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Using Information-Processing Principles in Public Policymaking

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Effective consumer disclosure programs require an understanding of information-processing principles. Examples of successful and unsuccessful approaches are described to illustrate "bottlenecks" which may prevent information from reaching the consumer.

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Although much has been written about the potential usefulness of information-processing theory in designing consumer disclosure programs [Dyer and Shimp 1977; Jacoby and Small 1975; Wilkie and Gardner 1974], government agencies have rarely used these principles in public policy development. One reason for this lack of impact is that few government policymakers have had behavioral science training. Even so, most of these concepts are, in and of themselves, not complex. Thus, these articles may have "failed" by not following some of the very principles they espoused, namely, by making the presentation too technical and by not making concrete recommendations for program development.

This article attempts to rectify this deficiency by presenting a framework for public policymaking which describes in detail specific "bottlenecks" in the consumer's processing system which must be taken into account in planning information disclosure programs. Examples of government and industry successes and failures will be presented throughout.

The general paradigm used for discussing these bottlenecks was originally proposed by McGuire [1976], who suggested that a consumer goes through a series of steps in acquiring, processing, and using information. For the sake of clarity, these steps have been collapsed into five major stages:

Exposure: data comes into contact with one or more of the consumer's five senses.

Attention: the consumer selects certain stimuli out of the environment for further processing.

Comprehension: the consumer understands and assigns meaning to the message conveyed.

Retention/Retrieval: information is stored in memory for later use when a decision is made.

Decision making: the consumer sorts out and synthesizes information stored in memory or available at point-of-sale.

In reality, these stages are not discrete; moreover, the distinctions between them are not always clear. However, they serve as a useful framework for discussing the types of impediments that must be considered if information is ultimately to affect consumer choice.

Exposure It is intuitively obvious that consumers must have some contact with the content of the message before it can have any effect on marketplace trans-

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actions. Since consumers have varying opportunities for exposure and differing propensities toward information search, it becomes vital for policy-makers, like marketers, to insure that consumers are exposed to the intended message. There are several roadblocks which can prevent the consumer from ever being exposed to the information. Each of these is discussed below.

Destruction or Removal of Information

In some instances the message may be accidentally destroyed or removed, leading to exposure failure. In this case, there is no opportunity for the information to affect consumer decision making. One of the concerns of the Federal Trade Commission (FTC) in formulating its recently promulgated "Octane Rule" was to insure that the consumer sees, or is exposed to, the octane ratings on gasoline pumps [*Federal Register* 1978b]. In the past, serious problems had occurred when the labels either were removed or became illegible as a result of adverse weather conditions or the effect of the caustic chemicals that inherently exist around gasoline pumps. The new regulation requires that the label be replaced when it cannot be easily read.

Information Unavailability

A second type of breakdown in the exposure stage is information unavailability, which results from regulatory constraints impeding the consumer's ability to receive the information. This principle can be illustrated by the experience of the Food and Drug Administration (FDA) in designing a patient package insert program for oral contraceptives. Two types of printed material were to be provided to patients: (1) a relatively brief package insert; and (2) a brochure providing a fuller discussion of risks and benefits to be made available by the physician at the patient's request. According to an FDA survey, patients exposed to both types of messages preferred the brochure to the insert and even retained it for future reference. However, only about one-third of the pill users reported receiving the brochure from their physician [Mazis, Morris, and Gordon 1978; Morris, Mazis, and Gordon 1977]. The survey results strongly implied that information "on request" was effectively less available than information which is required to be distributed.

The FDA's dilemma is not unique. Other government agencies must worry about balancing the benefits and costs of universal distribution of information. Concern for greater exposure seems warranted when a large proportion of consumers desire and are likely to use information and when there are serious consequences of misestimations without information. When only a small proportion of users are affected and consequences are less severe, information on request seems more appropriate.

Inappropriate Timing of Message

Dissemination of the message at an inappropriate time also reduces effective exposure. For example, the life insurance cost disclosure package adopted by the National Association of Insurance Commissioners (NAIC) suffers from a serious timing problem. Purchasers receive a disclosure package containing several cost indices for comparing policies, but the information comes only after the policy is delivered, usually a week to 10 days after purchase. Once the purchase decision has been made, however, "the buyer becomes psychologically committed to it and is very unlikely to read and use a disclosure package" [Kramer 1978, pp. 12-13].

Targeting Problems

For exposure to be effective, information must be targeted to the intended recipients. Since individual television stations determine when and how often to air public service announcements (PSAs), those who see or hear the PSA are often not members of the target audience. Given that PSAs can provide consumers with important information regarding purchase decisions,

it has been recommended to the Federal Communications Commission (FCC) that broadcasters be required to match the content of PSAs with the audience likely to be watching at the time they are aired. The futility of broadcasting a youth-oriented drug-abuse message during hours when most adolescents are in school was cited as an example of targeting problems [Pertschuk and Califano 1978].

Since the exposure stage of consumer information processing is a prerequisite for the subsequent four stages, any breakdown here will affect the flow of information in the remainder of the system.¹ Merely exposing consumers to information should not be the ultimate objective of policymakers, however. Data is of little use to consumers unless they decide to attend to it.

Attention Consumers are exposed to massive amounts of marketplace information. Frequently, because consumers are confronted simultaneously with a large amount of data, they have neither the time nor the inclination to attend to all of the messages being disseminated. Consequently, policymakers, like marketers, must be concerned with the development of cost-effective methods of attracting consumers' attention to their messages. It is at the attention stage that consumers sort out and actively examine stimuli (e.g., an advertisement, a warning or nutritional package label, or a comment made by a friend) for the purpose of further processing, while ignoring or filtering out other messages.

Attention is affected by both *internal* and *external* factors. Internal needs motivate the consumer to attend to information that is instrumental in reaching important goals. External factors, i.e., those related to the characteristics of the stimulus itself, can also affect attention levels. Each of these factors will be discussed in turn, in order to provide insights as to why government information requirements have frequently failed to attract the consumer's attention.

Internal Factors Since it is very costly for consumers to process all of the information to which they are exposed, potential sources of information are evaluated for their usefulness in decision making. In short, consumers attend to data which they consider to be helpful in achieving progress toward desired goals and ignore irrelevant information.

For example, care labeling disclosures have been attended to because they are pertinent to the economic and aesthetic needs of consumers, who want to ensure that a garment is not ruined by improper care after purchase. Survey evidence has shown that consumers find care labeling a relevant factor in clothing purchase decisions, because they desire "wash and wear" garments and wish to avoid costly cleaning procedures [FTC 1977].

Disclosures which contradict prior beliefs are less likely to be attended to. In a study conducted for the FTC's protein supplement hearings, consumers were presented with bottles of protein supplement products bearing mock labels, which stated:

Protein supplements are unnecessary for most Americans. The U.S. Public Health Service has determined that the daily diet of most Americans provides adequate protein.

Over three-quarters of the respondents indicated that they had seen nothing on the bottles about whether people need protein supplements. Only about 9 percent recalled that the message said people *do not* need protein supplements, and about as many thought that the label said people *do* need protein supplements [FTC 1978].

It is clear that in this case the tested disclosure did not get consumers' attention. However, it may be possible to design a disclosure which would attract attention. Research, such as the survey conducted for the protein supplement hearings, can provide guidance prior to implementation on whether the specific disclosure will effectively convey the intended message.

External Factors As shown above, consumers voluntarily attend to messages which are related to their internal beliefs, needs, and goals. A message may also attract attention because it has some distinctive feature, such as a novel idea, a uniquely shaped package, an unpredictable scenario, provocative music, bright colors, or interesting characters. These external factors are controlled by the party responsible for designing and delivering the message and can be used to gain the "involuntary attention" of consumers.²

Advertisers have long recognized that *novelty* can be used to attract attention. For example, the words "new" and "improved" are frequently used to provide consumers with a cue that there is something novel or unexpected in the product environment. It is more difficult for government agencies to use attention-provoking techniques to convey important facts to the public. Typically, agencies mandate that disclosures be presented as part of a seller's advertisement. Sellers often alter advertisements or package design to avoid boredom or "wear out."³ In the midst of this dynamic commercial environment, static disclosure messages may suffer a serious handicap in competing for consumers' attention. Rotating disclosure messages, as is done for cigarette health warnings in Sweden, represents a possible solution to this problem.

A second factor affecting attention levels is the *intensity* of the stimulus. It is particularly important that the disclosure have sufficient strength to attract attention when the consumer is acquiring information via a "low-involvement" learning medium such as television advertising, where consumers are not actively seeking information [Krugman 1965]. There are two common methods that public policymakers use to intensify communication effectiveness: (1) multimedia campaigns and (2) multisensory messages.

Well-coordinated communication campaigns, using a variety of media in a complementary manner, can attract attention to the target message and enhance its effect on consumer decision making. For example, in a major study of two California communities, the Stanford Heart Disease Prevention Program found that the combination of face-to-face instruction and mass media advertising produced a significantly greater reduction in heart disease risk factors (e.g., through dietary changes) than did mass media advertising alone [Farquar et al. 1977].

Even within a single medium, government agencies should continue to consider multisensory approaches which enhance attention to required disclosures. For television, in particular, simultaneous audio and video, or both verbal and nonverbal disclosure, may be more likely to attract attention. For example, a study of a warning message embedded in an Alka-Seltzer TV commercial showed that viewers exposed to both audio and video warnings had a much higher retention rate than those who merely heard it in the audio portion [ASI 1975].

Advertisers frequently rely on nonverbal approaches to attract the consumer's attention. Visual images, such as interesting and attractive scenes or personalities, are likely to stimulate the development of long-lasting mental images, perhaps because the right brain hemisphere can apparently "learn" visual images separately from the left hemisphere, which deals primarily with semantic concepts [Krugman 1978].

From a public policy perspective, there are lessons to be learned from the communication techniques employed by advertisers to sell products. Hence, for example, public policy concerned with advertising should shift greater attention to imagery. A visual scenario *showing* the consumer reading a nutritional label and pointing out relevant data to a child or a friend might be more effective than merely displaying numerical data. Visual portrayal of label reading might motivate label inspection at the point-of-sale. This concept of coordinating advertising disclosures (especially using visual images) and point-of-sale search will be discussed in greater detail in the "decision making" stage. Any policy shift involving visual requirements, however, should be accompanied by research so as to maximize consumer benefits without placing unneeded burdens on sellers.

Imagery can also be employed by advertisers to distract attention from "unpleasant" data, e.g., information conveyed through a required disclosure. If, for example, a fuel economy or nutritional disclosure is superimposed across the screen while a famous personality is shown, consumers are unlikely to read the disclosure. Government agencies should therefore consider the possibility of eliminating all video distractions when a required disclosure appears on the screen.

Audio information can also distract consumers' attention from video advisories, such as "use as directed." Research has shown that when audio and visual messages compete, the auditory information seems to dominate [Bettman 1979, p. 301]. Thus, audio transmission should be terminated during a video disclosure, unless the audio serves to reinforce the disclosure.

Transmitting a required disclosure in the midst of unrelated (or possibly even contradictory) information may also reduce its impact. Warning information will probably be more effective if it is *presented separately* from the rest of the advertisement rather than being sandwiched between distracting material. Information is likely to "get lost" when the disclosure is not distinct, as evidenced by the corrective messages embedded in Listerine advertisements.

In general, then, policymakers must be concerned about the consumer's degree of attention to disclosures. Both internal and external factors greatly affect attention levels. Consumers pay attention to information they feel is pertinent to their personal needs, values, and goals, and tend to be attracted to stimuli which are distinctive, have sufficient intensity, and are not subject to distraction from competing messages.

Comprehension The exposure and attention stages discussed above are the "mechanical" aspects of information processing. At these stages, there is very little mental activity by consumers. They are merely responding automatically to stimuli that have been strategically placed in the environment.

In the third stage, *comprehension*, consumers begin to actively transform and assign meaning to the data. There are two prerequisites that must be met in order for information to pass successfully through the comprehension stage: (1) it must be *understandable*; and (2) it must be presented in a context that allows it to be "encoded" in memory. These two issues will be discussed in turn below.

Understandability Disclosure programs that have generated information comprehensible to consumers have produced immediate effects. For example, miles-per-gallon data is readily understood by consumers and has helped ease the search for fuel-efficient automobiles.

However, surveys have shown that the model life insurance cost disclosure format adopted by the National Association of Insurance Commissioners (NAIC) is incomprehensible to the average consumer, although it was designed to facilitate better understanding of life insurance costs. The NAIC disclosures contain six different index numbers, which probably contribute to consumers' confusion [Kramer 1978].

Although the FTC has been requiring the disclosure of brightness information for light bulbs since 1970, a survey conducted five years after the rule was promulgated showed that most consumers did not understand the concept of "lumens," which is used to convey brightness. Only 1 individual of the 168 participating in the survey mentioned lumens as a pertinent factor in selecting light bulbs [Krugman 1965]. On the other hand, the average-life disclosure in number of hours has been useful in encouraging development of long-lasting light bulbs.

The need to consider the target recipients' capacity to understand the information is illustrated by a recent study of six- and eight-year-olds. Children were exposed to toy commercials with either a standard disclaimer used by the industry ("some assembly required"), or a modified one ("you have to put it together"). Not surprisingly, the children who were told "you have to put it together" showed greater understanding of the meaning of the message than the ones exposed to the "some assembly required" disclaimer [Adler et al. 1977].

If low-income groups constitute a significant portion of the target audience, tests for disclosure understandability are particularly important. Yet the FTC's "Cooling Off" disclosure, a remedy aimed primarily at protecting low-income consumers from unscrupulous door-to-door sellers, contains such potentially incomprehensible language as "transaction," "obligation," "negotiable instrument," and "security interest" [*Federal Register* 1972]. Empirical studies might be useful for testing whether it would be possible to substitute more understandable language.

When a single disclosure cannot accommodate the needs of diverse groups, agencies should consider the use of dual disclosures. A relatively brief and easily understood disclosure, perhaps in the form of a summary, could be provided to the mass audience, while more complex material could be made available, perhaps upon request, to those consumers who desire it. For instance, the staff of the Board of Governors of the Federal Reserve System has proposed to highlight the truth-in-lending disclosures of most importance to consumers, while relegating to a separate document more complex information such as prepayment rebates, late charges, security, events of default, and acceleration clauses [Durkin and Elliehausen 1978].

Ease of Encoding When consumers attend to the data presented, they interpret or assign their own subjective meaning to it. This process, which in effect transforms the data into usable information, is referred to as "encoding."

When information is encoded, it may remain virtually intact, or it may be substantially modified or distorted, or "rewritten" into more generalizable concepts. This encoding process is important to consider for a number of reasons. First, when potentially useful data is presented in a confusing manner, its meaning may be distorted by the recipient. If the distortion is antithetical to policy goals, consumers may make poorer decisions than they would have without the information. Thus, policymakers should design disclosures to avoid this pitfall.

For example, inconsistency of terminology used in the grade labeling of food may result in confusion. Thus, for beef, the top grade is "prime" and

the second grade is "choice," while for canned peas "choice" is first and "prime" is second. Dried peas get ratings of U.S. No. 1, No. 2, and No. 3, while for lima beans, U.S. No. 1 is only second best, and for canned peas, U.S. No. 1 is third [ASI 1975].

The encoding process may also result in the transformation of data into more generalizable, higher-order concepts, or "chunks." In effect, a whole set of facts may be processed as a single unit, which then comes to "stand for" the several smaller bits of data. A product's brand name often represents such a chunk of information. If, for example, consumers are led to believe a nonsubstantiated fact about a particular family brand (e.g., Brand X mouthwash is effective for treating colds and sore throats), they might generalize the same "miraculous" quality to other products with the same prefix (such as Brand X throat lozenges).

Another implication of the encoding process is that it is facilitated when consumers have some preexisting memory structure for organizing the new information. Consequently, when the government requires disclosures of complex information, it must either insure that the information is compatible with consumers' preexisting "schemata," or some compensatory measures must be taken.⁴ Some methods for dealing with the absence of a preexisting framework are discussed below.

Although disclosures may not have an immediate effect when consumers lack a frame of reference, awareness can increase over time through a "snowballing" effect. For example, studies have shown that since the enactment of truth-in-lending legislation, there has been a steady increase in awareness of the disclosure of credit terms, such as "annual percentage rate" [Durkin and Elliehausen 1978].

An explicit frame of reference can be developed for new concepts which consumers have not yet learned. For example, the FTC's new appliance energy labels list the highest and lowest annual energy cost for comparable products [*Federal Register* 1978a]. In this way, consumers can "chunk" the data to determine easily whether the model being considered is a good or poor buy with respect to energy utilization. Descriptive adjectives or grades for various categories of product performance could also be assigned to facilitate chunking. Other examples are: (a) unit pricing, which is really nothing more than a more efficient way of presenting two pieces of information, price and units, in one number; and (b) the presentation of a summary rating of nutrition information for all products within a product class. This summary format provides the consumer with a more usable chunk (e.g., Brand X is higher than most other brands within the product class).

Policymakers should design information disclosures which are comprehensible and easily remembered, in a form consistent with program goals. Understandability can be achieved by studying the needs of target audiences. When new ideas must be communicated to consumers and no frame of reference exists, the government can provide "relevant range" data (as in the proposed appliance energy labels), or preorganize the data into grades which help facilitate memory processes.

Retention and Retrieval

The previous section demonstrated the importance of information being understood by the target audience and being assigned meaning which is consistent with the goals of the information program. Typically, however, this is not the ultimate objective of disclosure. In order for the information to be useful to the consumer, it must often be retained in memory and later activated and retrieved for use in decision making.

Information read and understood by consumers is often forgotten. Even if

it is retained in memory for some length of time, it may still not be referred to when decisions are made. To remedy this "bottleneck" in the information-processing system, it is necessary to examine the nature and functioning of retention and retrieval.

The memory system has two major parts: (1) short-term memory (STM), which has very limited storage capacity, and (2) long-term memory (LTM), which is a permanent and unlimited memory store.⁵ Although these two parts are not physically different, they will be considered separately in the following discussion because each has important implications for the design of information disclosures.

Short-Term Memory (STM)

Short-term memory serves as a bottleneck to the consumer's information processing since it can handle only a small amount of data at one time. Therefore, when designing information disclosures, policymakers should remember that consumers generally have limited processing capacities which preclude the comprehension of "too much" information. If the short-term memory system is overloaded, the consumer will be unable to transfer information from short-term to long-term memory. This overload condition is a particularly relevant consideration for those media which do not allow the consumer to control the pace of presentation (e.g., broadcast). The FTC's proposal to include detailed nutrient disclosures in all television food ads has been widely criticized, since consumers would be unable to retain such complex information after being exposed to one 30-second commercial [Bettman 1975]. Other disclosures, such as those mandated by the Federal Reserve's truth-in-lending regulations and the FTC's mileage guides, may result in similar processing difficulties, causing consumers to ignore the entire message because the needed information cannot be separated from irrelevant data.⁶

Broadcast advertising is well suited for the transmission of simple concepts and overall impressions but is less appropriate than print advertising or in-store media (e.g., displays or labels) for conveying highly detailed information.⁷ Consumers have a limited time to absorb the information in any particular broadcast commercial. In addition, the fact that broadcast advertising is organized by brand makes interbrand comparisons across an attribute particularly difficult, since such comparisons require that consumers retain large amounts of data in memory.

In most situations, it is advisable to keep broadcast disclosures simple. Research can provide guidance about whether specific broadcast disclosures are easily grasped and remembered by consumers. Although simplicity should be the general rule, factors such as prior experience with the type of data conveyed, motivation, and well-formed frames of reference could make it *possible* for complex data in broadcast ads to be absorbed in some cases.

Long-Term Memory (LTM)

Policymakers should also be concerned about the organization of information in LTM, since this structure will affect whether and in what form information is retrieved. One method for enhancing retention is to *make the information specific* rather than abstract. For example, research has indicated that the concrete instruction, "weigh yourself every day," produces more weight loss than a more general message, "keep track of your weight" [Ley 1979]. Thus, a warning that "consuming this product will increase the user's chance of death by 5 percent" is more likely to be remembered than a general disclaimer, such as "this product could be hazardous to your health."

Finally, information processing can be facilitated by providing the appro-

appropriate cues for retrieval from long-term memory. It is vital, therefore, that the cues presented at the point-of-sale are congruent with the manner in which information is stored in memory. Similarly, an in-ad warning can be made more effective by insuring that at the time of purchase there will be a cue to stimulate retrieval of the warning information already stored in memory [Wright 1979]. If the cue is unavailable at the point-of-sale or if the in-store information is incongruent with the way the warning was tagged in memory, this information is less likely to be retrieved.

Decision Making The preceding discussion of exposure, attention, comprehension, and retention and retrieval has implicitly been concerned with how information acquired by a consumer affects the actual purchase decision. In this section we explore in more detail how humans go about making decisions.

When faced with making a decision, most consumers do not attempt to consider all the relevant factors. Instead, they construct simplifying rules which allow them to reach a satisfactory (although probably not optimal) decision. More specifically, the decision maker "constructs[s] a simplified model of the real situation in order to deal with it" [Simon 1957]. This concept is known as *bounded rationality*. Given the number of decisions which consumers must make in their daily lives, and the cost in terms of time and effort that would be required to consider *all* the relevant data, it can be seen that bounded rationality is actually a very logical application of cost-benefit analysis. Experiments based on the notion of bounded rationality have resulted in the emergence of a number of general principles which are useful in describing consumers' information-processing abilities and strategies and which have important implications for policymakers.

Concreteness The first such principle is that a decision maker tends to use only the information that is explicitly provided and will use it only in the form in which it is displayed.

This principle has a number of implications. First, the form of the information provided greatly affects the decision. For example, appliance energy consumption information could be presented to the consumer in a number of ways, such as the cost per day, per month, or per year. All of these forms are based on the same information (i.e., the appliance's energy consumption); but the principle of concreteness implies that consumers will probably use the information (if at all) in the form in which it is given. In the appliance example, energy consumption stated in terms of annual costs will make savings look bigger than the monthly or daily equivalents. Consumers exposed to the yearly data might thus be more inclined to purchase the more efficient (but possibly higher-priced) appliance, because of the form in which the information is displayed.

Information is also more likely to be used if it is in a form which is directly compatible with the question the consumer is trying to answer. Thus, it is better to present the information in "chunked" form rather than in its individual components, since consumers will often ignore information that requires some transformations. For instance, unit price labels directly answer the question, "which is the least expensive item per unit of measure?" and are thus more likely to be used than separate price and quantity information which requires transformation (i.e., a mathematical calculation).

If disclosed information is poorly organized, consumers cannot be expected to engage in an extended acquisition effort. Symbols on packages, such as a salt shaker for drugs which are ill advised for consumers on low-

sodium diets, could facilitate in-store inspection and ease the task of comparing marketplace alternatives.

In addition, while disclosure of warranty terms is currently required at the point-of-sale, the information needs to be better organized for consumers to be able to use it. Currently, written warranties can vary in presentation for different brands, making comparisons difficult. Improved organization of warranties, perhaps according to a standard format, might ease consumer search.

Such changes in format will be helpful, but comparing warranties will still involve reading through binders or examining complex documents attached to products. One solution is to simplify the data to aid comparisons of warranty terms. Standard summaries could be required, for instance, or simplified stickers attached to products. Booklets or signs could arrange warranty terms by brand. While the above ideas need further analysis, modification of in-store display of warranty information could greatly improve the ability of consumers to use the information.

Anchoring and Adjustment Humans also ease the strain of integrating information through a process called "anchoring and adjustment" [Slovic 1972]. A natural starting point (anchor) is used as a first approximation and is then adjusted to accommodate additional information. Typically, the adjustment is a crude and imprecise one which fails to do justice to the importance of the additional information.

For example, a study of purchasers of major durable goods revealed almost no relationship between the consumers' degree of satisfaction with their old products and the brand they initially considered [Staelin and Payne 1976]. Virtually the same proportions of dissatisfied and satisfied users reported initially considering their previous brand. In other words, it seems that purchasers initially anchor (consider) the brand with which they are most familiar (i.e., their former brand), whether or not they are satisfied with it. Evidence from the same study, however, indicates that consumers are more likely to adjust (be more receptive) to information about other brands if they had a poor experience with their former product. Thus, information remedy approaches designed to encourage more comparison shopping will have to contend with this anchoring and adjustment process that mitigates against consumers trying something new.

Misinterpretation of Small Data Samples It is a well-known statistical principle that very large samples will be highly representative of the population from which they are drawn, but that small samples can be quite unrepresentative. Studies have shown, however, that decision makers often erroneously treat small samples as if they were highly representative [Slovic 1972]. A typical example of this tendency is the consumer who infers the repair rates of a refrigerator from his/her personal experience or his/her neighbor's experience with a similar model of the same brand, even though the data are drawn from such a small sample that they are likely to have little value in predicting the repair rate of the new product. In this case, performance disclosures based on statistically sound testing procedures could help correct the error.

Conclusions This paper has presented numerous examples of why information remedies sometimes fail to produce the desired impact. The basic approach was to classify these examples in terms of the stage of information processing in which the information failed to get through to the consumer. It is hoped that those involved in designing and/or approving informational disclosure

remedies will find this structured approach useful, both in thinking through the potential impact of any disclosure and in designing methods of presenting or displaying the information. New technology, such as mini-computers and cable television, may ease the task of presenting information which is compatible with consumer needs. These technological advances will face information-processing problems also, however, since consumers are limited by both time and physical constraints.

Notes

1. Exposure to information can increase the probability of behavior change, although the likelihood of change will be slight if serious bottlenecks remain at other stages.
2. Involuntary attention refers to the allocation of processing capacity to stimuli more on the basis of automatic mechanisms than on the basis of current goals [Bettman 1979, p. 25].
3. Wearout generally refers to the loss of effectiveness of an ad or an ad campaign as the message gets more exposure.
4. A "schemata" has been defined as "a framework for organizing the information about a given concept into a set of meaningful relationships or a structure" [Olson 1978, p. 57].
5. There is also a set of sensory stores which allow information to enter the memory through one of the senses [Bettman 1979, p. 143].
6. Truth-in-lending regulations require disclosure of the cash price, amount of down payment, frequency and total number of payments, finance charges expressed as an annual percentage rate, and total deferred payment price. Mileage guides typically disclose both highway and city miles-per-gallon estimates, and state as well that the "estimated mpg is to be used for comparison purposes and that actual mileage may differ depending on the individual's driving speed, weather conditions, and trip length." In addition, advertisers must disclose that California drivers may get different mileage.
7. If consumers can make "accept" or "reject" decisions on the basis of the information, such as health warnings, broadcast disclosures could be processed with little effort by consumers. If, however, comparative performance judgments are required and consumers do not have a well-established frame of reference, broadcast disclosures are likely to be an inappropriate vehicle.

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