2

Origins of Behavior
Complex behaviors do not emerge as unitary patterns, but are formed through integration of many constituent activities of differing origins. For this reason, it is more fruitful to analyze the determinants of behavioral processes than to categorize behaviors as learned or innate or to try to apportion relative weights to these factors.

Learning By Response Consequences

The more rudimentary mode of learning, rooted in direct experience, results from the positive and negative effects that actions produce. When people deal with everyday events, some of their responses prove successful, while others have no effect or result in punishing outcomes. Through this process of differential reinforcement, successful forms of behavior are eventually selected and ineffectual ones are discarded.

Learning by reinforcement is commonly portrayed as a mechanistic process in which responses are shaped automatically and unconsciously by their immediate consequences. Simple actions can be altered by their effects without awareness of the relationship between actions and outcomes. However, the cognitive capacities of humans enable them to profit more extensively from experience than if they were unthinking organisms.

Response consequences have several functions. First, they impart information. Second, they serve as motivators through their incentive value. The third, and most controversial, function concerns their capacity to strengthen responses automatically. A full understanding of learning by response consequences therefore requires detailed consideration of these functions.

INFORMATIVE FUNCTION

In the course of learning, people not only perform responses but also notice the effects they produce. By observing the different outcomes of their actions, they develop hypotheses about which responses are most appropriate in which settings. This acquired information then serves as a guide for future action. Accurate hypotheses give rise to suc-
cessful performances, whereas erroneous ones lead to ineffective courses of action. Cognitions are thus selectively strengthened or disconfirmed by the differential consequences accompanying the more remotely occurring responses (Dulany & O'Connell, 1963).

Contrary to the mechanistic view, outcomes change behavior in humans largely through the intervening influence of thought. Reinforcing consequences serve as an unarticulated way of informing performers of what they must do to gain beneficial outcomes and to avoid punishing ones. Because learning by response consequences is largely a cognitive process, consequences generally produce little change in complex behavior when there is no awareness of what is being reinforced. Even if certain responses have been positively reinforced, they will not increase if individuals believe, from other information, that the same actions will not be rewarded on future occasions (Estes, 1972).

**MOTIVATIONAL FUNCTION**

Anticipatory capacities enable humans to be motivated by prospective consequences. Past experiences create expectations that certain actions will bring valued benefits, that others will have no appreciable effects, and that still others will avert future trouble. By representing foreseeable outcomes symbolically, people can convert future consequences into current motivators of behavior. Most actions are thus largely under anticipatory control. Homeowners, for instance, do not wait until they experience the distress of a burning house to purchase fire insurance; people venturing outdoors do not ordinarily depend on the discomfort of a torrential rain or a biting snowstorm to prompt them to dress appropriately; nor do motorists usually wait until inconvenienced by a stalled automobile to replenish gasoline.

The capacity to bring remote consequences to bear on current behavior by anticipatory thought encourages foresightful behavior. It does so by providing both the stimulus for appropriate action and the sustaining inducements. Because anticipatory incentives increase the likelihood of the kind of behavior that is ultimately reinforced time and time again, this type of incentive function has great utility.

**REINFORCING FUNCTION**

Explanation of reinforcement originally assumed that consequences increase behavior automatically without conscious involvement. This view was challenged by the results of verbal learning experiments in which experimenters reinforced certain classes of words verbalized by participants and ignored all others. Changes in how frequently subjects produced reinforced verbalizations was then examined as a function of whether the participants recognized which types of words produced rewards. Spielberger and DeNike (1966) measured awareness at periodic intervals throughout the session. They found that reinforcing consequences were ineffective in modifying behavior as long as participants were unaware of the reinforcement contingency; but participants suddenly increased the appropriate behavior when they discovered which responses would be rewarded. Other investigators (Dulany, 1968), using different tasks and reinforcers, likewise found that behavior is not much affected by its consequences without awareness of what is being reinforced. Neither these findings nor generalizations based on them went unquestioned.

Earlier studies by Postman and Sassenrath (1961) examined the temporal relation between emergence of awareness and changes in responsiveness. In these experiments, reinforcement produced small improvements in performance prior to awareness, but participants markedly increased appropriate responses after they hit upon the correct solution. Learning, they concluded, can occur without awareness, albeit slowly and quite inefficiently. The subsequent increase in correct responses makes it easier to discern what is favored; once the discovery has been made, the appropriate behavior is readily performed, given valued incentives.

Discrepant findings concerning the relationship between awareness and behavior change are largely due to how adequately awareness is measured. If awareness is assessed after many trials have elapsed, participants may figure out the correct responses late in the series after they have increased noticeably by reinforcement in the absence of awareness. Indeed, some evidence seems to suggest just this, for when recognition of reinforcement contingencies is measured at long
intervals, awareness appears to precede behavior change, but when measurements are made at short intervals, performance gains seem to precede awareness for subjects who later recognize the correct responses (Kennedy, 1970, 1971). Whether they were partially aware of their own behavior, but did not express their provisional thoughts, remains to be demonstrated.

The procedures used in the preceding studies are adequate for demonstrating that awareness can facilitate change in behavior, but they are ill-suited for resolving the basic issue of whether awareness is necessary for learning or performance change. Because the responses and their outcomes are observable, one must rely on participants' verbal reports to determine whether and when awareness has been gained.

The question of whether learning must be consciously mediated is answered decisively by using tasks that prevent awareness because the action-outcome relationship cannot be observed. Awareness is precluded when the appropriate responses are unobservable but their consequences are not, or the correct responses are noticeable but their reinforcing consequences are not.

Hefferline and his associates (Hefferline, Bruno & Davidowicz, 1970) have successfully modified unobservable responses by reinforcement. In these studies, the occurrence of visibly imperceptible muscular contractions, detected by the experimenter through electronic amplification, are reinforced either by monetary reward or by termination of unpleasant stimulation. The unseen responses increased during reinforcement and decreased after reinforcement was withdrawn. None of the participants could identify the response that produced the reinforcing consequences, although they generated hypotheses about the relevant activities.

Awareness is not an all-or-none phenomenon. It is possible to achieve increases in performance on the basis of misleading hypotheses if these are partially correlated with the correct solution to the task. If the participants in a verbal learning study believe that comments about household items are the rewarding responses, when actually references to kitchen utensils is the correct response class, they are likely to generate some appropriate responses. Similarly, in studies of nonverbal tasks some observable activity that itself is not entirely appropriate may at times activate the relevant unseen responses. Awareness can thus exist in degree of accuracy, depending on how closely the chosen hypotheses are correlated with the correct one. Small changes occurring without awareness may well be attributable to partially correlated hypotheses.

Although the issue is not yet completely resolved, there is little evidence that reinforcers function as automatic shapers of human conduct. Even if improved methodologies established that elementary responses can be learned without awareness of what is being reinforced, this would not mean that complex behavior can be similarly acquired. As an illustration, consider a task involving rule-governed behavior. Suppose subjects are presented with words of varying length, and told that their task is to respond by providing a correct number corresponding to each word. Let us select an arbitrary rule that gives the “correct number” by subtracting the number of letters in a given word from 100, dividing the remainder by 2, and then multiplying this result by 5. Correct responses are derived from a high-order rule requiring a three-step transformation of the external stimulus. To create accurate responses one must perform several mental operations in a particular sequence. An unthinking organism is unlikely to show any gains in accurate performance, however long its responses are reinforced.

A vast amount of evidence lends validity to the view that reinforcement serves principally as an informative and motivational operation rather than as a mechanical response strengthening. The notion of “response strengthening” is, at best, a metaphor. After responses are acquired the likelihood that they will be used in a given situation can be readily altered by varying the effects they produce, but the responses cannot be strengthened any further. For example, people will drive automobiles for the resulting benefits, but the benefits do not add increments of strength to the driving responses. The dubious status of both automaticity and response strengthening, and the vestigial connotations of the term reinforcement, make it more fitting to speak of regulation than reinforcement of behavior by its consequences. It is in the former sense that the concept of reinforcement is being used in this book.
It is fortunate that consequences do not automatically enhance every response they follow. If behavior were reinforced by every momentary effect it produced, people would be overburdened with so many competing response tendencies that they would become immobilized. Limiting learning to events that are sufficiently salient to gain recognition has adaptive value. For lower organisms possessing limited symbolizing capacities there are evolutionary advantages to being biologically structured so that response consequences produce lasting effects mechanically without requiring symbolic processing of ongoing experiences.

Reinforcement provides an effective means of regulating behaviors that have already been learned, but it is a relatively inefficient way of creating them. It might be noted in passing that rarely do people learn behaviors under natural conditions that they have never seen performed by others. Because reinforcement influences ordinarily occur together with numerous behavioral examples to draw upon, it is difficult to determine whether reinforcement creates the new behavior or activates what was already partly learned by observation.

**Learning Through Modeling**

Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action. Because people can learn from example what to do, at least in approximate form, before performing any behavior, they are spared needless errors.

**Processes of Observational Learning**

According to social learning theory, modeling influences produce learning principally through their informative func-
tion. During exposure observers acquire mainly symbolic representations of the modeled activities which serve as guides for appropriate performances. In this conceptualization, which is summarized schematically in Figure 1, observational learning is governed by four component processes.

**Attentional Processes**

People cannot learn much by observation unless they attend to, and perceive accurately, the significant features of the modeled behavior. Attentional processes determine what is selectively observed in the profusion of modeling influences to which one is exposed and what is extracted from such exposures. A number of factors, some involving the observers' characteristics, others involving the features of the modeled activities themselves, and still others involving the structural arrangement of human interactions, regulate the amount and types of observational experiences.

Among the various attentional determinants, associational patterns are clearly of major importance. The people with whom one regularly associates, either through preference or imposition, delimit the types of behavior that will be repeatedly observed and hence learned most thoroughly. Opportunities for learning aggressive conduct, for example, differ markedly for members of assaultive gangs and for members of groups exemplifying pacific lifestyles.

Within any social group some individuals are likely to command greater attention than others. Modeled conduct varies in effectiveness. The functional value of the behaviors displayed by different models is therefore highly influential in determining which models people will observe and which they will disregard. Attention to models is also channeled by their interpersonal attraction. Models who possess engaging qualities are sought out, while those lacking pleasing characteristics are generally ignored or rejected.

Some forms of modeling are so intrinsically rewarding that they hold the attention of people of all ages for extended periods. This is nowhere better illustrated than in televised modeling. The advent of television has greatly expanded the range of models available to children and adults alike. Unlike their predecessors, who were limited largely to familial and

subcultural sources of modeling, people today can observe and learn diverse styles of conduct within the comfort of their homes through the abundant symbolic modeling provided by the mass media. Models presented in televised form are so effective in capturing attention that viewers learn much of what they see without requiring any special incentives to do so (Bandura, Grusec, & Menlove, 1966).

The rate and level of observational learning is also partially determined by the nature of the modeled behaviors themselves as, for example, their salience and complexity. In addition, observers' capacities to process information govern how much they will benefit from observed experiences. People's perceptual sets, deriving from past experience and situational requirements, affect what features they extract from observations and how they interpret what they see and hear.

**Retention Processes**

People cannot be much influenced by observation of modeled behavior if they do not remember it. A second major process involved in observational learning concerns retention of activities that have been modeled at one time or another. In order for observers to profit from the behavior of models when they are no longer present to provide direction, the response patterns must be represented in memory in symbolic form. Through the medium of symbols, transitory modeling experiences can be maintained in permanent memory. It is the advanced capacity for symbolization that enables humans to learn much of their behavior by observation.

Observational learning relies mainly upon two representational systems—**imaginal and verbal**. Some behavior is retained in imagery. Sensory stimulation activates sensations that give rise to perceptions of the external events. As a result of repeated exposure, modeling stimuli eventually produce enduring, retrievable images of modeled performances. On later occasions, images (centrally aroused perceptions) can be summoned up of events that are physically absent. Indeed, when things are highly correlated, as when a name is consistently associated with a given person, it is virtually impossible to hear the name without experiencing an image of that
person. Similarly, mere reference to an activity that has been repeatedly observed (e.g., driving an automobile) usually arouses its imaginal counterpart. Visual imagery plays an especially important role in observational learning during early periods of development when verbal skills are lacking, as well as in learning behavior patterns that do not lend themselves readily to verbal coding.

The second representational system, which probably accounts for the notable speed of observational learning and retention in humans, involves verbal coding of modeled events. Most of the cognitive processes that regulate behavior are primarily verbal rather than visual. Details of the route traveled by a model, for example, can be acquired, retained, and later reproduced more accurately by converting the visual information into a verbal code describing a series of right and left turns (e.g., RLRRL) than by reliance upon visual imagery of the route. Observational learning and retention are facilitated by such symbolic codes because they carry a great deal of information in an easily stored form.

After modeled activities have been transformed into images and readily utilisable verbal symbols, these memory codes serve as guides for performance. The importance of symbolic coding in observational learning is revealed in studies conducted both with children (Bandura, Grusec, & Menlove, 1966; Coates & Hartup, 1969) and with adults (Bandura & Jeffery, 1973; Bandura, Jeffery, & Bachicha, 1974; Gerst, 1971). Observers who code modeled activities into either words, concise labels, or vivid imagery learn and retain behavior better than those who simply observe or are mentally preoccupied with other matters while watching.

In addition to symbolic coding, rehearsal serves as an important memory aid. When people mentally rehearse or actually perform modeled response patterns, they are less likely to forget them than if they neither think about them nor practice what they have seen. Many behaviors that are learned observationally cannot be easily established by overt enactment because of either social prohibitions or lack of opportunity. It is therefore of considerable interest that mental rehearsal, in which individuals visualize themselves performing the appropriate behavior, increases proficiency and retention (Bandura & Jeffery, 1973; Michael & Maccoby, 1961). The highest level of observational learning is achieved by first organizing and rehearsing the modeled behavior symbolically and then enacting it overtly (Jeffery, 1976).

Some researchers (Gewirtz & Stingle, 1968) have been especially concerned with conditions that produce initial imitative responses on the assumption that they help to explain observational learning at later development. There is some reason to question, however, whether developmentally early and later imitations have equivalent determinants. In early years, the child's imitative responses are evoked directly and immediately by models' actions. Later on, imitative responses are usually performed without the models present, long after the behavior has been observed. Immediate imitation does not require much in the way of cognitive functioning because the behavioral reproduction is externally guided by the model's actions. By contrast, in delayed modeling, the absent events must be internally represented so that the difference between physically prompted and delayed modeling is like the difference between drawing a picture of one's automobile when it is at hand, and drawing it from memory. In the latter situation, the hand does not automatically sketch the car; rather, one must rely on memory guides, mainly imaginal representations.

Motor Reproduction Processes

The third component of modeling involves converting symbolic representations into appropriate actions. To understand this response guidance function requires analysis of the ideomotor mechanisms of performance. Behavioral reproduction is achieved by organizing one's responses spatially and temporally in accordance with the modeled patterns. For purposes of analysis, behavioral enactment can be separated into cognitive organization of responses, their initiation, monitoring, and refinement on the basis of informative feedback.

In the initial phase of behavioral enactment, responses are selected and organized at the cognitive level. The amount of observational learning that will be exhibited behaviorally partly depends on the availability of component skills. Learners who possess the constituent elements can easily in-
tegrate them to produce the new patterns; but if some of these response components are lacking, behavioral reproduction will be faulty. When deficits exist, then the basic sub-skills required for complex performances must first be developed by modeling and practice.

There are other impediments at the behavioral level to doing what one has learned observationally. Ideas are rarely transformed into correct actions without error on first attempt. Accurate matches are usually achieved by corrective adjustments of preliminary efforts. Discrepancies between the symbolic representation and execution serve as cues for corrective action. A common problem in learning complex skills, such as golf or swimming, is that performers cannot fully observe their responses, and must therefore rely upon vague kinesthetic cues or verbal reports of onlookers. It is difficult to guide actions that are only partially observable or to identify the corrections needed to achieve a close match between representation and performance.

Skills are not perfected through observation alone, nor are they developed solely by trial-and-error fumbling. A golf instructor, for example, does not provide beginners with golf balls and clubs and wait for them to discover the golf swing. In most everyday learning, people usually achieve a close approximation of the new behavior by modeling, and they refine it through self-corrective adjustments on the basis of informative feedback from performance and from focused demonstrations of segments that have been only partially learned.

Motivational Processes

Social learning theory distinguishes between acquisition and performance because people do not enact everything they learn. They are more likely to adopt modeled behavior if it results in outcomes they value than if it has unrewarding or punishing effects. Observed consequences influence modeled conduct in much the same way. Among the countless responses acquired observationally, those behaviors that seem to be effective for others are favored over behaviors that are seen to have negative consequences. The evaluative reactions that people generate toward their own behavior also regulate which observationally learned responses will be performed. They express what they find self-satisfying and reject what they personally disapprove (Hicks, 1971).

Because of the numerous factors governing observational learning, the provision of models, even prominent ones, will not automatically create similar behavior in others. One can produce imitative behavior without considering the underlying processes. A model who repeatedly demonstrates desired responses, instructs others to reproduce the behavior, prompts them physically when they fail, and then rewards them when they succeed, may eventually produce matching responses in most people. If, on the other hand, one seeks to explain the occurrence of modeling and to achieve its effects predictably, one has to consider all the various determining factors discussed above. In any given instance, then, the failure of an observer to match the behavior of a model may result from any of the following: not observing the relevant activities, inadequately coding modeled events for memory representation, failing to retain what was learned, physical inability to perform, or experiencing insufficient incentives.

DEVELOPMENTAL ANALYSIS OF MODELING

Because observational learning entails several subfunctions that evolve with maturation and experience, it depends upon prior development. Modeling can be increased by reinforcing matching behavior, but such demonstrations are not of much help in explaining imitation failures, or in identifying what exactly is being acquired during the process. Facility in observational learning is increased by acquiring and improving skills in selective observation, in memory encoding, in coordinating sensorimotor and ideomotor systems, and by the ability to foresee probable consequences of matching another's behavior. Observational learning is hindered by deficits, and increased by improvements, in its component functions.

In studying the origin and determinants of modeling it is essential to distinguish between instantaneous and delayed reproduction. In the earliest years of development, children's
modeling is largely confined to instantaneous imitation. As children develop skill in symbolizing experience and translating it to motor modalities, their capacity for delayed modeling of intricate patterns of behavior increases.

In developmental studies, chronological age is widely used as an index of cognitive development. Although performances requiring cognitive functioning generally increase with age, the relationships are not always orderly ones. Some discrepancies arise because many things other than cognitive competency also change as children grow older. Relating changes in functioning to age has normative value but it tells us little about the subprocesses governing the altered performances. One can better understand how developmental factors affect the capacity for observational learning by measuring the degree to which component functions have evolved than by relying on age as the index of development.

Developmental studies need not be confined solely to changes in functioning under natural circumstances. Another procedure is to study proficiency in observational learning by children who have received different amounts of pretraining in component functions over a period of time. This is an especially effective way of identifying the developmental determinants of observational learning because the critical factors are created directly.

Piaget (1951) presents a developmental account of imitation, in which symbolic representation plays an important role, especially in higher forms of modeling. At the earlier sensorimotor stages of development, imitative responses can be evoked in children only by having the model repeat the child’s immediately preceding responses in alternating imitative sequences. During this period, according to Piaget, the children are unable to imitate responses they have not previously performed spontaneously, because actions cannot be assimilated unless they correspond to already existing schemata. Piaget reports that when new elements are introduced, or even when familiar responses that children have acquired but are not exhibiting at the moment occur, they do not respond imitatively. Imitation is thus restricted to reproduction of activities that children have already developed, that they can see themselves make, and that they have performed immediately before the model’s repetition.

The limitations in infant imitativeness observed by Piaget in the longitudinal study of three children are not entirely corroborated by other investigators. Infants can acquire by observation new skills and transfer them to different situations (Kaye, 1971). It is assumed by Piaget that during initial stages children do not differentiate between self-imitation and imitation of the actions of others. If they cannot distinguish modeled activities from their own, the theory must include additional assumptions to explain why a child’s own behavior can originally induce matching responses but identical actions initiated by others cannot.

In a detailed longitudinal study, Valentine (1930) shows that infants do imitate modeled acts within their capabilities even though they are not performing them beforehand. Moreover, matching performances, from which imitative capabilities are inferred, vary markedly depending on who the models are, what they select to model, and how they do it. Infants imitate their mothers much more than they do other people. They sometimes fail to respond to initial demonstrations but imitate the actions if repeated a number of times. Repeated modeling will thus reveal higher infant imitative capacities than brief modeling.

In Piaget’s view, schemata, which refer to schematic plans of action, determine what behaviors a person can or cannot imitate. The critical issue in observational learning is not how input is matched to preformed plans but how input creates the plans. Schema formation, according to Piaget, is determined by maturation and by experiences that are moderately incongruent with existing mental structures. Modeled events that are highly novel presumably cannot be incorporated.

There are commonalities between social learning and Piaget’s theory in their emphasis on the development of plans of action. Both recognize the importance of sensorimotor and ideomotor learning; that is, young children must develop ability to translate what they perceive to corresponding actions, and to convert thought into organized sequences of actions.
They differ, however, in how representations are abstracted from exemplars and in the limiting conditions of modeling. In the social learning view, observational learning is not confined to the moderately unfamiliar. Nor is self-discovery through behavioral manipulation the only source of information, as emphasized in Piagetian theory. Information about new responses can be extracted from observing modeled examples as well as from the consequences of one’s own behavior. If sensory and motor systems are sufficiently developed, and the component skills exist, there is no reason why children cannot learn novel responses by watching others, though obviously the moderately familiar would be easier to learn than the markedly different. From the perspective of the multiprocess theory presented earlier, deficiencies in imitative performance, which are usually attributed by Piaget to insufficiently differentiated schemata, may also result from inadequate attention to modeled activities, from inadequate retention, from motor difficulties in executing learned patterns, or from insufficient incentives. The incentive determinant deserves further comment because it bears importantly on the evaluation of findings from naturalistic studies.

The level and accuracy of children’s imitations of what they see and hear is partly influenced by how models respond to their behavior. Young children imitate accurately when they have incentives to do so, but their imitations deteriorate rapidly if others do not care how they behave (Lovaas, 1967). When only children’s responses are observed and recorded, imitative deficiencies arising from faulty incentives may be incorrectly attributed to shortcomings within the children. Because most observational studies with infants involve a two-way influence process, imitative performances reflect not only the competency of the child but the reactions of the participating models. If models respond alike to performances that differ in quality, children do not imitate too well, whereas they accurately reproduce behavior within their capacity if models show appropriate interest.

The discussion thus far has been concerned with early stages in the development of imitation as depicted by Piaget. As children’s intellectual development progresses, they become capable of delayed imitation of modeled performances which they cannot see themselves make. These changes presumably come about through coordination of visual and sensorimotor schemata and through differentiation of the children’s own actions from those of others. They now begin systematic trial-and-error performance of responses until they achieve good matches to new modeled patterns.

At the final stages of development, which generally begin in the second year of life, children attain representational imitation. Schemata are coordinated internally through imaginal representation to form new patterns of modeled behavior without requiring overt provisional trials of actions. The change that could be produced by modeling would be limited if coded representations were confined to imaginal replicas of modeled activities. Most modeled behavior is acquired and retained through the medium of verbal symbols. Had Piaget extended his studies of imitation into later childhood years, verbal representations would doubtless have emerged as an important functional mediator in delayed modeling.

A comprehensive theory of modeling must explain not only how patterned behavior is acquired observationally, but also how frequently and when imitative behavior will be performed, the persons toward whom it is expressed and the social setting in which it is most likely to be exhibited. Piaget’s account of imitation contains only a few general statements about the motivational factors regulating performance of matching behavior. Imitation is variously attributed to an intrinsic need for acting and knowing, to a desire to reproduce actions that differ partially from existing schemata, and to the esteem in which the model is held. Such factors are must too general to account satisfactorily for selective imitation of different models, of the same models at different times and places, and of different responses exhibited by the same models (Bandura & Barab, 1971). In view of the abundant evidence that imitative performances are extensively
regulated by their consequences, the influence of reinforce-
ment determinants must be included in explanatory schemes, 
whatever their orientation may be.

COMPARATIVE ANALYSIS OF 
MODELING

The role of symbolic processes in observational learning 
can be evaluated through comparative studies. If species 
higher in the phylogenetic scale have increasing capability to 
symbolize experience, then one would expect differences be-
 tween species in their potentialities for delayed modeling. 
Systematic comparisons have not been conducted between 
different species in observational learning on tasks varying in 
complexity and need for memory representation. Findings of 
various studies that happen to use different species neverthe-
less have suggestive value.

Lower species will learn simple acts through modeling if 
they can perform the behavior concurrently or shortly after it 
is exemplified by a model. Observational learning is less re-
liable, however, if there is an appreciable lapse of time be-
tween watching and performing.

With higher species the superiority of observational 
learning over learning by reinforcement is more striking. 
Higher animals can by watching acquire complicated se-
quences of responses even though they do not perform them 
until some time after the original demonstrations. The most 
impressive evidence for delayed modeling of novel patterns of 
behavior comes from chimpanzees reared in human families 
(Hayes & Hayes, 1952). They sit at typewriters striking key-
boards, apply lipstick to their faces before mirrors, open cans 
with screwdrivers, and engage in other human activities, 
without prior tutoring, which they have seen performed from 
time to time. The success of Gardner and Gardner (1969) in 
teaching sign language to a chimpanzee reveals the advanced 
capacity of primates to acquire observationally a generalized 
communicative skill that is used on future occasions in differ-
ten settings for a variety of purposes. After being taught by 
demonstration a large vocabulary of signs, the animal sponta-
neously used gestural communication by combining signs to 
get adults to do the things it wanted.

LOCUS OF RESPONSE INTEGRATION IN 
OBSERVATIONAL LEARNING

New patterns of behavior are created by organizing re-
sponses into certain patterns and sequences. Theories of mod-
eling differ on whether component responses are integrated 
into new forms mainly at central or peripheral levels. Rein-
fforcement theories (Baer & Sherman, 1964; Gewirtz & Stin-
gle, 1968) assume that response elements are selected from 
overt performance by providing modeling cues and rewarding 
actions that resemble the modeled behavior and ignoring 
those that do not. The response components thus extracted 
are sequentially chained by reinforcement to form more com-
plex units of behavior. Since, in this view, behavior is orga-
nized into new patterns in the course of performance, learning 
requires overt responding and immediate reinforcement.

According to social learning theory, behavior is learned 
symbolically through central processing of response informa-
tion before it is performed. By observing a model of the 
desired behavior, an individual forms an idea of how response 
components must be combined and sequenced to produce the 
new behavior. In other words, people guide their actions by 
prior notions rather than by relying on outcomes to tell them 
what they must do. Observational learning without perform-
ance is amply documented in modeling studies using a non-
response acquisition procedure (Bandura, 1971a; Flanders, 
1968). After watching models perform novel behav-
ior, observers can later describe the behavior with considera-
ble accuracy, and given appropriate inducements, they often 
achieve errorless enactments on the first trial.

It is commonly believed that controversies about the 
locus of learning cannot be satisfactorily resolved because 
learning must be inferred from performance. This may 
well be the case in experimentation with animals. To determine 
whether animals have mastered a maze one must run them 
through it. With humans, indices of learning exist that are 
independent of performance. To measure whether humans 
have learned a maze by observing successful models, one need 
only ask them to describe the correct pattern of right and left 
turns. In addition to verbal indices, formation of representa-
tions can be assessed by measures of recognition and under-
understanding not requiring motor reproduction. Results of experiments using multiple measures of acquisition show that people learn by watching before they perform (Bandura, Jeffrey, & Bachicha, 1974; Brown, 1976).

ROLE OF REINFORCEMENT IN OBSERVATIONAL LEARNING

Another issue of contention in observational learning concerns the role of reinforcement. Reinforcement-oriented theories assume that matching responses must be reinforced in order to be learned (Baer & Sherman, 1964; Miller & Dollard, 1941; Gewirtz & Stingle, 1968). The operant conditioning analysis relies entirely upon the standard three-component paradigm \( S^n \to R \to S^r \), where \( S^n \) denotes the modeled stimulus, \( R \) represents an overt matching response, and \( S^r \) designates the reinforcing stimulus. Observational learning presumably is achieved through differential reinforcement. When responses corresponding to the model's actions are positively reinforced and divergent responses are either unrewarded or punished, the behavior of others comes to function as a cue for matching responses.

This scheme does not appear to be applicable to observational learning where observers do not perform the model's responses in the setting in which they are exemplified, where neither the model nor the observers are reinforced, and whatever responses have been acquired observationally are first performed days, weeks, or months later. Under this set of conditions, which represents the most prevalent form of observational learning, two of the factors \( (R \to S^n) \) in the three-component paradigm are absent during acquisition, and the third factor \( (S^n, \) the modeling cue) is typically absent from the situation in which the observationally learned response is first performed. The operant analysis clarifies how imitative behavior that a person has previously learned can be prompted by the actions of others and the prospect of reward. However, it does not explain how a new response is acquired observationally.

According to the social learning view, observational learning occurs through symbolic processes during exposure to modeled activities before any responses have been performed and does not necessarily require extrinsic reinforcement. This is not to say that mere exposure to modeled activities is, in itself, sufficient to produce observational learning. Not all stimulation that impinges on individuals is necessarily observed by them, and even if noticed, what is registered may not be retained for any length of time.

Reinforcement does play a role in observational learning, but mainly as an antecedent rather than a consequent influence. Anticipation of reinforcement is one of several factors that can influence what is observed and what goes unnoticed. Knowing that a given model's behavior is effective in producing valued outcomes or in averting punishing ones can improve observational learning by increasing observers' attentiveness to the model's actions. Moreover, anticipated benefits can strengthen retention of what has been learned observationally by motivating people to code and rehearse modeled behavior that they value highly.

Theories of modeling differ primarily in the manner in which reinforcement affects observational learning rather than in whether reinforcement may play a role in the acquisition process. As shown in the schematization in Figure 2, the issue in dispute is whether reinforcement acts backward to strengthen preceding imitative responses and their connection to stimuli, or whether it facilitates learning anticipatorily through its effects on attentional, organizational, and rehearsal processes. It follows from social learning theory that observational learning can be achieved more effectively by informing observers in advance about the benefits of adopting modeled behavior than by waiting until they happen to imitate a model and then rewarding them for it.

In social learning theory, reinforcement is considered a facilitative rather than a necessary condition because factors other than response consequences can influence what people attend to. One does not have to be reinforced, for example, to hear compelling sounds or to look at captivating visual displays. When attention is held, the opportunity for meaningful imitation can be increased.
events themselves, the addition of positive incentives does not increase observational learning. Observers display the same amount of observational learning regardless of whether they are informed in advance that correct imitations will be rewarded or are given no prior incentives to learn the modeled performances (Bandura, Grusec, & Menlove, 1966; Rosenthal & Zimmerman, 1977). After the capacity for observational learning has fully developed, one cannot keep people from learning what they have seen.

Because of the traditional assumption that responses must be performed before they can be learned, operant researchers have attempted to reduce observational learning to operant conditioning. As far as learning is concerned, it might be more appropriate to reverse the direction of the reductive analysis. If people learn which behavior is appropriate by observing the effects of their actions, acquisition through operant conditioning becomes a special case of observational learning. Symbolic representations of behavior can be constructed from observing examples or from the informative effects of one’s performances.

Both reinforcement and social learning theories assume that whether or not people choose to perform what they have learned observationally is strongly influenced by the consequences of such actions. Social learning theory, however, en-

compasses a broader range of reinforcement influences including external, vicarious, and self-generated consequences.

THE MODELING PROCESS AND TRANSMISSION OF RESPONSE INFORMATION

A major function of modeling influences is to transmit information to observers on how responses can be synthesized into new patterns. This response information can be conveyed by physical demonstration, pictorial representation, or verbal description.

Much social learning occurs on the basis of casual or directed observation of behavior as it is performed by others in everyday situations. As linguistic skills are developed, verbal modeling is gradually substituted for behavioral modeling as the preferred mode of response guidance. People are aided in acquiring social, vocational, and recreational skills by following written descriptions of how to behave. Verbal modeling is used extensively because one can convey with words an almost infinite variety of behaviors that would be inconvenient and time consuming to portray behaviorally.

Another influential source of social learning is the abundant and varied symbolic modeling provided by television, films, and other visual media. It has been shown that both children and adults acquire attitudes, emotional responses, and new styles of conduct through filmed and televised modeling (Bandura, 1973; Liebert, Neale, & Davidson, 1973). In view of the efficacy of, and extensive public exposure to, televised modeling, the mass media play an influential role in shaping behavior and social attitudes. Further developments in communication technology will enable people to observe on request almost any desired activity at any time on computer-linked television consoles (Parker, 1970). With increasing use of symbolic modeling, parents, teachers, and other traditional role models may occupy less prominent roles in social learning.

A major significance of symbolic modeling lies in its tremendous multiplicative power. Unlike learning by doing,
which requires shaping the actions of each individual by repeated experience, in observational learning a single model can transmit new behavior patterns simultaneously to vast numbers of people in widely dispersed locations. There is another aspect of symbolic modeling that magnifies its effects. During the course of their daily lives, people have direct contact with only a small sector of the environment. Consequently, their perceptions of social reality are heavily influenced by vicarious experiences—what they see, hear, and read in the mass media. The more peoples’ images of reality derive from the media’s symbolic environment, the greater is its social impact.

The basic modeling process is the same regardless of whether behavior is conveyed through words, pictures, or live actions. Different forms of modeling, however, are not always equally effective. It is often difficult to convey through words the same amount of information contained in pictorial or live demonstrations. In addition, some forms of modeling may be more powerful than others in commanding attention. Children—or adults, for that matter—rarely have to be compelled to watch television, whereas oral or written reports of the same activities would not hold their attention for long. Furthermore, the symbolic modes rely more heavily upon cognitive prerequisites for their effects. Observers whose conceptual and verbal skills are underdeveloped are likely to benefit more from behavioral demonstrations than from verbal modeling.

SCOPE OF MODELING INFLUENCES

Much of the conduct being modeled at any given time is socially prescribed or highly functional; hence, it is adopted in essentially the same form as it is portrayed. For example, there is little leeway permitted in the proper way to drive an automobile or perform a surgical operation. Modeling influences, however, can create generative and innovative behavior as well. Through a process of abstract modeling, observers derive the principles underlying specific performances for generating behavior that goes beyond what they have seen or heard (Bandura, 1971b; Zimmerman & Rosenthal, 1974).

Abstract Modeling

In studying abstract modeling people observe others performing various responses embodying a certain rule or principle. Observers are later tested under conditions where they can behave in a way that is stylistically similar to the model’s disposition, but they cannot mimic the specific responses observed because they must apply what they have learned to new or unfamiliar situations. To take an example, a model generates from a set of nouns sentences containing the passive construction (“The dog is being petted,” “The window was opened,” etc.). The sentence exemplars vary in content and other features, but their structural property—the passive voice—is the same. Children later are instructed to create sentences from a different set of nouns with the model absent, and their production of passive constructions is recorded.

In abstract modeling, observers extract the common attributes exemplified in diverse modeled responses and formulate rules for generating behavior with similar structural characteristics. Responses embodying the observationally derived rule resemble the behavior the model would be inclined to exhibit under similar circumstances, even though observers have never seen the model behaving in these new situations.

General features can be extracted through repeated exposure to individual exemplars which share common properties. Exposure alone, however, does not ensure that the relevant aspects will be noticed. Factors that increase the salience and significance of the common features greatly facilitate abstract modeling. The effects accompanying the model’s responses is one such factor. When only the responses embodying the rule produce positive effects for the model, the aspects common to the positive exemplars can be more easily singled out by observers.

In observational learning of difficult concepts, abstract modeling is aided by providing concrete referents in conjunction with the conceptual responses. Young children, for example, learn a language rule with greater ease when the grammatical expressions occur along with corresponding activities that depict the relationships represented in the speech than if the utterances are modeled alone (Brown, 1976). Referential modeling, which presents actual events together with their
abstract counterparts, plays an especially influential role in early phases of cognitive development.

Modeling has been shown to be a highly effective means of establishing abstract or rule-governed behavior. On the basis of observationally derived rules, people learn, among other things, judgmental orientations, linguistic styles, conceptual schemes, information-processing strategies, cognitive operations, and standards of conduct (Bandura, 1971a; Rosenthal & Zimmerman, 1977). Evidence that generalizable rules of thought and conduct can be induced through abstract modeling reveals the broad scope of observational learning.

Later, the role of abstract modeling in language learning will be analyzed in some detail. Development of moral judgments is another area in which the abstract modeling paradigm has been extensively applied to test predictions from alternative theories of conceptual learning. It has been repeatedly shown that children tend to alter their standards of moral evaluation in the direction of models’ judgments. Proponents of different theories agree that moral reasoning is modifiable through exposure to divergent views, but they differ on how and when such modeling achieves changes.

Workers within the Piagetian developmental tradition assume that moral judgments appear as integrated wholes in distinct stages forming an invariant sequence. Piaget (1948) favors a two-stage order progressing from moral realism, in which rules are seen as unchangeable and punishments are administered in terms of amount of damage done, to relativistic morality that embraces motivational considerations. Kohlberg (1969) postulates a six-stage sequential typology beginning with punishment based obedience and evolving through instrumental hedonism, approval-seeking conformity, respect for authority, contractual legalistic observance, and culminating in private conscience. Since the stages constitute a fixed developmental sequence, individuals cannot learn a given form of moral judgment without first acquiring each of the preceding modes in order. The presumption is that modeling of moral standards that are too discrepant from one’s dominant stage have little impact because they cannot be assimilated. Judgmental standards of lesser complexity are similarly rejected because they have already been displaced in attaining succeeding levels. Divergent modeling supposedly creates cognitive disequilibrium in observers which is reduced by adopting a higher stage of moral reasoning. Innate motivators are posited to explain why people do not preserve their equilibrium simply by adhering to their own opinions and rejecting conflicting ones (Rest, Turiel, & Kohlberg, 1969).

A major problem with typologies is that it is hard to find people who fit them. This is because different circumstances call for different decisions and conduct. A given person’s moral judgments take many forms rather than being uniformly layered. Eventually further subtypes must be created to handle the diversity people show in their judgments. Personal experiences and changing societal demands produce increasingly differentiated functioning with age. As in any activity that involves increasing complexity, age differences in moral judgment can be found. But individuals at any given level of development usually express different moral judgments depending on circumstances (Bandura & McDonald, 1963). Stage theorists are able to classify people into types only by applying arbitrary rules to coexisting mixtures of judgments spanning several “stages” and by categorizing most people as being in transition between stages (Turiel, 1966).

According to the social learning view, people vary in what they teach, model, and reinforce with children of differing ages. At first, control is necessarily external. In attempting to discourage hazardous conduct in children who have not yet learned to talk, parents must resort to physical intervention. As children mature, social sanctions increasingly replace physical ones. Parents cannot always be present to guide their children’s behavior. Successful socialization requires gradual substitution of symbolic and internal controls for external sanctions and demands. After moral standards of conduct are established by tuition and modeling, self-evaluative consequences serve as deterrents to transgressive acts. As the nature and seriousness of possible transgressions by children change with age, parents alter their moral reasoning. For example, they do not appeal to legal arguments in handling misconduct of preschoolers, but they explain legal codes and penalties to preadolescents in efforts to influence future behavior that can have serious consequences.

During the course of development, children also learn
how to get around moral consequences. They discover that they can avoid, or reduce, reprimands by invoking extenuating circumstances for their conduct. As a result, different types of vindications become salient cues for moral judgments. Later they learn to attenuate self-condemning consequences for reprehensible conduct by self-exonerating justifications. A theory of moral reasoning must therefore be equally concerned with the cognitive processes by which the immoral can be made moral.

Parents of course are not the exclusive source of children’s moral judgments and conduct. Other adults, peers, and symbolic models play influential roles as well. Children exposed to conflicting standards exemplified by adult and peer models adopt different standards of conduct than if adults alone set the example (Bandura, Grusec, & Menlove, 1967). To complicate matters further, the standards acquired through modeling are affected by inconsistencies in the behavior of the same model over time, and by discrepancies between what models practice and what they preach (Bryan & Walbek, 1970). To the developing child, televised modeling, which dramatizes a vast range of moral conflicts, constitutes another integral part of social learning. Symbolic modeling influences the development of moral judgments by what it portrays as acceptable or reprehensible conduct and by the sanctions and justifications applied to it.

Although developmental trends obviously exist in moral judgments, the conditions of social learning are much too varied to produce uniform moral types. Even at the more advanced levels, some behaviors come under the rule of law, others under social sanctions, and still others under personal sanctions. Evidence of age trends, which most every theory predicts, is often accepted as validating stage theories of morality. Stage propositions, however, demand much more than age trends: they assume (1) that there is uniformity of judgment at any given level; (2) that a person cannot evaluate conduct in terms of a given moral standard without first adopting a series of preceding standards; and (3) that attainment of a given evaluative standard replaces preceding modes of thought by transforming them. Empirical findings provide little support for these presumptions.

Some efforts have been made to test the modifiability of moral judgments within the Kohlberg framework by exposing children to divergent levels of reasoning (Rest, Turie, & Kohlberg, 1969; Turie, 1966). The investigators report that children reject opinions below their predominant mode of thinking, have difficulty comprehending opinions that are too advanced for them, and are most likely to adopt views immediately above their own level. Certain methodological shortcomings, however, detract from the generality of these findings. Measures of moral reasoning should include a wide range of factors that are relevant to the formation of moral judgments. In the research cited above, responses are elicited for only a few morally relevant dimensions.

Apparent deficiencies in moral reasoning, often attributed to cognitive limitations or insensitivities to certain moral issues, have been shown to be partly artifacts of the assessment procedure used (Chandler, Greenspan, & Barenboim, 1973; Gutkin, 1972; Hatano, 1970). The same individuals express different moral opinions depending upon the number of moral dimensions included in the depicted events, the types of alternatives presented, whether they judge verbal accounts or behavioral portrayals of transgressions, and whether they reveal their moral orientations in abstract opinions or in the severity of sanctions they apply to different acts.

The procedures used to change moral reasoning in research conducted within the stage framework are even more limited than the assessment of effects. Children hear conflicting opinions expressed for only two or three hypothetical situations depicting a moral dilemma remote from their experiences, such as stealing a drug from a pharmacist to save a woman dying of cancer. One can easily fail to achieve changes by using weak influences. Theories claiming the negative (i.e., certain influences cannot produce change) should apply the influences extensively rather than briefly in testing the validity of the theory. Evidence that there are some age trends in moral judgment, that children fail to adopt opinions they do not fully comprehend, and that they are reluctant to express views considered immature for their age can be adequately explained without requiring elaborate stage propositions.
Social learning theory treats moral judgments as social decisions made on the basis of many factors that serve to mitigate or to justify the wrongness of conduct. Among the multidimensional evaluative criteria are included the characteristics of the wrongdoer, the nature of the act, its long-range as well as immediate consequences, the setting in which it occurs, the motivating conditions, the remorse of the transgressor, the number and type of people who are victimized, and a host of other extenuating circumstances. Standards of evaluation are acquired by precept, by example, and by experiencing directly and vicariously the consequences of transgressive acts. Through such diverse experiences people learn which dimensions are morally relevant and how much weight to attach to them.

The moral situations encountered in everyday life contain many decisional ingredients that vary in relative importance, depending upon the particular configuration of events. Hence, factors that are weighed heavily under some combinations of circumstances may be disregarded or considered of lesser import under a different set of conditions. With increasing development, moral judgments change from single-dimensional rules to multidimensional and configural rules of conduct.

Exposure to divergent modeling can alter moral judgments in several ways. By favoring certain judgmental standards, models increase the salience of morally relevant dimensions. The views they express additionally provide justifications for reweighing various factors in making decisions about the wrongness of given acts. In areas of morality, for which society places a premium on acceptable attitudes, public opinions may differ substantially from those that are privately held. Expression of moral convictions provides social sanctions for others to voice similar opinions. Divergent modeling can thus effect changes in moral judgments through attentional, cognitive, and disinhibitory mechanisms.

As in other areas of functioning, modeling influences do not invariably produce changes in moral reasoning. The lack of effects can result from either comprehension deficits or performance preferences. People cannot be much influenced by modeled opinions if they do not understand them. Cognitive skills place limits on what can be acquired through brief exposure to opposing opinions. There is substantial difference, however, between positing prerequisite cognitive functions and fixed sequences of unitary thought. Greater progress can be achieved in identifying the developmental determinants of complex abilities by analyzing the prior competencies needed to master them, than by categorizing people into ill-fitting types.

In voicing opinions, models transmit ideas and preferences. But modeling does not itself guarantee that views which have been learned will be articulated. In the case of performance preferences, modeled judgments are learned but not expressed because they are personally or socially disfavored. The ease with which judgmental standards can be shifted in one direction or another depends upon the conceptual skills they require and the consequences they generate. In addition, judgmental standards vary in discriminability, which affects the facility with which they can be learned. It is much easier to recognize damage than to infer the antecedents or intentions of actions. The claim attributed to learning theory that different moral judgments are equally modifiable has no foundation. Some judgmental changes are obviously more difficult to achieve than others.

An issue that has received surprisingly little attention is the relationship between moral reasoning and moral conduct. The extent to which moral judgments govern conduct will vary depending upon social circumstances. People are ordinarily deterred by anticipatory self-censure from engaging in behavior that violates their moral principles. When transgressive behavior is not easily self-excusable, actions are likely to be consonant with moral standards. But exonerative moral reasoning can be used to weaken internal restraints. Because almost any conduct can be morally justified, the same moral principles can support different actions, and the same actions can be championed on the basis of different moral principles (Bandura, 1973; Kurtines & Greif, 1974). People will behave in reprehensible ways for reciprocal obligations, for social approval, as duty to the social order, or for reasons of principle. Level of moral development may indicate the types of exonerative justifications needed to get a person to transgress,
but it does not ensure any particular kind of conduct. The various conditions that are conducive to exonerative moral reasoning will be discussed later in greater detail.

**Creative Modeling**

Contrary to common belief, innovative patterns can emerge through the modeling process. When exposed to diverse models, observers rarely pattern their behavior exclusively after a single source, nor do they adopt all the attributes even of preferred models. Rather, observers combine aspects of various models into new amalgams that differ from the individual sources (Bandura, Ross, & Ross, 1963). Different observers adopt different combinations of characteristics.

In the case of social behavior, children within the same family may develop dissimilar personality characteristics by drawing upon different parental and sibling attributes. Successive modeling, in which observers later serve as sources of behavior for new members, would most likely produce a gradual imitative evolution of new patterns bearing little resemblance to those exhibited by the original models. In homogeneous cultures, where all models display similar styles of behavior, behavior may undergo little or no change throughout a series of successive models. It is diversity in modeling that fosters behavioral innovation.

Modeling probably contributes most to creative development in the inception of new styles. Once initiated, experiences with the new forms create further evolutionary changes. A partial departure from tradition thus eventually becomes a new direction. The progression of creative careers through distinct periods provides notable examples of this process. In his earliest works, Beethoven adopted the classical forms of Haydn and Mozart, though with greater emotional expressiveness which foreshadowed the direction of his artistic development. Wagner fused Beethoven’s symphonic mode with Weber’s naturalistic enchantment and Meyerbeer’s dramatic virtuosity to evolve a new operatic form. Innovators in other endeavors in the same manner initially draw upon the contributions of others and build from their experiences something new.

The discussion thus far has analyzed creativity through the innovative synthesis of different sources of influence. While existing practices furnish some of the ingredients for the new, they also impede innovation. As long as familiar routines serve adequately, there is little incentive to consider alternatives. The unconventional is not only unexplored, but is usually negatively received when introduced by the more venturesome. Modeling influences can weaken conventional inclinations by exemplifying novel responses to common situations. People exposed to divergently thinking models are indeed more innovative than those exposed to models who behave in a stereotyped conventional fashion (Harris & Evans, 1973). Although innovative modeling generally enhances creative ideas in others, there are some limits to this influence. When models are unusually productive and observers possess limited skills, their creative efforts may be self-devalued by the unfavorable comparison. Prolific creative modeling can thus dissuade the less talented.

**Other Modeling Effects**

Models do more than teach novel styles of thought and conduct. Modeling influences can strengthen or weaken inhibitions over behavior that observers have previously learned (Bandura, 1971b). Behavioral restraints are most strongly developed by observing the consequences experienced by models. Seeing models punished tends to inhibit similar behavior in others. Conversely, seeing others engage in threatening or prohibited activities without adverse consequences can reduce inhibitions in observers. Such disinhibitory effects are most strikingly revealed in therapeutic applications of modeling principles (Bandura, 1976a; Rachman, 1972). Exposure to models performing feared activities without any harmful effects weakens defensive behavior, reduces fears, and creates favorable changes in attitudes.

The actions of others can also serve as social cues for eliciting preexisting behavior. Response facilitation is distinguished from observational learning in that nothing new is learned, and from disinhibition, because the behavior is socially acceptable and therefore is unencumbered by restraints. In response facilitation, the modeled actions function simply as social prompts. Inhibitory and disinhibitory effects
of modeling are analyzed later in the context of vicarious reinforcement, and social facilitation is examined in the discussion of situational antecedents of behavior.

Modeling influences can have additional effects, though these may be less important. The behavior of models draws attention to the particular objects chosen from the available alternatives. As a result, observers may subsequently use the same objects to a greater extent, though not necessarily in the same way. In one study, for example, children who had observed a model pummel a doll with a mallet not only imitated this specific action, but also used the mallet more in other activities than children who did not see this particular instrument used by others. Finally, observing affective expressions produces emotional arousal, which tends to increase responsiveness. The overall evidence thus reveals that modeling influences can serve as instructors, inhibitors, disinhibitors, facilitators, stimulus enhancers, and emotion arousers.

DIFFUSION OF INNOVATION

The discussion thus far has been concerned mainly with observational learning at the individual level. Modeling also plays a prime role in spreading new ideas and social practices within a society, or from one society to another. Successful diffusion of innovation follows a common pattern: new behavior is introduced by prominent examples, it is adopted at a rapidly accelerating rate, and it then either stabilizes or declines depending upon its functional value. The general pattern of diffusion is similar, but the mode of transmission, the speed and extent of adoption, and the lifespan of innovations varies for different forms of behavior.

Social learning theory distinguishes between two processes in the social diffusion of innovation. These are the acquisition of innovative behaviors and their adoption in practice. With regard to acquisition, modeling serves as the major vehicle for transmitting new styles of behavior. The numerous factors that determine observational learning, discussed earlier, apply equally to the rapid promulgation of innovations.

Symbolic modeling usually functions as the principal conveyance of innovations to widely dispersed areas. This is especially true in the early stages of diffusion. Newspapers, magazines, radio, and television inform people of new practices and their likely benefits or risks. Early adopters therefore come from among those who have had greater exposure to media sources of information about the innovation (Robertson, 1971). After novelties have been introduced symbolically, they are disseminated further to group members through personal contact with local adopters (Rogers & Shoemaker, 1971). When the influence operates through direct modeling, adoptive behavior tends to spread along existing networks of interpersonal communication. If the behavior is highly conspicuous, however, it can be learned from public displays by people who are unacquainted with one another.

Modeling affects adoption of innovations in several different ways. It instructs people in new styles of behavior through social, pictorial, or verbal display. Observers are initially reluctant to embark on new undertakings that involve risks until they see the advantages gained by early adopters. Modeled benefits accelerate diffusion by weakening the restraints of the more cautious potential adopters. As acceptance spreads, the new gains further social support. Models not only exemplify and legitimate innovations, they also serve as advocates by encouraging others to adopt them.

The acquisition of innovations is necessary but not sufficient for their adoption in practice. Social learning theory recognizes a number of factors that determine whether people will act on what they have learned. Stimulus inducements serve as one set of activators. In the consumer field, for example, advertising appeals are used extensively to stimulate consumers to purchase new products. Fashion industries saturate the market with new styles and reduce the availability of the fashions they wish to supplant. Different sources of mass communication furnish prompts from time to time for new technologies, ideologies, and social practices. The more pervasive the stimulus inducements, the greater the likelihood that learned innovations will be tried.

Adoptive behavior is highly susceptible to reinforcement influences. People will espouse innovations that produce tan-
Adaptive behavior is also partly governed by self-generated consequences to one's own conduct. People readily espouse what they regard as praiseworthy but resist accepting innovations that violate their social and moral convictions. Self-reinforcing reactions are not insulated from the pressures of social influence, however. People are often led to behave in otherwise personally devalued ways through diffusion strategies that circumvent negative self-sanctions. In the marketing field, for example, new products are presented in ways that appear compatible with prevailing values. Energy-consuming devices are advertised in the name of conservation; consumer conformity is promoted in the name of individualism. Similar processes operate in the promulgation of behavior having moral implications. People who are ordinarily considerate will engage in reprehensible conduct after it has been redefined in acceptable terms.

Innovations spread at different rates and patterns because they have different requirements for adoption. These serve as additional factors controlling the diffusion process. People will not adopt innovations even though they are favorably disposed toward them if they lack the money, the skills, or the accessory resources that may be needed. Some innovations are more subject to social prohibitions, which yield additional influence over what is adopted.

Among innovative behaviors, none have been scrutinized more intensively than those in the consumer field. Because of the critical role played by initial adopters in the diffusion process, much of the research is aimed at determining whether those who are quick to try new things possess distinguishing characteristics. If certain identifiable types of individuals are the first to adopt new ideas and products, the initiation of the diffusion process could be regulated by directing promotional appeals at them. These early adopters would, in turn, influence others through their trend-setting example.

In more sophisticated investigations, the rate of adoption is plotted over time and the diffusion curve is segmented into innovators, first adopters, later adopters, and finally the laggards. Researchers then examine whether people at the successive stages of adoption differ in any way. It is easy to section diffusion curves best site...
ences between early and late adopters are generally assumed to arise from their personal characteristics or their social and economic circumstances. Late adopters and laggards presumably wait to see the benefits gained by innovators before trying new things themselves. In fact, some of the variations in time of adoption partly result from differences in when people are first exposed to new products or fashions. Temporal analysis of diffusion may therefore yield misleading results if individuals are not equated for the time and the amount of initial exposure.

As we have already seen, the primary determinants of adoptive behavior are the influences closely tied to it—the stimulus inducements, the anticipated satisfactions, the observed benefits, the experienced functional value, the perceived risks, the self-evaluative derivative, and the various social barriers and economic constraints. The influential ingredients will vary across products. Those that are publicly conspicuous, as in the case of clothing one wears, will be under greater social control than products that are used privately. In the case of highly expensive items economic factors may outweigh social ones. For this reason, adoption determinants are not generalizable across products, unless they fall in the same class. There is little reason to expect that someone who is innovative in Paris fashions will also be innovative in dishwashing detergents. Adoptive behavior, then, is best analyzed in terms of controlling conditions rather than in terms of types of people. Specificity of innovation is by no means confined to products. It applies equally to the spread of new ideas, as in the innovation and diffusion of public policies across states (Gray, 1973).

In sum, modeling serves as the principal mode of transmitting new forms of behavior, but those who have access to instruments of influence can exercise only partial control over the diffusion process. Not everything that is modeled becomes popular. Dispositional characteristics are of limited value in predicting who, from among the vast assortment of potential adopters, will be most receptive. Social and economic factors, which partly regulate adoptive behavior, set limits on the power of persuasion. Nevertheless, by operating on the deter-

minants they can control, marketers help shape the public tastes and lifestyles.

Many of the preceding illustrations involve diffusion of behavior that is not only allowed socially but is commercially promoted. The adoption process, as revealed by incidence rates, is similar for activities that are socially prohibited. Spread of new styles of collective protest and aggression, for example, conforms to the generalized diffusion pattern (Bandura, 1973). As a rule, however, there is a greater time lag in widespread adoption of disassociative than of prosocial styles of behavior.

The differential consequences and social inducements associated with various forms of conduct likely account for the temporal variations between exemplification and subsequent adoptions. As we have seen, early adoption of prosocial novelties usually gains the user status. In contrast, behavior that is forbidden by law or by custom carries risk of punishment. It therefore requires the cumulative impact of salient examples to reduce restraints sufficiently to initiate a rise in the modeled behavior. Even under weakened inhibitions, antisocial conduct requires the coexistence of strong aversive inducements or anticipated benefits before the behavior will be adopted.

The analysis of diffusion so far has been largely concerned with the spread of behavior within a society. Revolutionary advances in communications technology, which vastly expand the range of influence, have transformed the social diffusion process. Through the medium of satellite television systems, ideas, values, and styles of conduct are now modeled on a worldwide scale. In the coming years, the electronic media will play an increasingly influential role in the process of intercultural change.