of results." Few publications have tried to assemble this kind of consequation under the same heading, or in the same treatment, as consequation for rats or pigeons. Most publications concerned with information feedback give short shrift to reinforcement, and publications about reinforcement (including reinforcement of humans, as in behavior analysis) give little

heed to information feedback. It seems timely to bring these two aspects of consequation together. This is not to imply they are equivalent; on the contrary, I have explicitly distinguished between them (Parsons, 1974). By subsuming both under consequation because they both influence subsequent action, it may become more evident that psychologists should analyze and investigate how they combine and differ.

The concept of human consequation is broad enough to admit, if one wishes, constructs and associated variables besides information feedback: self-verbalization of cognitive variables, including those associated with constructs or theories of purpose, expectancy, attribution, perception, learned helplessness, and intrinsic motivation. For human consequation, in particular, some psychologists like to infer processes preceding action that link action and consequator before the latter occurs. Others infer consequators linked with preceding actions. All of these variables can be inserted into the consequation paradigm.

Consequation/Feedback

Table 1 lists variables that concern consequators (feedback or reinforcement) in themselves. These are grouped under "Extent, Amount," "Comparison," "Type," and "Source." Consequators can vary in extent both between actions and for particular actions. They can be augmented in some fashion. They can provide explicit cues or information about what a subsequent action should be. They can give non-comparative information or compare a preceding action with earlier actions, with actions of other persons, or with some standard. Consequators can be accumulated. They can be transformed. They can be verbal or non-verbal. Verbal consequators can be evaluative or non-evaluative. Non-verbal (affective) consequators can be favorable or unfavorable, appetitive or aversive. Sources can be external to the individual or internal, extrinsic or intrinsic. Extrinsic sources can be mechanical or human, with many variations in each, including variations in modality.

Some consequators are primarily discriminative, some affective. Most if not all, one suspects, are both, conveying information about future action and strengthening the preceding action. How these two functions of a consequator are related to each other needs to be investigated by further research, though it is a question that past research has addressed and one beclouded by conceptual preferences among psychologists.

Action Relationships

Consequators cannot be examined except in relation to actions (responses, tasks). As indicated in Table 2, the relationships are numerous, shown under "Purposes, Effects of Consequation/Feedback," "Action Aspects," and "Action Relations." Consequation of prior actions can strengthen, sustain, weaken, or eliminate these actions in the future, change them into different actions, or create new actions. Some of these purposes or effects are called "learning," some "performance." Future actions may also include reactions of misinterpretation, doubt, inattention, increased effort, or goal-setting. Temporal factors include intervals between prior action and consequator and between consequator and further action, and other actions may occur during these intervals. Some reinforcement schedules also fall under "temporal factors." Consequators have varying degrees and kinds of validity, realism, comprehensiveness, specificity, and relevance with respect to the actions they consequate, especially in information feedback.

Too often consequation in its various forms has been related simply to "performance" or "behavior," as though the kinds and aspects of preceding and subsequent particular actions had no bearing on what the consequation process accomplished. But behavior and performance consist of actions, and actions--responses, tasks, or whatever one wishes to call them--vary greatly in type and characteristics, as the listing shows. Their properties--the criteria for measuring them--also vary. It seems reasonable to expect different effects from a consequator when it consequates one type of action rather than another, or when effects are measured according to different aspects/criteria of the same action, e.g., time and accuracy. Presumably a consequator's effects can differ when action is repetitive, as in a habit or skill, and when it is occasional, as in making a decision in a novel situation. The level of an individual's proficiency or skill level also seems an important relationship. When we add to this diversity of actions and their aspects the variety of consequators and their aspects, clearly the relationships between consequation and action can become exceedingly complex.

Potentiation Relationships

As indicated earlier, consequators may be established or strengthened by potentiators. (These may also bring out an action, one that is already in a person's repertoire or, perhaps, with the help of verbal discriminators, something new.) The role of potentiation, set forth in Figure 3 under "Potentiation Aspects" and "Potentiation Relations," is as significant as its consideration in psychological research has been, for the most part, neglectful. Although earlier behavioral research with infrahuman organisms gave attention to operations or circumstances of deprivation (e.g., of food or water) and presentation (e.g., of shock or cold), behavior analysis or modification seems rarely to have considered potentiation in research or remediation with human subjects or clients. The operant contingency is often stated as having two terms (response and consequence or reinforcer), less frequently with three terms (by adding the discriminative stimulus), and seldom if ever with the fourth term, potentiator. Some confuse potentiation with discrimination, since each antecedes action. Studies of information feedback (and biofeedback) have usually neglected the role of goal-setting (by others or the individual) in influencing the effectiveness of such feedback, though a number of studies have been concerned with goal-setting in itself. Yet experimental instructions often include commands or exhortations as well as information, and experiments may have "demand characteristics." Just as some analysts have disregarded potentiators in discussing consequators, others have dealt with potentiation without regard for consequation. They suggest that our drives, our needs, are solely responsible for our actions. Indeed, individuals do scratch an itch or respond to a command; the consequation that jointly explains why they do so has occurred in the perhaps-forgotten past. It has been suggested, even, that consequators such as knowledge of results generate potentiators, such as goal-setting. In common parlance, potentiators may be called "motives," and on some occasions "motivation" is ascribed to these; yet on other occasions it is attributed to consequators such as "incentives." I prefer to consider both.

Consequation Context

Finally, as Figure 4 demonstrates, it is necessary to consider the context in which consequation occurs. What is the "Referent" (i.e., that to which the consequator refers, that which produced the action that was consequated)? Does the "Receiver" get the consequator in private or in public?

Conclusion

There is another set of considerations concerning consequation seldom found in the research literature. This is the displacement of one action by another because the latter becomes "stronger" (more probable) and the former is incompatible with it. The latter becomes stronger because its consequator or combination of consequators is more influential than the former's. The consequator of each may be a positive reinforcer (favorable consequator) such as money, but the displacing action gets more than the displaced. In another situation, the consequator of the displacing action consists of a smaller favorable consequator, and one of the consequators of the displaced action consists of a larger favorable consequator, but the displaced action also has another consequator, an unfavorable (aversive) one--like a punisher. The result can be what I have called "alternative avoidance" (Parsons, 1979); the action with the less influential positive reinforcer displaces that with both the more influential one and the aversive effect, depending on the relative influences of the three consequators. Much of daily activity involves alternative avoidance.

Although this report has made use of, and elaborated on, a behavioral framework to set forth consequation/feedback variables, one must not disregard terms and constructs from information processing and other cognition-based approaches. Quite the contrary. The variables they suggest must be considered and placed in the framework--for example, attentional and rehearsal processes that result from consequation and are hypothesized to intervene prior to action. Nor is it claimed that consequation/feedback is responsible for all actions, all behavioral change. Much of what people do results from potentiators (such as goal-setting) and discriminators (such as environmental cues, what others say, and self-talk) without help from consequation, or at least without help that can be readily identified; whether the potentiators or discriminators benefit from past consequation is another question.

It would have been foolhardy in this report to try to describe all of the relationships between the variables listed. Some of them are in dispute, some under investigation, some still to be disentangled from psychological theory and terminology. In consequation, what is cognitive, what affective? What is information, what reinforcement? Can verbal potentiators (e.g., a command) convert otherwise neutral (e.g., a click) or informational (e.g., KOR) consequators into affective consequators (reinforcers)? Conversely, how much information is conveyed by reinforcers? Might a contingency as such be a consequator? There are many interesting generalizations to explore. Much research has already been conducted; much is presently under way. This report does not pretend to describe this research. It simply tries to map the salient features of the domain.

Table 1. Variables in human consequation/feedback. I. Consequation/feedback.

CONSEQUATION/FEEDBACK

A. Extent, Amount

1. Quantity (quantitative)
   a. Magnitude, level, intensity
   b. Relative degree

2. Quality (qualitative)

3. Frequency (independent of action)(b)
   a. Total number/time
   b. Cumulative effects
   c. Minimum required(b)

4. Multiplicity
   a. Multiple types
   b. Multiple sources
   c. Initial; augmented

5. Augmentation(b)
   a. Extrinsic
   b. Intrinsic

6. Variation (independent of action)
   a. Constant
   b. Varying

7. Transformation
   a. Reduced; increased or amplified(b)
   b. Linear; non-linear
   c. Arbitrary units
   d. Spatial
   e. Scale, grain, target size

B. Comparison

1. Actual Performance
   a. Non-comparative
   b. Neutral (e.g., time, raw scores)

2. Comparative: Standard (relevant to standard(b))
   a. Standard: qualitative; quantitative
   b. Pre-knowledge: Correct action known in advance(b)
      Correct action not known in advance--"uncertainty"
   c. Differential: explicit; implied
      ("good," "bad;" "worse;" "same," "different;" "on course," "off course"
   d. Type of deviation, error: commissive, omissive(b)
      false positive, false negative
   e. Direction of deviation(b): between actual and desired response(b)
      of error(b)

f. Amount of deviation: tolerance permitted
extent of error(b) relative to tolerance, criterion
precision: percentage, grade; "close," "more," "less"
g. With incorrect action: correct (required) action only
correct and incorrect action
h. With correct action: correct (required) action only
correct and incorrect action

3. Comparative: Previous Action
a. Immediately previous; worst, best previous
b. Location in previous distribution; percentile
c. Change: improvement; same; degradation

4. Comparative: Others
a. "Absolute vs. comparative" (a); with vs. without reference to others
b. Competition accompaniments

C. Type

1. Verbal/Social
a. Non-evaluative: mm-hum, eye contact, head nod
other attention
acknowledgment; thanks
neutral, raw score
b. Evaluative: praise, compliment; blame, criticism
from "powerful other"(a)--see D. Source
fail, pass; failure, success
comments: "good," "bad;" "better," "worse;" "excellent," "terrible"(variation in intensity)
"right," "wrong;" correct: positive; incorrect: negative(a); "right" only, "wrong" only, both; interaction with the number of response alternatives

2. Non-Verbal:
a. Non-affective: mechanical source(a); auditory click(b)
b. Surrogates: points, prizes, stars
c. Secondary reinforcers: money, money-loss
d. Feeling-relevant(b); pleasant, unpleasant; liked, disliked
e. Primary consequators: positive reinforcers; negative reinforcers (escape, avoidance); punishers: food, water, candy, heat, cold, noise, odor, effort, discomfort, inconvenience
f. Drive-reducing: appetitive; aversive
g. More frequent response (Premack Principle)

D. Source

1. External vs. internal(a)--e.g., person/device vs. proprioceptive

2. Extrinsic vs. intrinsic(b)--e.g., others vs. self

3. Self-feedback
   a. Internal, intrinsic
   b. Requests for feedback
   c. Self-detection of errors (self-generated feedback)
   d. Self-recording (in-head, oral, written); plotting own scores; making own confidence ratings

4. Agent (Person)
   a. High vs. low-power individual(a); status, influence
   b. Type of person
   c. Prior experience with that person
   d. Prior experience with others like that person

5. Medium
   a. Personal (human) vs. impersonal (mechanical)(a), e.g., supervisor vs. printout, face-to-face vs. display
   b. Modality: verbal-visual-auditory(b); feedback modality and action modality (see II. Action Relations.)
   c. Combinations: among modalities
      extrinsic and intrinsic (i-e, e-e, i-i) (see Augmentation; Extent. Amount, above)

(a) Listed by Pritchard and Montagno (1978)
(b) Listed by Meister (1976)

Table 2. Variables in human consequation/feedback.
II. Action Relationships.

ACTION RELATIONSHIPS

A. Purposes, Effects of Consequation/Feedback

1. Behavior
   a. Action modification: establishing
      strengthening
      sustaining
      altering
      weakening
      eliminating
   b. Learning (training) vs. performance(b)
   c. Shaping (differentation) vs. repetition
   d. Duration of effects: temporary; long-term
   e. Cumulative effects
   f. Discrimination; directing, cueing; cue for next response(b)
      expectancy, hypothesis formation
      suggestibility(b)
      providing information (general, status, procedures)
      improvement(b); how to; telling correct action
      forcing, guiding, showing, correction procedures, guided practice
      cueing instead of feedback
   g. Preference change(b)

2. Feelings
   a. Effects of feelings(b)
   b. Arousal of enjoyment, satisfaction, pleasure, elation, relief
   c. Arousal of dissatisfaction, worry, anxiety, anger
   d. Effects on morale

3. Potentiation
   a. Effort: level of aspiration; trying harder, less hard
   b. Goal setting, "motivation," achievement motivation

4. Modifiers of Effects
   a. Misinterpretation (of consequation/feedback)
   b. Doubt about its validity, feasibility
   c. Prior experience with same, similar feedback
   d. Prior experience with same, similar agent
   e. "Perception" of feedback: individual differences in learning, performance, both; personality differences; feedback per se vs. what it does to the individual
   f. Inattention; competing behavior

B. Action Aspects

1. Action Types
   a. Motor, psychomotor: positioning, tracking, reaction time, aiming, displacement, force, complex coordination, kinesthetic
   b. Perceptual: detection, monitoring, identification, discriminative, magnitude judgments, recognition
   c. Verbal learning: serial, maze, paired associates, verbal conditioning, concept acquisition, programmed learning
   d. Estimation: time: duration, latency
   e. Information processing: clerical, decision making
   f. Academic knowledge: arithmetic, other subjects
   g. Eye movements
   h. Muscle tension, slight activity
   i. Cardiovascular: heart rate, blood pressure, vasodilitation-contraction
   j. Response learning: integration of elements into units; shaping of responses according to standard
   k. Non-response learning: response already in repertoire
   l. Procedure-acquisition; chaining
   m. Task association with discriminative stimuli
   n. Unique behavior acquisition within task
   o. Overlearning(b)
   p. Complex, difficult tasks vs. simple tasks(b)
   q. Open vs. closed tasks
   r. Dull, repetitive tasks(b)

2. Action Properties, Criteria
   a. Output
   b. Speed
   c. Rate
   d. Errors (magnitude, direction)
   e. Quality
   f. Intensity, extensity
   g. Scope, completeness, comprehensiveness
   h. Information
   i. Free operant vs. discrete trials

3. Action Frequency
   a. Repetitive
   b. Occasional
   c. Sole instance

4. Action Alternatives
   a. In: input; output
   b. Number of alternatives: dichotomous, multiple, continuous e.g., true-false vs. multiple-choice items

5. Action Context
   a. Duration: task, session, work
   b. Prolonged performance, fatigue effects
   c. Laboratory, work environments, study environments

6. Proficiency Level
   a. Stage of skill acquisition; cerebral efficiency (drug effects)
   b. Individual differences

C. Action Relations

1. Temporal
   a. Interval between action and consequator
      (1) Range: immediate to years(a)
      (2) Delay (of feedback)(b); (of reinforcement)
          feedback during system operations
          feedback after system operations (debriefing)
      (3) Intervening events or actions
          similar, opposite, unrelated
          within-action interference
   b. Interval between consequator and next action
      (1) Range: immediate to years
      (2) Intervening events or actions
   c. Temporal location of consequator behavior
      (1) During action ("action" feedback)
      (2) Post-action (dependent on definition of "action," "response")
   d. Interval between actions (inter-response interval)
   e. Reinforcement schedule(a)
      (1) Continuous (after each response, action, trial)
      (2) Interval (fixed, variable)

2. Extent of Action Consequated
   a. Number of similar elements within action
      (1) Continuous (after each response, action, trial)
      (2) Ratio (fixed, variable)
   b. Number of different elements within action
   c. Number of consequators per actions
      (1) Total number per total actions
      (2) Relative number among competing actions

3. Variation in Actions Consequated
   a. Similarities-differences in cues; discrimination shaping
   b. Similarities-differences in responses; response shaping

4. Validity of Consequator
   a. Veridicality(b); accuracy of information(a)--truth about performance
   b. Misinformation in consequator
      (1) False KOR (extent); arbitrary, fictitious feedback
      (2) Effects of delay of KOR
      (3) Results of adversary's reaction
      (4) Extent of knowledge of misinformation
   c. Misinterpretation

5. Action - Consequator correspondence
   a. Feasibility, likelihood aspects
   b. Correlation with actuality
   c. Feedback independent of action
   d. Modality correspondence: visual-visual, visual-auditory, auditory-auditory, auditory-visual

6. Comprehensiveness of Action
   a. All pertinent action; "comprehensiveness"(a); job coverage
   b. Number of dimensions in the action; multiple inputs

7. Comprehensiveness of Consequator
   a. Number of dimensions of consequator
   b. Amount of feedback; full, partial

8. Specificity of Action, Consequator
   a. Specificity-molecularity(a); molar-molecular(b); specificity(b)
   b. Precision of displayed error(b)
   c. Action (response) categories available(b); fractionation
   d. Structured vs. probabilistic(b)
   e. Tolerance(e.g., in tracking) vs. selection (e.g., in true-false test)
   f. Ambiguity (e.g., 50% right vs. 90% right)
   g. Items in action, in consequator
      (1) Single, several, many
      (2) Serial items vs. terminal item
      (3) Summaries, lump sums vs. detailed data
      (4) Particular action vs. category of action vs. "something you did."
   h. Continuous vs. category vs. binary metric
   i. Amount of information (bits) in feedback, in task

9. Relevance to Action
   a. Confounding(b): from delay, multiple criteria, complex action, individual-team attribution
   b. System status(b)
   c. "As perceived"(b)

10. Action-Action
   a. Similarity of consequated action to subsequent action
   b. Stimulus generalization; response generalization

(a) Listed by Pritchard and Montagno (1978)
(b) Listed by Meister (1976)

Table 3. Variables in human consequation/feedback
III. Potentiations relationships

POTENTIATION RELATIONSHIPS

A. Potentiation Aspects

1. Source
   a. External, extrinsic
   b. Internal, intrinsic

2. Clarity
   a. Explicit: stated beforehand
   b. Implicit: in feedback

3. Agency
   a. Physical circumstance, occurrence
   b. Display: sign, text, radio, TV, advertisement
   c. Other person(s)
   d. Self--e.g., self-admonition

4. Operations, Conditions--Non-Verbal
   a. Deprivation: hunger (food)
      thirst (water, liquids)
      sex
      social interaction (loneliness)
      environmental stimuli (isolation)
      breathing
      elimination
   b. Presentation: heat
      cold
      pain, ailment
      effort
      stress (various stressors)
      confinement
      unpleasant odor
      unpleasant setting
      noise
      itch
      discomfort
      inconvenience
      threat
   c. Extent, duration

5. Operations, Conditions--Verbal
   a. Goal-setting: achieve, get, do, refrain, stop
   b. Imperative: command
      demand
      request
      exhort
      plead

c. Affective content: positive--e.g., "get it right"
negative--e.g., "don't make a mistake"
neither: contingency statement, "if...then..."

6. Operations, Conditions--Social
   a. Cultural values; ethics, moral implications
   b. Societal approval, disapproval; law
   c. Conscience
   d. People: liked; disliked

7. Associated Feelings
   a. Anxiety, concern
   b. Satisfaction, dissatisfaction
   c. Enjoyment, elation; depression
   d. Anger, frustration

B. Potentiation Relations

1. Potentiator Changed by Consequator
   a. Change through acquisition, achievement as consequator
   b. Change through removal, escape, termination as consequator
   c. Change through avoidance, postponement as consequator
   d. Change through punishment as consequator

2. Non-Verbal
   a. Potentiator--consequator similarity
   b. Extent of potentiator--extent of consequator

3. Verbal
   a. Knowledge of goal: known; unknown
   b. Difficulty level of goal: hard; easy
   c. Specificity of stated goal, outcome
      (1) Precise: "complete 75%"
      "get 75% right"
      "you got 75%; beat that"
      "walk .3 km/hr faster"
      "detect each fault"
      (2) Imprecise: "do the best you can"
      "do better"
      "don't do as poorly"
      "work as rapidly as possible"
      "try not to make mistakes"
      "do better than before"
      "try to improve your score"
   d. Type of stated goal
      (1) Standard, requirement
      (2) Prior action, score: improve; maintain
      (3) Others' actions: group norm; competition
   e. Aspect of stated goal (criterion), action
      (1) Speed
      (2) Accuracy
      (3) Totality of action--e.g., "win the game"
      (4) Instance of action--e.g., "get a hit"

Table 4. Variables in human consequation/feedback
IV. Consequation context.

CONSEQUATION CONTEXT

A. Referent

1. Individual (feedback of individual accomplishment)

2. Multi-operator
   a. Team(b) (feedback of team score)
   b. Work group(a) (feedback of group output)

3. Total Entity
   a. System (feedback of system performance)
   b. Organization (feedback of organization performance)
   c. Proximity to, remoteness from individual operator(b)
   d. Intervening activities, individuals

B. Receiver

1. Individual alone (private)(a)

2. Individual in work group (public)(a)

(a) Listed by Pritchard and Montagno (1978)
(b) Listed by Meister (1976)

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