

**Personality and Attitude Change:
An **Information-Processing**Theory**

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THE NATURE OF A SYSTEMS THEORY

A scientific theory is a packed down synopsis of obtained relationships. It is when knowledge obtains this form that the information gained through experimental investigation becomes, not just the joy of the individual researchers who make up the invisible college in the area, but a lasting heritage of the broader scientific and public circles in which the invisible college exists and is sustained. While the isolated experiment may be the hope and the despair of the scientist who conducts it, its results are seldom inspiring to the outside reader. Only when the results of numerous individual studies are brought into conjunction with one another does a general theoretical housing emerge that makes the numerous individual studies seem worthwhile to the outside observer. The individual study, isolated from any such broader theoretical contacts, sometimes even elicits the ridicule of the layman, whether

we mean here the alert member of the general public, the scoffing legislator at the annual hearing of a subcommittee on research appropriations, or even the members of one's own discipline whose work falls under another rubric.

It seems to me that social psychology is currently going through a phase in which the packing down and distilling of broad areas of knowledge is somewhat out of favor. Two other styles of work seem to be more in fashion today. An appreciable number of productive work-

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ers focus on a very narrow series of accumulative experiments (on topics such as the effect of adjective combinations on impression formation or the effects of varying payoff matrices on cooperative choices in prisoner's dilemma games.) This is indeed cumulative research as one hopes for in science, but it tells all but the initiates more about the phenomenon under investigation than they really want to know. A second currently fashionable style of work, more comprehensible to the outsider, but also tending to arouse the puritanical indignation of some (McGuire, 1967; Ring, 1967), involves moving around rapidly by applying a clever theoretical notion to one area after another in a series of demonstration experiments. These and other styles of research do contribute to the general scientific enterprise and we suspect that each researcher is most productive when allowed to do the kind of work he feels to be most stimulating. Hence, we would be satisfied to see those who resonate with the current fashions continue such work styles. We are advocating that the currently neglected enterprise of broader theorizing be added to, rather than replace, these other worth-while aspects of the total scientific endeavor. Indeed, broader theorizing is possible only when the more focused and specific workers actively pursue their experimentation.

Theoretical housings of the type we have in mind here might be called **"systems"** theorizing. They are designed for middle range problem areas (such as the topic on which we focused in this chapter, personality factors in attitude change) which would probably be considered uncomfortably broad by the straight-line experimenter and esoterically narrow by the nonexpert. The

systems theorist tries to weave together the specific lines of research and the isolated experiments to formulate a theoretical housing that will subsume and give coherence to the reliable information we currently have about relationships in the given area and will suggest new relationships for further investigation. A notable example of systems theorizing is Hullian Behavior Theory which was formulated to subsume a variety of accepted empirical relationships in the area of simple human and animal learning. Hull's formulation happens to be a partial progenitor of the learning theory formulations presented in several chapters of this book and so serves conveniently here to depict several characteristics of the approach. Systems theorizing involves asserting a series of postulates that can generate the observed relationships in the area. They can be derived from various sources, including induction from common sense observations of the natural world, analyses of the results of experiments conducted under refined laboratory conditions, creative inspiration based on analogy, functional analysis, etc. These postu

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lates tend to be logically independent of one another; the main thing they have in common is that each bears on the area for which the theoretical housing is being developed and is felt to account for some of the variance in the behavior of interest. In [Hullian **Behavioristics**, these postulates have to do with frequency of reinforcement, drive level, stimulus generalization, work inhibition, conditioned inhibition, etc., as they affect performance. The purpose of assembling such a set of postulates is to systematize and clarify existing knowledge and to generate new, testable hypotheses to extend that knowledge. Developing and testing a systems theory presents a number of difficult problems owing to the unrelatedness and open-endedness of the list of fundamental postulates. Since one can start with any set of postulates and enlarge the set indefinitely, such a theory is potentially nonparsimonious, inelegant, and untestable. It is hard to ascertain whether adding a postulate

produces any considerable increase in explanatory power or is simply redundant with the previous assumptions. Any empirical embarrassment which the theory encounters in principle can be removed by the addition of a new postulate. There seems to be an inherent danger in this indefinite salvageability of a systems theory. We can make it suffice as a **product** simulation of the behavior with which we deal by shoring up any initial list of postulates (which might provide an inadequate process simulation) by the endless addition of new assumptions that lead us further and further into a misunderstanding of the processes involved.

A number of expedients can be taken to minimize these inherent dangers in systems theorizing, some appropriate at the stage of theory formulating and others at the stage of theory testing. In the theory formulating stage, one takes into consideration that not all the possible postulates are equally important to the theory. They differ in attractiveness in a number of regards including relevance to the phenomenon being described, extent to which we are confident in their validity on the basis of experimental data or on other grounds, their independence of the other postulates in the system, etc. In constructing a systems theory it is useful to take such information into account. An appropriate procedure is the one which [I] happened to use, namely, a functional analysis. This involves examining the demands which the environment in which he evolved puts on the person in the behavioral area that the theory is supposed to cover (see McCuire, **1968a**, for a fuller discussion of this heuristic). The problem is one of **teasing** out the essential survival problems in this area and assuming that the human operates on principles that allow him to cope with these problems in an economical fashion. (Admittedly, this heuristic

assumes that the human has evolved with an optimal solution.) As the most fundamental postulates purportedly describing how humans function in the area, the theorist selects the principles which would best allow a person to cope with the fundamental survival problem in the area or utilize the most

valuable survival opportunity. To such primary postulates, the theorist adds secondary and tertiary ones which serve as correctives to prevent excessive operation on the

principles embodied in the primary postulates or as refinements **allow** the differential **operation** of these fundamental principles (ICpending upon the particular situation. In our systems theory to handle personality factors and attitude change, we followed this heuristic strategy. We viewed the basic survival opportunity as openness to useful information and guidance from other people, with a necessary **corrective** of critical evaluation and useful refinements having to do with situational specificity.

While such caution during the theory-construction phase somewhat minimizes the peril that this type of theorizing will lead us further and further into a blind alley, any carelessness during the theory formulation, however sophisticated, only lessens rather than eliminates the danger. It is always possible by the addition of new postulates to the system to "save the appearances," if we may use that Hellenic expression. Our anxieties to assure testability are partly mitigated by confidence that the esthetic needs of scientists will not allow such a post factum salvaging to proceed indefinitely. If the multiplication of assumptions proceeded endlessly, the theoretical structure in which we seek to house the obtained relationships in the area would become so unesthetic that the theoretical approach will finally be abandoned, if not by the theory's progenitor himself, at least by the young people entering the area, with less investment in and imprinting on the old paradigm. Also, another testing consideration limits the endless multiplication of assumptions. As each new postulate is added to the system to account for observed empirical discrepancies from the old deductions, the addition adds multiple new predictions in terms of interaction effects with many of the old postulates. Hence, many possible postulates whose addition would yield a main effect to account for a particular observed discrepancy would have to be rejected immediately because they also yield interaction predictions which are disconfirmed by existing, or easily obtainable data. It is this consideration that leads us, in our systems theorizing regarding personality factors in attitude change, to stress the importance of interaction predictions.

In this section we shall first describe the existing body of knowledge about personality and attitude change relationships on which we

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built the present systems theory and then outline the theory itself. The first topic involves marking out the subject matter area to which the theory is meant to apply and sketching briefly the state of our knowledge in that area at the time the theory was formulated. The second topic, depicting the theory itself, involves describing the three postulates and two corollaries that make up the core of the predictive system.

THE STATE OF THE QUESTION

Scope of Our Theory

The terms "personality" and "attitude change" are both used in a broad sense in the current discussion, so that the present theory covers a fairly wide area. By personality we have in mind any variable on which people differ, including factors like intelligence, demographic variables like age and sex, and dynamic characteristics like anxiety and self-esteem. Some would consider the latter as most appropriately called personality variables. Hence, considering the intended scope of the present theory we might more appropriately refer to "individual difference factors" rather than "Personality factors in attitude change. Since the experimental data in terms of which we shall discuss the theory here deal with dynamic factors like self-esteem and anxiety, we cautiously used the narrower term in our present chapter title. However, the theory is intended to apply equally well to any individual difference characteristic (and indeed, to other kinds of independent variables) as they affect attitude change. The applicability of the theory is also rather general on the dependent variable side. While we have used attitude change in the title, the

theory is meant to apply to all social influence situations whether they involve suggestion, conformity, persuasion, etc., and whether the target measure is cognitions, affect, gross behavior, etc. The theory is designed to account for the relationships between any individual difference characteristic and susceptibility to social influence in any situation. Hence, the theory applies to how individual difference characteristics will be related to hypnotic or waking suggestibility (as in Hull's [1933] body sway inductions); and to conformity to authority or group consensus (as in the Sherif [1935] or Asch [1956] conformity situations); and to mass media persuasibility (as in Hovland's [1954] communication situations).

We have argued elsewhere (McCuire, 1968a) that the relationship of personality characteristics to susceptibility in any one of these types of social influence situations cannot be directly generalized to

the others. It might seem at first glance that if this contention of specificity is valid, one should study personality correlates separately in each type of influencibility situation. However, we think that the specificity is an attraction, rather than a deterrent to studying several of the situations in conjunction. Under these circumstances we think that the more inclusive study yields a whole which is greater than the sum of the parts. While each type of situation studied in isolation gives us certain information about personality relationships to influencibility, when studied in conjunction we have the further dividend of obtaining information on interaction effects also. These interaction effects indicate more clearly the nature of the underlying processes in each of the influence situations. Hence, in constructing the present systems theory, as well as in testing it, we are attempting to account for the relationships of any type of individual difference characteristic to susceptibility in any type of influence situation. Due to this fairly broad scope, it is inevitable that the theory will be fairly complex, with a variety of orthogonal postulates. It also follows that the appropriate experimental designs will be rather complicated so as to yield information on higher order interaction effects.

State of the Empirical Knowledge

Scientific researchers are very diverse as regards their attitudes toward the antiquity and popularity of their area of study. At one extreme, there are the numerous researchers given to regarding their work as created *ex nihilo*, a brave new area of study not even thought of until their investigations began. These researchers often seem to be reinventing the wheel and as having to recapitulate phylogeny due to their failure to recognize that there is an already existing scholarly foundation on which they might build. At the opposite extreme, also well occupied, are those who tend to regard their current research as the culmination of a straight-line evolution that the science has been pursuing since its birth. To the outsider, these parochial imperialists present the same spectacle as does Father Knickerbocker as he depicts human history as a rather slow moving preparation for the founding of the City of New York. The first group experiences anxieties if the specter of related past work is raised to threaten their feelings of originality. Those at the latter extreme suffer separation anxiety unless they can establish that their work is in the mainstream of their discipline's development and so focused on its perennial problems. At the risk of seeming to be in the latter group, we claim that susceptibility to social influence is the oldest individual difference variable as well as the oldest topic in social psychology to receive scientific attention.

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Susceptibility to social influence was first investigated in its special aspect of suggestibility. The famous controversy between the schools of Nancy and Paris over the generality of suggestibility (which brought into confrontation Liebeault and Beruhheim against Charcot and Janet) is a well-known incident in the history of psychology and psychiatry. That this controversy is of venerable age (as experimental psychology goes) is illustrated by the fact that Binet published several volumes of investigation in support of the Paris School before he

turned his attention to the measurement of individual differences in intelligence, for which he is now somewhat better known.

Even if the claim of absolute antiquity is somewhat exaggerated, it seems undeniable (McGuire 1968a) that interest in this topic of influencibility developed early and has continued unabated. As a result of this long interest there is a vast literature on the topic and a considerable body of experimental results regarding personality-susceptibility relationships (McGuire, 1968a, b). This literature consists largely of reports of isolated experiments, done to test ad hoc hypotheses rather than to test the implications of a general theory. These studies generally disregarded all but a few earlier studies done in the area. As a result, the conditions of the various experiments differ widely as regards the subjects used, the types of influence indications employed, the effects measured, etc. Not surprisingly, the results of the separate experiments do not neatly supplement one another, and where they are relevant to one another, they seem mutually contradictory as frequently as they replicate or extend one another.

We can illustrate this confused state of affairs by adverting to a single personality variable, that of self-esteem. This choice is hardly an atypical one since this variable and anxiety constitute the two most popular individual difference characteristics that have been studied for their attitude change relationships. The untidy nature of the corpus of results can be illustrated without our going back to Paris at the turn of the century. The past dozen years of progress will suffice to show the upward and onward movement of this confusion. In 1954 the answer regarding the relationship between self-esteem and influencibility seemed simple if somewhat ambiguous. In that year, Janis (1954) found a negative relationship between self-esteem and influencibility. At about the same time McGuire and Ryan (1955) found a positive relationship between these two variables. In general, a fairly simple if unclear picture was indicated such that influencibility either increased or decreased with increasing self-esteem. A dozen years later, the answer regarding this relationship seemed less simple but no less ambiguous. Cox and Baner (1964) found all inverted-U-shaped nonmonotonic relationship between influencibility and attitude

change. Simultaneously, Silverman (1964) found a nonmonotonic relationship of upright-U shape. Hence, it now appeared that self-esteem is nonmonotonically related to influencibility with the maximum, or perhaps minimum, influencibility occurring at intermediate ranges of self-esteem. It is from this nettle of confusion that we hope to pluck the flower of truth.

To save the appearances of so complex a set of results as this, the reader should not expect a simple theory. Hence in anticipation of our ponderous theoretical apparatus of three postulates and two corollaries, we appeal to the unembarrassed assertion by Irving Sarnoff (personal communication) that, "If you are describing a pretzel shaped universe, you may have to use pretzel shaped hypotheses." Indeed, the systems theory that we present here is only part of the story developed elsewhere (McGuire, 1968a). And it must be admitted that even that broader and more complex theory does not suffice to subsume the Silverman upright-U relationship mentioned above, though it will handle the other three types of relationships just cited. Our embarrassment at not being able to work Silverman's results into the theory is somewhat lessened by our impression that it is an extremely rare finding and that Silverman himself has subsequently reported the exact opposite nonmonotonic relationship more in accord with Cox and Bauer's finding as well as the present theory (Silverman, Ford, & Morganti, 1966). Nevertheless, it would be well to keep in mind that there do exist some obtained relationships that are wildly discrepant from what even our complex and eclectic theory can handle.

POSTULATES FOR A SYSTEMS THEORY OF PERSONALITYINFLUENCIBILITY RELATIONSHIP

While it is an advantage of systems theorizing that it can select its postulates eclectically, we have already indicated some reasons why this selection should be disciplined by a general orientation lest the system become unwieldy, untidy,

and untestable. Behind the formulation we are presenting here lies a general Markov chain, information-processing conceptualization of the social influence process. We shall first describe this general conceptualization and then present the three postulates and two corollaries to which it gives rise.

The General Conceptualization of Social Influence Processes

We follow M. Brewster Smith (1965) by maintaining that research on attitude change derives from four broad approaches: information-

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processing theory, perceptual theory, consistency theory, and functional theory. Our present formulation about personality relationships in the attitude change area falls quite clearly under the information processing rubric (which elsewhere we have called the "learning theory" approach), and so we shall here confine our discussion to it. We have discussed both it and the other three theoretical approaches more fully elsewhere (McCuire, 1968a, b). Use of the information processing approach involves predicting how an independent variable will be related to attitude change by analysis of that variable's likely effect on learning the contents of the social influence communication. The guiding idea here is that an essential problem in a social influence situation is adequate reception of the persuasive message. At a minimum, it is assumed that the extent to which a person is influenced by a message will be positively related to the extent to which he attends to and comprehends its persuasive content. Use of this approach, then, involves predicting how any independent variable in the communication situation (such as order of presentation, source credibility, level of fear appeal, receiver's self-esteem, time since message receipt, etc.) will be related to attitude change by analyzing that variable's likely impact on learning the message contents. Hence, if there is a primacy effect in learning, then one is predicted also as regards opinion change; if there is a negatively decelerated decay in retention of message content, a like function is predicted as regards the persistence of induced attitude change, etc. A version

of this rather simple-minded depiction of the attitude change process lies behind the present theory.

The guiding idea of our information-processing conceptualization is actually somewhat more elaborate **than** the impoverished learning theory approach just depicted. The social influence process is visualized as a six-step Markov chain. That is, for attitude change to be induced, there must occur six successive steps, each dependent on the previous step as a necessary but not sufficient condition. First of all, there is only a certain probability that a persuasiveness message will actually be communicated; factors affecting this variable are studied mainly by people who work in the mass communication and content analysis areas. There is then some conditional probability that the subject will adequately attend to such a message if it is presented. Given that he attends adequately, there is only some probability that he will sufficiently comprehend the arguments and conclusions being urged in the message. It is usually hard in practice to distinguish operationally between these second and third steps of attention and comprehension. We can, however, measure them jointly by administering a reading comprehension test that measures how well the person can

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report the message content, as compared with a control subject who has not been exposed to the message. His score on this test of recall provides a measure of how well he attended to and also comprehended the contents, without clarifying whether failures of recall were due to inadequate attention, inadequate comprehension, or both. Perhaps new techniques (such as pupil dilation) will someday allow us to get a direct measure of attention and thus allow us to tease out the relative contribution of these two mediators. At the present stage of applying this model, we make no attempt to separate the second and third processes empirically.

To continue our depiction of the six-step process beyond this third stage of comprehension, it can then be said that given adequate message comprehension, there is only some probability that the person will yield to and be convinced by the arguments which he has heard. The typical one-session

laboratory experiment on attitude change usually measures the process only up to this fourth step, by introducing immediately a post communication opinionnaire to measure the extent to which the person actually agrees with the conclusion argued. This agreement level, as compared to his precommunication level of agreement or the agreement level of a control group who has not heard the communication, indicates the attitude change produced by the message. A fifth step must be considered when, in most natural environment research and some laboratory experimentation on attitude change, impact is measured only after some time has passed. Even where the person immediately yielded to the arguments, there is only some probability that he will retain his newly adopted position until the delayed measure is made. Furthermore, the measure of attitude change impact often involves some gross behavior (such as buying, voting, contributing, etc.) which has only a certain probability of occurrence, even given that the ideological yielding is retained, which introduces a sixth step into the total process.

In our present development of this six-step formulation into a systems theory for personality relationships in the attitude change area, we shall adopt some simplifications that facilitate exposition and experimentation without being intrinsic shortcomings in the formulation. One simplification is that we shall not here discuss the last two steps in the chain, retention and derivative overt behavior. Rather, we shall adopt the experimental conveniences of analyzing the persuasion process only as far as the yielding step; that is, we shall measure the attitude change impact in terms of opinionnaire responses obtained shortly after the presentation of the persuasive communication. A second simplification, the reasons for which were indicated above,

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is that we will not try to measure separately the attention and comprehension steps, but rather measure them jointly by the score obtained on an immediate test of retention of message contents. A third simplification, again conventionally adopted for experimental convenience, is that we shall not allow the first step, message presentation, to be a variable under the subject's control.

Rather, we shall use the standard laboratory technique of presenting standard persuasive communications to some groups while presenting none or other standard messages to other groups. This abbreviated systems theory of the attitude change process constitutes the motivation behind the several postulates regarding personality-influencibility to which we now turn.

Postulate I: The Multiple-Mediation Assumption

Our first postulate simply makes explicit the common sense essence of the information-processing approach: that any personality characteristic (or indeed any independent variable in the communication situation) can affect attitude change by having an impact on any one or more of the mediational steps just outlined. Thus, if we ask what is the relationship between self-esteem and influencibility, we can find an adequate answer only by analyzing the likely impact of self-esteem on each of the mediators, including the attention to and comprehension of the message, as well as the yielding to what is comprehended. The necessity for making this point explicit derives from the fact that in most conventional thinking about personality-influencibility relationships, there is an overemphasis on the mediational role of yielding.

This overemphasis on the yielding mediator can be illustrated anecdotally by asking a layman to conjecture regarding the relationship between intelligence and persuasibility. He is likely to suggest that the more intelligent people tend to be less persuasible. When pushed to account for this prediction, he suggests that the more intelligent person tends to be less yielding to social influence attempts since he has more information to bolster his initial opinion and is better able to see the flaws in the arguments used in the persuasive message; moreover, the highly intelligent person is typically more confident in himself and more willing to maintain a position discrepant from peer or authority sources. It will be noted that all of these explanatory concepts have to do with the yielding mediator and overlook completely the reception mediator. That is, they disregard the impact of intelligence on attention to and comprehension of

the message. But while the yielding mediator indicates a negative relationship between intelligence and persuasibility, it seems reasonable to conjecture posi

tive relationship between the two on the basis of the reception mediator. The more intelligent person tends to have more interest in the outside world and thus be more attentive to persuasive messages; he will be better able to understand the conclusion being urged and the relevance of the arguments presented. This failure to take into consideration this mediational role of reception makes it difficult to account for certain obtained results. For example, U.S. Army personnel in World War II tended to be more influenced by the "Why We Fight" to the extent that they were better educated (Hovland, Lumsdame, & Sheffield, 1949). This type of result becomes more comprehensible when we realize that even these open propaganda films had sufficient subtlety so that the superior receptive capacity of the more intelligent soldiers made them more vulnerable to being influenced than did their superior critical ability protect them from influence via the yielding mediator. In general, postulate I calls our attention to the fact that to predict how a characteristic like intelligence is related to influencibility we must consider the impact on the reception as well as yielding mediator.

Postulate II: The Compensatory Assumption

If our first postulate simply made explicit a common sense analysis, our second postulate might seem by contrast to be outrageously arbitrary. It asserts that the mutually opposite operation of the two mediators, reception and yielding, as was just described in the case of intelligence, is typical of personality-influencibility relationships. That is, any personality characteristic which has a positive relationship to reception, tends to be negatively related to yielding, and vice versa. We are assuming here that

nature is deliciously equitable so that any characteristic which makes an individual vulnerable to social influence through one of the mediators tends to protect him from influence via another.

Since we posit this compensatory principle as an initial postulate, technically we do not have to justify it except by demonstrating its usefulness in yielding valid predictions. Yet its apparent arbitrariness moves us to argue that such a dynamic equilibrium situation is made plausible by considerations of engineering efficiency, by the data available in the literature, and by esthetic speculations that border on the theological. Since these justifications are discussed more fully elsewhere (McGuire, 1968a), we shall not review them here. Our position on this point is rather analogous to that of Neal Miller regarding the assumption in his conflict theory that the avoidance gradient is steeper than that for approach. One presents reasonable arguments

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based on data or considerations of efficiency why this state of affairs should widely obtain. But if delayed too long by an obstinate critic, one adopts the fall-back position that this state of affairs may not be universal, but that one's exposition will deal only with situations in which the posited conditions do obtain. We shall simply state here that we think the compensatory principle holds very generally; but that in any case we are simply dealing with personality-influencibility relationships in which it does hold. More specifically, we maintain that it does hold in the case of the two most frequently studied personality variables in attitude change research, anxiety and self-esteem, on which the empirical work discussed here has been focused. Anxiety, for example, is assumed to be negatively related to the reception and positively to the yielding mediator; while self-esteem is assumed to have the opposite relationships (see McGuire, 1968a, for a fuller discussion of these assumptions).

Two corollaries can be derived from this compensatory principle. The first corollary is that, because of the compensatory contributions of the two

mediators, the overall relationship between the personality variable and attitude change will tend to be nonmonotonic with maximum influencibility found at some intermediate level of the personality characteristic. It can be shown that when such a compensatory, dynamic equilibrium situation obtains as regards the mediators, the overall relationship will tend to be of this inverted-U shape under a wide range of parametric conditions. This type of model has appeared in many areas of psychological research and so will be familiar to many readers. The algebraic considerations and the empirical basis for this model in the personality-influencibility area have been presented elsewhere (McCuire, 1963, 1968a) so that we shall here simply state the corollary without seeking to justify it.

The second corollary following from the compensatory principle has to do with the interaction between chronic and acute variations in personality characteristics. We refer here to the person's chronic level on a personality variable, such as his natural persisting level of anxiety, as compared with his acute level on this variable produced by a momentary situational or experimental manipulation of his anxiety by exposing him to frightening conditions. This second corollary states that an experimental manipulation of acute anxiety (or any other personality characteristic) will have an effect on influencibility that depends upon the person's chronic level on that variable. More specifically, raising one's acute anxiety by some fear induction (or his self esteem by an experience of success) will tend to increase the person's influencibility, if he is chronically quite low on these variables, and

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will tend to decrease his influencibility, if he is chronically high on them. That this corollary would follow from the compensatory postulate and its nonmonotonic corollary can be grasped if one visualizes the inverted-U shaped curve, with the chronically low person lying to the left of the inflection point and the chronically high near or to the right of this point. If the laboratory induction adds a fixed increment to the chronic level this interaction effect would follow.

A parenthetical caution is in order regarding this second corollary as it bears on the acute versus chronic question. We regard it as valid as far as it goes, but also as inadequate in portraying the true complexity of the relationship between the acute and the chronic variations in a personality characteristic. This corollary considers the two types of variation as essentially equivalent and additive. In the fuller depiction of the systems theory which we present elsewhere (McGuire, 1968a), we deal with a fourth postulate, not considered in the present chapter, which complicates the picture described here. Specifically, it assumes that the person's chronic natural level on a given personality characteristic is imbedded in a matrix of related traits which help him to cope with the problems to which this chronic level exposes him. The situationally induced, acute level of the variable constitutes a "purer" manifestation of the characteristic, without the imbeddedness in compensatory traits. We shall do no more here than caution the reader that this second corollary should not be taken as the whole story regarding the personality-influencibility relationship that one would find with acute as compared with chronic variations in the characteristic.

Postulate III: The Situational Weighting Assumption

The operationalists among us tend to reach for our guns when we come upon a theory that predicts nonmonotonic relationships. Such a formulation, when put forward in an area as qualitative and unspecific regarding its parameters as is typical in psychological work, can be the last refuge of scoundrels, because it is able to account for almost any obtained relationship. If the data indicate a positive relationship between the independent and the dependent variables, the theorist can say that the sampled range of the independent variable was to the left of the inverted-U inflection point; if a negative relationship is obtained, he can say it lay to the right; if no relationship is found, he can say that his two conditions lay on opposite sides of the inflection point. So many different outcomes would be in accord with such a theory, that its scientific status is threatened by the difficulty of specifying any outcome that would disconfirm it. The third postulate at-

tempts to tie down the theory somewhat, by specifying some of the parameters at least in an ordinal sense, so that certain outcomes, particularly as regards interaction effects, would be embarrassing to the theory. Postulate III asserts that the precise shape and location of the inverted-U relationship between individual difference characteristics and susceptibility to social influence will vary with specifiable aspects of the communication situation.

This third postulate capitalizes on our having sufficient knowledge of some social influence situations so that we can specify systematic differences among them as regards the extent to which the several mediators contribute to the covariance between the personality characteristic and the attitude change effect. Some social influence situations allow much more individual difference variance as regards the mediational role of attention and comprehension of the persuasive materials than do others. For example, the **typical** suggestion situation entails a very repetitive message such as a three minute recital to the effect that "you are falling back, back . . ." which seems so clearcut that any normal college sophomore presumably can grasp the gist of it. Hence, a personality variable's relationship to receptivity would be unimportant in determining its relationship to susceptibility to such suggestion. In suggestion situations the personality variable's relationship to the yielding mediator carries most of the weight in establishing its relationship to attitude change. A much different reception weighting would obtain in many of the laboratory and field persuasion situations which involve argumentative messages of greater subtlety. For example, a persuasive message designed to enhance the attractiveness of a product or a politician via a mass media or in face-to-face presentation typically allows for much more variance in message reception. Illustrative would be the World War II "Why We Fight" films of the U.S. Army which were mentioned above. With these moderately complex messages, the personality variable's relationship to attention and comprehension will have some important weight in determining its ultimate relationship to attitude

change. The audiences of the mass media, and even the subjects in laboratory research on attitude change, tend to have little intrinsic interest in the topics discussed in the persuasive message so that their attention to and learning of its contents tend to be rather precarious. Hence, one can expect considerable individual difference variance in message comprehension even when the communication situation might seem relatively simple to academicians.

Just as we can design the social influence situation so as to vary the reception mediator's weight in determining the personality-influencing

bility relationship, so we can select situations so as to manipulate the variance due to the yielding mediator. For example, some topics are so culturally defined as "matters of fact" that almost any college sophomore will be inclined to yield completely to the persuasive message insofar as he understands it. The exposition of a scientific theory, as presented by a physics instructor to the college sophomore, would constitute such a situation. Here we would expect that the relationship of a personality characteristic to the amount of attitude change achieved by such a lecture would be mediated almost entirely by that characteristic's relationship to the reception mediator. On the other hand, there are situations dealing with matters of taste, such as the relative attractiveness of two motion pictures, in which we would expect considerable individual difference variance in the yielding mediator. In these latter cases, the personality characteristic's ultimate relationship to attitude change would be much affected by its relationship to the yielding mediator.

In this discussion of the situational weighting postulate, we have been fairly programmatic and qualitative. Elsewhere (McCuire, 1968a) we have argued that it would not be prohibitively difficult to obtain a more exact analysis of the contributions of the several mediators to the attitude change variance in a variety of social influence situations. Until such an analysis has been achieved, we can at least make certain types of interaction predictions; for example, when we contrast simple and unambiguous conformity situations with more subtle argumentative persuasion situations, as described above. The reception

mediator can be assumed to play a larger role in determining the personality-influencibility relationship in the latter situation. We can, therefore, predict that the relationship of a variable like intelligence to attitude change will be predictably different in one of the situations as compared to the other. Specifically, the level of intelligence which produces maximum influencibility will be higher in the latter situation than in the former. The strategy in the research discussed below is to derive from the theory predictions regarding these situation-personality interaction effects as regards attitude change.

General Strategy for Testing the Theory

The generic concept imbedded in the theory we have been displaying here is that a personality characteristic over its whole range will exhibit a nonmonotonic relationship to influencibility. Further, a whole family of these inverted-U functions are derivable, such that the vertical and horizontal displacement of the inflection point (the

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level of the personality characteristic at which maximal attitude change occurs) varies from situation to situation in predictable ways in accord with the absolute and relative weightings of the variance mediated by the reception and the yielding processes. Predictions from the theory can be tested in terms of within and between experimental comparisons from research already reported in the literature, as we have attempted to demonstrate elsewhere (McGuire, 1968 a,b). In this chapter we will evaluate the theoretical formulation in terms of two experiments designed specifically to test its derivations. These two studies were designed to test predictions regarding an overall nonmonotonic function, situational differences in the location of this function and interactions between chronic and acute variations of the personality characteristic. In the next section these two experiments and their implications for the present

formulation will be discussed.

TWO EXPERIMENTS Designed TO TEST THE SYSTEMS THEORY

A systems theory is developed to some extent inductively by the sequential addition of postulates that can account increasingly well for the obtained empirical relationships in an area. There is also, of course, an a priori deductive process in inferring the additional postulate. Studies designed to test the adequacy of the present systems theory in accounting for personality-influencibility relationships can also be used in the theory-formulating enterprise to suggest new hypotheses required to make the formulation valid. The two studies that will be described in this section can be viewed as serving this double function. These two experiments, one by Millman (1965) utilizing anxiety as the personality characteristic, and the other by Nisbett and Gordon (1967) focusing on self-esteem, were parallel in many regards; but while each study employed its personality characteristic to test similar predictions, there were certain differences in the two designs in that they were intended to supplement one another to some extent. Each involved essentially the same three-variable orthogonal design, which included acute variations of the personality characteristic, chronic variations of it, and variations in the situational weighting of the reception mediator. There were, however, a number of differences in experimental tactics between the two studies, introduced either for convenience or to allow testing of slightly different nuances of the theory. The two studies were done simultaneously and therefore did not allow the accumulation of sophistication that would have resulted from one study being built on the experience of the other. Although they were done simultaneously and are similar in design,

we shall describe them separately and successively for clarity and exposition.

SUSAN MILLMAN'S ANXIETY STUDY

Predictions

The Millman experiment was designed to test some of the implications of the present systems theory as applied to anxiety by McGuire (1961, 1963). According to this formulation, the overall relationship between the person's anxiety level while he is being exposed to a persuasive message and the message's attitude change impact will be nonmonotonic, provided we accept the assumptions (McGuire, 1968a) that anxiety is negatively related to the reception mediator and positively to the yielding mediator.

Since the theory leaves the precise parameters unspecified, any outcome (except perhaps the appearance of a full right-side-up U-shaped function) between the two variables could be handled by the theory. Hence, to facilitate the opportunity for disconfirmation, interaction predictions were made along the lines suggested by corollary 2 and postulate III. That is, it was predicted that an experimentally manipulated increase in acute anxiety would add less to the persuasibility of those already high in chronic anxiety than to those who operated on lower levels of chronic anxiety. Furthermore, it was predicted that increases in the anxiety level would have less beneficial effects on attitude change with hard to comprehend messages as compared to easy ones. The study was also designed to tease out three components of the momentary anxiety level: the person's chronic anxiety level, the anxiety produced by the contents of the message, and situationally induced anxiety from manipulations irrelevant to the communication topic. It had been hoped that the relationships of these various anxiety variables to the two mediators could be adequately studied. Unfortunately, practical considerations made it necessary to curtail some aspects of this research prematurely so that the results are not completely satisfactory in those regards. Another aspect of the experiment which we record here that is far from ideal is that the manipulation seems to have been unsuccessful with one of the two issues used so that the results reported below deal with only half of the obtained data. Further details

on these points are discussed by Millman (1965).

It should be understood that our criticism does not imply that the two experiments reported here are poor compared to other research on personality-influencibility relationships. On the contrary, we regard these two experiments as far above the average of those reported

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in the literature. The shortcomings in this general body of research include: poor measures of the dependent, independent and intervening variables; inadequate manipulations; small sample size; sampling a too-narrow range on the personality variable; designs, etc. All of these have troubled us ever since we grappled in detail with **this** problem in the McGuire and Ryan study (1955). These inadequacies seem to us responsible for the unusually conflicting body of results in this area. We resolved at that early date not to publish personally any empirical results in this personality-influencibility area until we could undertake a study of sufficient quality that would add comprehension rather than confusion to the area. It did not seem appropriate to impose the same stringent demands on the published research of our students or on our own informally circulated work. We do not believe that the time and place to be silent and to speak out is the same for every man or every form of discourse.

Method

The aspects of the Millman study that we shall describe here involved presenting 48 college students with a tape recorded discussion of a scholarly nature which argued that the population of China would soon reach a high figure (in excess of what most college students would spontaneously estimate without having been exposed to a persuasive recording). Half the students heard the tape recorded discussion under good technical conditions; the other half heard it over recorded with noise that made comprehension somewhat difficult. This difference represented the high versus low comprehensibility

variations.

Each of the other two independent variables involved the subject's anxiety. One of these involved his chronic anxiety level, as given by his score on a shortened version of the Taylor Manifest Anxiety Scale, adjusted post factum for social desirability. On the basis of these adjusted chronic anxiety scores (obtained prior to the experimental manipulations), the subjects were partitioned by a median split into high and low chronic anxiety subgroups. Orthogonally to this chronic anxiety variation, the person's acute anxiety was manipulated by fear arousing conditions having nothing to do with the message topic. Half of the subjects were told that they would subsequently be performing at the task in a moderately warm and humid room (the acute low anxiety condition) and the other half were told that they would be subsequently performing while receiving severe electric shocks (the acute high anxiety condition). Hence, the experiment as we shall describe it here consisted of a $2 \times 2 \times 2$ design.

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The study was presented to the subjects as a test of verbal comprehension under different stress conditions. He was told that he would first be given a test of aural comprehension under ordinary learning conditions and then under a high stress condition. The low acute group were told that the stress condition would involve working in a warm room; and the high acute group, that it would involve taking the test while being exposed to severe electric shock. The various personality tests which the subjects were given were explained as being means of determining what kinds of people are most affected by stress. No mention was made that the subject's opinions regarding the topics of the messages would be measured or that the hypotheses dealt with influencibility. After the acute anxiety level was manipulated by the description of the low or high threat condition described above, the subjects were presented with tape recorded messages which were supposedly the comprehension test materials but actually were the persuasive inductions. After he had heard the tape recorded dialogue under normal" conditions, the subject's comprehension of

the contents was measured as was his own opinion regarding the point at issue, namely, the likely population of China in coming years. Comprehension was measured by eight multiple choice items; and opinion change was assessed by the before-after change score on a six-item opinionnaire. The experiment was terminated when these measures were obtained; that is, the subjects were not asked actually to perform under the stress conditions whose description constituted the acute anxiety manipulation. The true purpose of the experiment was then revealed to the subjects and the nature and reasons for the deceptions employed were explained to them. They were asked not to discuss the experiment with others.

Results

The checks on the manipulations indicated that the three independent variables were successfully varied as intended. However, this was the case only for the "China" issue that yielded the results we report here, and not for a second "mental illness" issue. Hence there is some slight danger that these results represent a post factum capitalization on chance differences. Less worrisome is the fact that on some of the anxiety manipulation checks, the intended differences did not appear at a statistically significant level (Miliman, 1965). This is probably due, at least in part, to the fact that this study was designed as a methodological tour de force as regards measures of anxiety.

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bly, the broad net that was cast in selecting indicators resulted in some of them not yielding significant differences.

As regards the mediating variable of message comprehension, the situational manipulation of comprehensibility, not surprisingly, had a significant effect. The message heard in the low comprehensible condition (with a noisy overrecording) produced significantly lower scores than the message heard

under the better auditory clarity conditions. The acute anxiety manipulation also had a significant effect on message comprehensibility, with those under the high threat condition learning the contents better than those anticipating only the mildly stressful treatment. Chronic anxiety level had only a trivial relationship to message comprehension. The interaction between chronic and acute anxiety was also insignificant though one might have expected such an interaction on the basis of the Taylor and Spence theorizing.

A quite different picture emerges as regards the opinion **change** dependent variable. Persons in the high anxiety condition showed slightly more opinion change than those in the low with both the chronic and acute variations, but neither difference reached the conventional level of statistical significance. The present theory made no predictions about such main effects. Most interesting for the present theory was that there was a sizeable interaction between these two variables in the predicted direction. Those chronically low in anxiety showed more opinion change under induced high threat than low; while those chronically high in anxiety showed depressed attitude change when they were exposed to high threat. This is the kind of relationship one would expect on the basis of Postulate II and its corollaries, which imply that if the person is chronically low in anxiety, an induced fright will tend to raise his anxiety to the optimal intermediate level; while if he is chronically high, the fear arousing induction will tend to raise his anxiety beyond the optimal.

Unfortunately for the theory, or at least for the testing of it in this situation, the attempted message comprehensibility variation was not successful in producing a significant difference in opinion change. Hence, there was no opportunity to test for the predictions of situational-personality interaction which could be derived on the basis of Postulate III. Furthermore, as in most attitude change research (McGuire, 1966, 1968b), the gross measures of message comprehension and of attitude change showed only a trivial relationship. Indeed the effects of the independent variables on the two measures, learning and attitude change, tended to be maddeningly reciprocal as regards

what was significant: those variables that were significantly related to one of these measures tended to be unrelated to the other.

THE NISBETT-GORDON SELF-ESTEEM STUDY

The Nisbett and Gordon study essentially paralleled that of Susan Millman, except that self-esteem played the role in their study which anxiety played in hers. They used a three-variable orthogonal design including chronic and acute variations in self-esteem and high versus low message complexity. The resources in their study were, however, invested somewhat differently than in hers in that they employed more subjects and used a more drastic manipulation of message complexity but omitted the direct measure of the reception mediator and utilized their subjects in groups rather than individually.

Method

In this study, as in the Milman study, college students served as the subjects and the research was represented as concerned with their comprehension of the materials presented, without mention of any interest in their persuasibility. We shall provide here a somewhat simplified account of the experimental conditions, a fuller description being conveniently available elsewhere (Nisbett and Gordon, 1967). The chronic and acute self-esteem independent variables were manipulated along the lines of a contemporaneous study done in our laboratory (Conlon, 1965). Chronic self-esteem was measured by a self-report scale derived from the MMPI with numerous adaptations by McGuire and Ryan (1955). Acute self-esteem was manipulated by administering to the subjects a pseudo-test of intelligence one week before the presentation of the persuasive material, and then telling the subject, just prior to that presentation, his purported score on the intelligence test. Half the subjects, chosen at random, were given information indicating that they had done extremely well on this sup-posed intelligence test (the acute high self-esteem group) and the remainder were given information which suggested that they had done very

poorly (the acute low self-esteem group). Immediately after this false feedback, the persuasive materials were presented.

The persuasive messages were of two types, one rather sparse of content, which was designed to allow but little variation in the reception mediator. As the social influence situation designed to allow relatively little variance as regards reception, a conformity induction was employed in which positions regarding health practices were clearly stated in one sentence and the subjects were given norms which medi

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ated the clearcut consensus of health authorities regarding these practices. (The critical items for measuring **conformability** effects were two practices on which the position represented as the authority viewpoint was quite discrepant from those which college students ordinarily endorsed.) The second type of social influence situation, allowing for more variance in the reception mediator, involved presenting subjects with lengthy, semitechnical passages arguing for a stand on certain health practices that were quite at variance with those ordinarily espoused by college students. After presentation of these two types of social influence inductions, the subjects were given an Opinionnaire which constituted an after-only measure of their opinions on these several health issues involved in the design. The session was then ended with a revelation that the intelligence test scores which they had been given were completely fictitious and of the other critical aspects of the experiment.

Results

Although the experimenters received a strong clinical impression that the false feedback of intelligence test scores at the beginning of the second persuasion session made a considerable impression on the subjects, the check on this successfulness manipulation did not show a conventionally significant

difference in self esteem On all three checks on this manipulation the difference was in the **appropriate** direction, but none of the differences attained the Os level of significance. In view of this indifferent success of the acute self-esteem manipulation, the relationship of this **variable** to opinion change must be interpreted with some caution.

Because in the Nisbett-Gordon study it was feasible to employ considerably more subjects than in the Millman study reported above, the sample was partitioned into more than two levels as regards chronic self-esteem. The results as regards chronic self-esteem and influencibility are quite in keeping with the systems theory outlined in the previous section, and the assumptions (McCuire, 1968a) that self-esteem is positively related to the reception mediator and negatively to the yielding mediator. In the low reception variance, conformity situation, the inverted-U shaped nonmonotonic relationship is plainly shown between chronic self-esteem and attitude change. In the high reception variance, persuasion condition, where we would expect the inflection point to occur at much higher levels of self-esteem, the relationship between chronic self-esteem and persuasability is an increasing one throughout the entire range of self-esteemsam-

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pled These results are in line with what one would be led to expect on the basis of Postulate III. It should be noted that the positive relationship between self-esteem and persuasability found here tends to confirm that found by McGuire and Ryan (1955) and to reverse the Janis (1954) finding and the "common sense' prediction one makes when one commits the common fallacy of ignoring the role of the reception mediator.

The results as regards the acute self-esteem variable are much less supportive of the theory, as might be expected in view of the indifferent success of its manipulation. There was no main effect of acute self-esteem on attitude change in either the social influence situation involving low reception variance or in that involving high reception variance. Furthermore, there is no

significant interaction between chronic **and acute** self-esteem variables such as is required by corollary 2. In fact, such evidence on this interaction as can be deduced from the data suggests that the shape of the relationship is the reverse of that derivable from the model, such that a success experience may increase the influencibility of those low in chronic self-esteem more than that of the chronic highs.

Empirical STATUS OF THE THEORY

Neither the Millman (1965) nor the Nisbett and Gordon (1967) experiments have provided anything like a thorough and definitive test of the systems theory which has been partially presented here and discussed more fully elsewhere (McGuire, 1968a). The inadequacy of the two studies in this regard is manifest even though these studies were more elaborately designed and more carefully done than most of the research in the personality-influencibility area and were planned specifically to test the theory. Even less definitive are those studies in the literature which were designed independently of the present theory, although some of the individual studies, such as those reported by Gelfand (1962) and by Silverman (1964), confront the theory almost as effectively as the two studies described here that were designed explicitly for that purpose. Also, some cross-experimental comparisons of results (such as between the Janis [1954] and the McGuire and Ryan [1955] studies) can also be nicely ordered by the theory.

A number of deficiencies can be specified in the previous personality-persuasibility research (and, as indicated above, the two studies described here are not entirely free from these defects) as regards an adequate test of the systems theory developed here. The manipula

tions of the personality variables are often inadequate (or at least are inadequately detected by the checks on the manipulation). The subject

populations have tended to be so narrow the at the chronic variation represented in the sample tends to be too small and too indicated to leave us confident that a sufficiently wide range of the variable has been tapped to allow the nonmonotonic overall relationship) to appear. The complex interactions between the chronic and acute variations on a given personality dimension, as suggested by corollary 2 of Postulate III and by Postulate IV of the fuller treatment of this systems theory (McGuire, 1968a) remains to be investigated, or even to be adequately specified theoretically.

Still other deficiencies in the empirical research stand in the way of an adequate testing of the systems theory that we have been developing. Refined measures of the mediating processes are lacking. A direct measure has been attempted only for the reception mediator, and measures of content learning have been rather inadequate in the few carefully designed attitude change studies (Watts and McGuire, 1964; see also Greenwald's chapter in this volume). Direct measures of the yielding variable have been neglected altogether, though proposals in this regard have been made (McGuire, 1961, 1968a). We also need a more sophisticated understanding of the relationship between purported proximal dependent variables (such as reception) and the more distal ones (such as opinion change) which they are supposedly mediating as regards relationship to the independent variable. Aspects of this almost metascientific question have been explored elsewhere (McGuire, 1969).

In general, it seems to us that the adequate testing of a systems theory requires a more than usually elaborate empirical effort. The characteristics of such elaborate experimentation include: multivariable orthogonal designs; wide ranges on the independent variables; direct measures of the mediating processes as well as the distal dependent variable, and covariance analyses that will determine the relationship between the independent and the dependent variable with and without adjustment of the several mediators. Research of this scope is currently under way in our laboratory.

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