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Models of Attitude and Belief Change from the Perspective of System Dynamics

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ABSTRACT

This paper describes models of attitude and opinion change from several theoretical perspectives. Current research in persuasion, argumentation, opinion setting, and attitude change emphasize either cognitive, emotional, or behavioral factors, which determine how people change their attitudes. The paper first reviews the pioneer mathematical work of John E. Hunter and his colleagues and then assesses his models for its loop structural characteristics. Simulation output as well as the structural characteristics of these models indicates that behavioral approaches, such as imitation and conditioning, are problematic in controlling attitudes through arguments, messages, and behavior. Cognitive dissonance and information processing models appear to be more effective in controlling attitudes. Finally, the paper concludes with an embellishment of these models to show how cognitive searching processes can give time to think about counterarguments and thus be used as a coping mechanism to resist persuasive messages.

KEY WORDS

Attitude Change, behavioral, cognitive, dissonance approaches, credibility, source derogation.

INTRODUCTION

Scientific interest in studying the dynamics of attitudes and beliefs has come from a variety of disciplines, including social psychology, sociology, communication, and marketing. Over the years, a number of theories of attitude change have emerged, developed, and perhaps fallen by the wayside, as additional empirical studies cumulated. There have been some efforts to model attitude change, but most of the theories in the area are presented at the verbal level. Currently there are some efforts to use system dynamics to capture basic generic structures in social psychology, which would include

the dynamics of attitude change (see, e.g., Levine and Doyle, 2002). In the past, one pioneer in modeling attitude and belief change was the late John E. Hunter, a colleague and friend, who also was one of the earliest developers of meta-analysis (Schmidt and Hunter, 1977; Hunter, Schmidt, and Jackson, 1982; Hunter and Schmidt, 1990). Hunter and his associates, namely Stanley Cohen, Jeffrey Danes, Scot Sayers, and the author developed a series of models from around 1970 to 1985 that mathematically captured the essence of most if not all of the theories of the day (e.g., see Cohen, 1971; Hunter, Cohen, and Danes, 1984). The collection of models are very interesting from the point of view of loop structure, and some of them are as relevant theoretically today as they were thirty years ago. The purpose of this paper is to view a few of the models that are still at the cutting edge of the theory of attitude change from the perspective of system dynamics.

A Different Approach

The work of Hunter et. al. primarily focused on developing a set of difference equations and change/state graphs representing a variety of approaches to attitude change, including, behavioral, informational, balance, conformity and dissonance theories of attitude change. Although much of their work is exciting, from the author's point of view, one limitation of their modeling effort was that Hunter et. al. did not publish solutions to their equations. In the Hunter, Cohen, and Danes book (Hunter, Cohen, and Danes, 1984), they showed a number of rate/state graphs that were relatively static in nature. System dynamicists apply computer simulation to integrate the rate equations to show behavior over time. In preparing for this paper, the author first carefully converted Hunter et. al's. difference equations to differential equations and then simulated the model. Some fascinating effects missed by Hunter et. al. came out of simulating the models.

What affects attitude change? Among social psychologists, there is general agreement that credibility is a necessary condition for attitude change to occur. Credibility itself in these models is primarily related to how the receiver feels about the source of the messages being received. In addition, there might be individual difference or personality variables, such as persuasibility, which is related to the time constant that amplifies or inhibits attitude change.

Most of the models focused on how a person, the receiver, reacts to a set of messages given by the second party, the source person. Each family of theories have a different set of assumptions concerning how the receiver's attitudes toward some object or other person, such as a movie star, changes over time. In addition, each model attempts to represent how the receiver's attitude toward the source of the messages might change as well as time goes on. All the models have two stocks, namely the receiver's Attitude toward the Object, a , and the receiver's Attitude toward the source, s .

System dynamicists might be very interested in some of the behavioral mechanisms represented in these models. For example, there is a possibility of a "boomerang effect" that might occur when someone who you mistrust gives you a message that is totally contrary to what you believe. In that circumstance, one might be prone to actually move

in the opposite direction from the source's message. Also, if the receiver gets a message that is contrary to his/her current attitude, one reaction might be to spend time finding counterarguments rather than listening carefully to the line of arguments given by the source person. This may inhibit the effectiveness of the message. Note that this second mechanism is quite different from the boomerang effect where the receiver actually changes attitudes in the opposite direction from the intended message. Finally, some of the models displayed a polarity, which affects attitude change for those who harbor extreme opinions and attitudes. This effect assumes that it is harder to change people with extreme attitudes than people who have neutral attitudes toward a person or issue. The same message generates more change for people who are neutral than for those who hold extremely positive or negative attitudes and opinions.

In theory, attitudes can be either positive or negative, and yet cumulate over time so that they play the role of levels or stocks. Unlike many material stocks used in system dynamic models, attitudes must be considered as vector objects, having both magnitude and direction. The value of the level could legitimately go negative if the source gives the receiver a series of negative messages about another person, object, or issue.

BEHAVIORAL PERSPECTIVE

The first set of model suggests that attitude change obeys the rule that, if the message agrees with the receiver's attitude, then the receiver's attitude is bolstered and intensified. On the other hand, if the message disagrees with the receiver's attitude, then the receiver's attitude is shaken and changes take place to lower or increase the receiver's attitude towards the value of the message. Some behavioral theorist stress the role of imitation in attitude change. They assume that the receiver is passively taking the source's modeling behavior as a message. If the message and attitude match each other, the receiver's attitude is "reinforced, and increases the receiver's attitude value in the same direction. On the other hand, suppose the message and the receiver's attitude disagreed, i.e., one was positive and the other was negative. Then the receiver's attitude would be "punished", and change would occur in the direction of the message.

A simple model of the agreement/disagreement principle is represented by a flow diagram in figure 1 below. Although this may look very much like a simple stock adjustment process because of the negative loop through the upper and lower bound effect variable, one should be warned that the dynamics of change expressed in this model is very different. It is also important to know that I assume that attitudes are bounded. Something happens at the extremes. I have incorporat that assumption in this model through the use of the variable, "upper and lower bound effect". The upper and lower bound effect is modeled as a fuzzy max and min function (see Sterman, 2000) to keep the scales between the values of -10 to +10. The choice of those values was arbitrary, although not in conflict with the psychological literature.

Figure 1. A simple version of the agreement-disagreement reinforcement model

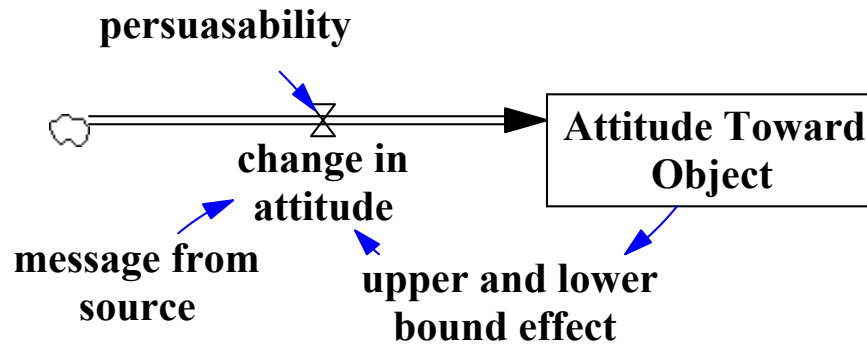


Figure 2, below, which is in the form of a causal loop diagram may help in understanding the implications of a “blind” reaction to either agreeing or disagreeing with the messages given by the source person. As one can see, the loop deals with the fact that attitudes normally have upper and lower bounds. In all of these models, I have defined the attitudes as ranging from -10, extremely negative, to plus 10, extremely positive about a person, an object, or an issue. In Figure 2, the only loop that comes into play is one which only begins to dominate as the receiver’s attitudes become closer and closer to one of the bounds.

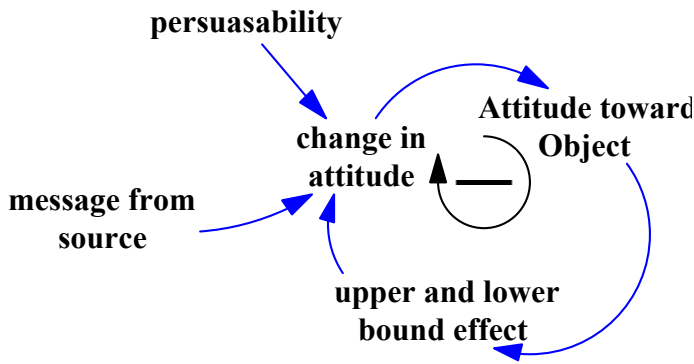


Figure 2. Causal loop diagram of the agreement-disagreement model

Note the message affects the rate variable, change in attitude, directly. It does not play the role of a goal in a typical stock adjustment process. The equation for the rate variable is as follows:

$$\text{Change in attitude} = \text{message from source} * \text{persuasability} * \text{upper and lower bound effect.}$$

The rate equation, as an expression of policy, implies that strong messages, in either direction, give the most change in the receiver’s attitude toward an object or issue. Note also that this version of the behavioral approach has no boomerang effect.

Results of the Behavioral Model

The first run of this model shows what happens when initially, the source had a relatively strong negative attitude toward an object, person, or issue, but the message was very positive. Figure 3 shows the response of the receiver. The receiver reverses direction toward the upper and lower bound of the message. However, and this is an important point about this model, one can see that the attitude moves steadily and linearly to the value of the message and then continued to grow in the positive direction beyond the value of the message. There is very little control over the final value of the receiver's attitude by the message, unlike a typical proportional control negative loop process. To see this even more clearly, consider the source that is only moderately positive about the object and gives a series of moderate messages presumably to move the receiver's attitude level to the value of the message. One would think that the source would want the receiver to become more moderate, i.e., to lower the attitude from its initial high positive value. However, as seen in Figure 4, since the source and the receiver are both positive, i.e., in agreement, the effect of the moderate message is to push the receiver's attitude toward the extremity, not down toward the moderate message value. This is the problem with the reinforcement, behavior approach to attitude change. The source cannot control the attitudes of the receiver very well. This is open loop control of sorts, and as a social mechanism, one would think that human's have evolved a better system of managing social opinions and attitudes.

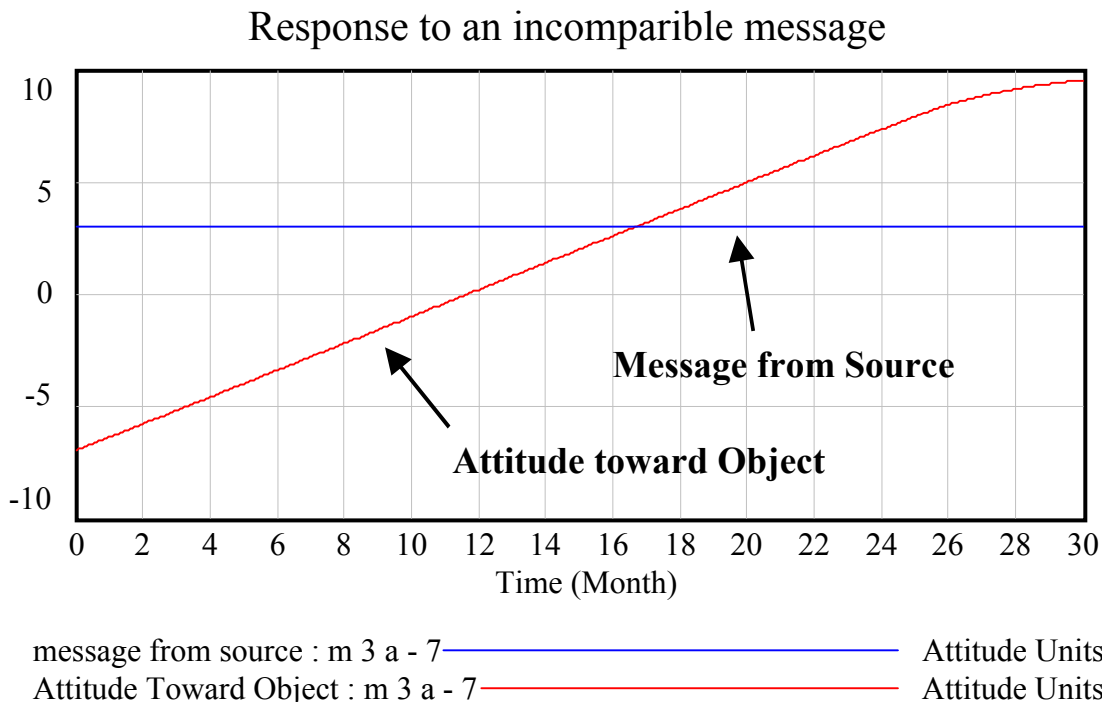


Figure 3. The attitudinal response to a positive message when there is disagreement

In this model, the rate equations are

$$ds/dt = \text{agreement indicator} * \text{ease of change in att toward source} * \text{bound effect on att toward source} \quad (1)$$

and

$$da/dt = \text{Persuasibility} * \text{source credibility} * \text{bound effect on Att toward obj} * m \quad (2)$$

where the agreement indicator is the product of the message and the attitude toward the object,

s = the Attitude toward the source

a = Attitude toward the object, and

m = message

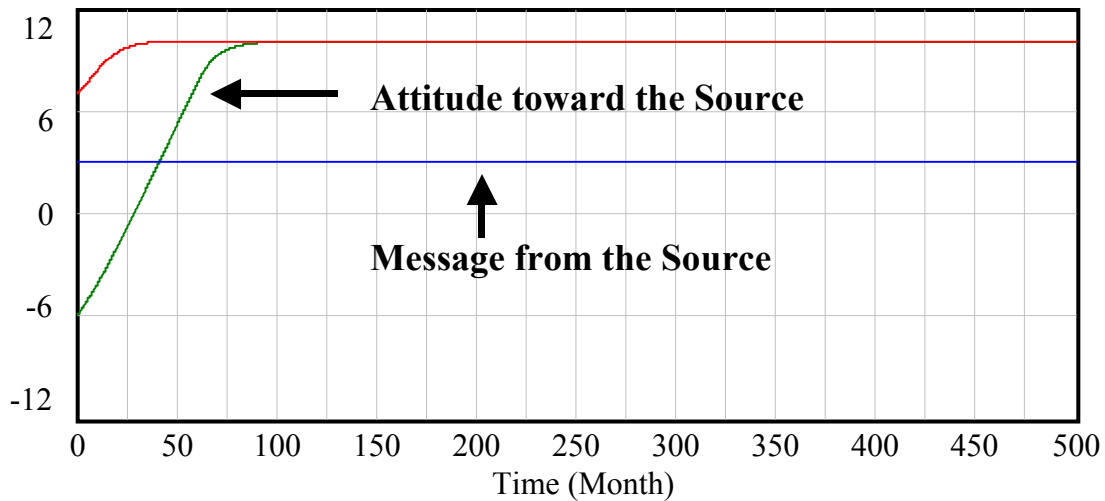
The agreement indicator is the product of the Attitude Toward the Object. When the message and the object attitude match, the rate of change in Att Toward Source is positive. When the message and object attitude are mismatched, the Att Toward Source will decrease. If the source and the receiver are not in agreement, then the receiver will lower his or her opinion of the source, according to this model.

This time there is a positive loop connecting the two stocks, which indicates that an increase in the attitude toward the source increases credibility, which leads to an increase in the attitude toward the object. An increase in the attitude toward the object would lead to an increase in the agreement indicator, which would again increase the attitude toward the source.

Results of the Embellished Behavioral Model

The question then becomes whether the control problem pointed out with the behavioral approach to changing and controlling attitudes would remain with this additional structure.

Message, Attitude towards object and attitude towards source



message from source : $a=7$ $m=3$ $s=-6$ ————— att toward object units
 Attitude Toward Object : $a=7$ $m=3$ $s=-6$ ————— att toward object units
 Att Toward Source : $a=7$ $m=3$ $s=-6$ ————— att toward object units

Figure 6. Change in attitude toward the object, for a moderate positive message and an initial negative attitude toward source

As one can see from Figure 6, since both the value of the message about the object and attitude toward the object are initially compatible, the source attitude moves to positive ground. However, again object attitude becomes more extreme as time goes on, rather than coming closer to the value of the message. The role of credibility in this model is somewhat interesting, because credibility, which can enhance or inhibit object attitude change, can really slow down the change in object attitudes. However, in general, the open loop problem of trying to have the receiver's attitude conform to the message is not solved. At least from the perspective of this model, the behavioral approach is flawed. Hunter et. al. did not emphasize or point out this problem of controlling attitudes with messages. Let us now go on to look at other non-behavioral approaches to attitude change that might solve this control problem.

COGNITIVE THEORY: INFORMATION PROCESSING

The information processing approach to changing attitudes conforms very nicely to many of the elements seen in system dynamic models. Here the emphasis is on having the receiver's object attitude change as a function of the discrepancy between the message and the attitude as shown in Figure 7. This is a case of the use of the classical stock adjustment process, which is a form of proportional control. The information processing approach originates from the work of Hovland and Pritzker (1957), Anderson (1959, 1964, 1971), Levine, Hunter, and Sayers, (1972). Hunter, Levine, and Sayers (1976).

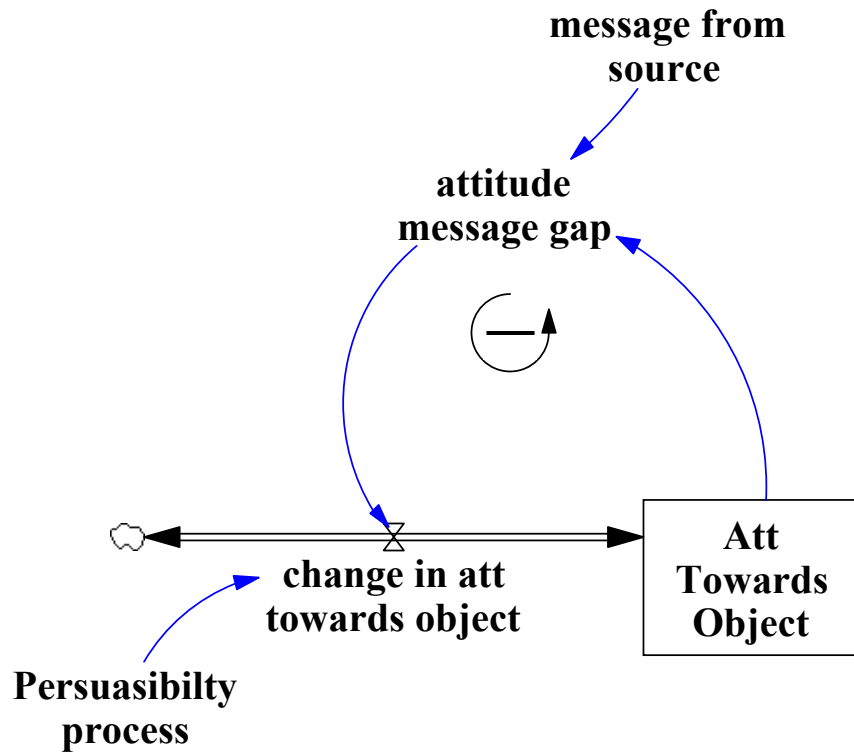


Figure 7. The simple version of the information processing model of attitude change

The Receiver's Attitude Towards the Source, and Source Credibility

The Mirror Model of Source Change.

The trajectory for this simple version of the information processing model of attitude change is the well known logarithmic curve that converges to value of the message. Let us consider a second stock, the receiver's attitude toward the source, or source attitude, s . How does the attitude toward the source change in an information theory framework? There has been little said about the process of source change. However, Hunter et. al. suggested several different possible ways that the receiver's attitude toward the source could change over time. The first approach is subsumed under what Hunter et al, p.52, call the "mirror model." It assumes that the only thing the receiver knows about the source of the messages is the message itself, so the message not only tells the receiver what the source thinks about the object, but the message also lets the receiver know something about the source. The mirror model assumes that, if the source says something nice, i.e. positive, then the source is nice. On the other hand, if the source says something

nasty, i.e. m is negative, then the source is not nice, i.e. nasty. The rate equation for source change is

$$ds/dt = m - s \quad (3)$$

The model can be seen in Figure 8.

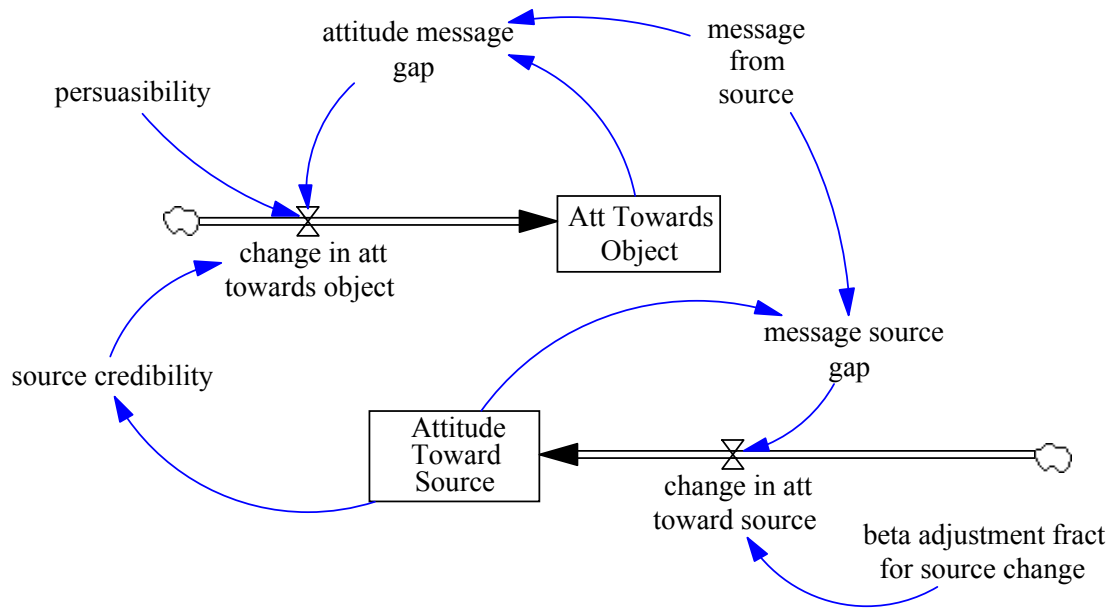
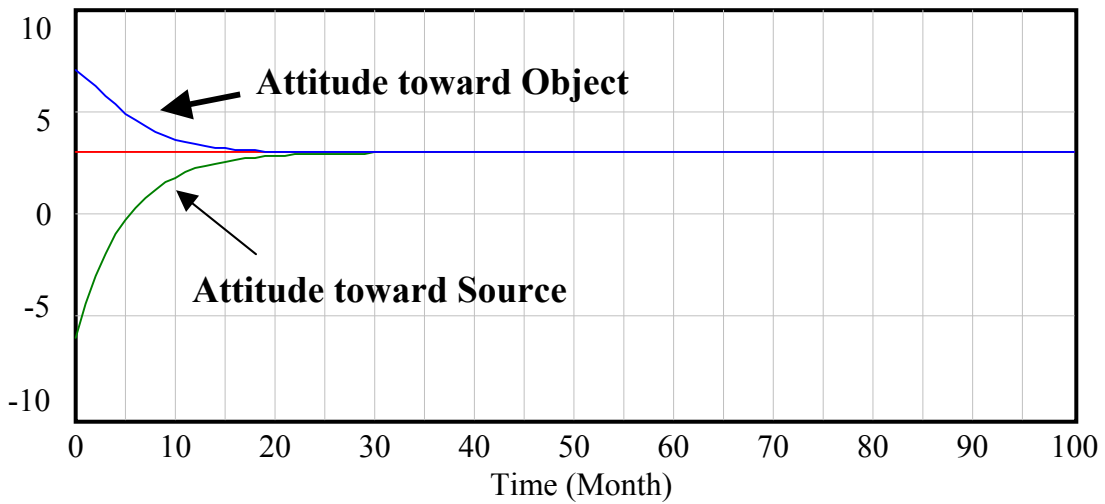


Figure 8. The mirror version of the information processing model

Initial results of running the mirror model. Does this model solve the problem of controlling the receiver’s Attitude toward the Object, “a?” Figure 9 shows the results of the test run utilizing the mirror model of source change.

Attitude Towards Object and Source for the Mirror Model



Att Towards Object : Huntmirror m3 a7 s-6 —————

message from source : Huntmirror m3 a7 s-6 —————

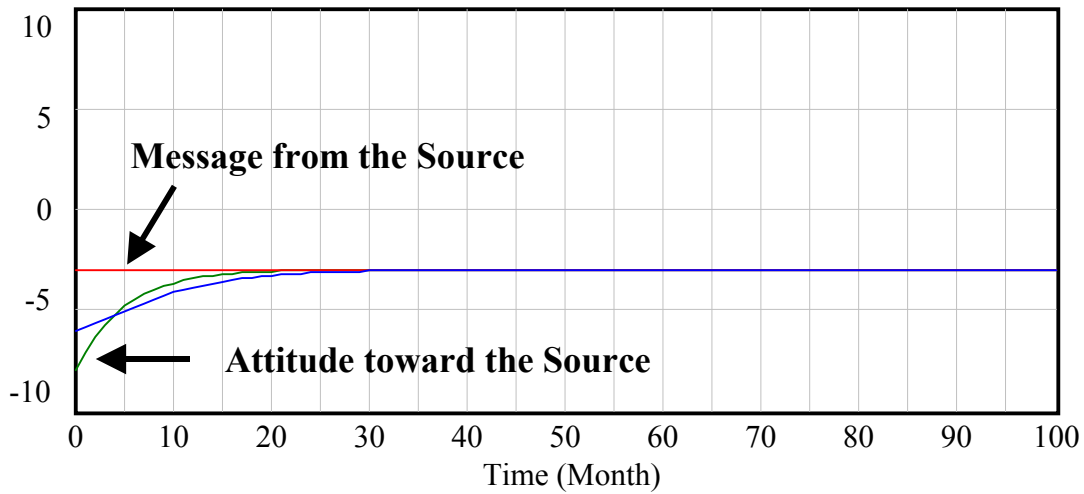
Attitude Toward Source : Huntmirror m3 a7 s-6 —————

Figure 9. The mirror model of source change reacting to a message that was less than the initial object attitude.

To see why one calls this a mirror model, consider the following situation: Let the source attitude, s , equal -8 , $m = -3$, and $a = -6$. Now, although m is negative, it is higher than s , so s should move upward toward m .

The output of the model is found in Figure 10. As one can see, the mirror model simply assumes that the attitude toward the source would go up if it is below the message value or go down if its initial value were above the message value.

Attitude Towards Object and Source for the Mirror Model



Att Towards Object : mirror m-3 a- 6s-8 —————

message from source : mirror m-3 a- 6s-8 —————

Attitude Toward Source : mirror m-3 a- 6s-8 —————

Figure 10. The mirror model when the message is still negative, But less negative than the initial value of the attitude toward the source

Cohen's Model of Source Change.

Cohen (1971) developed a version of the information processing model that made a different set of assumptions concerning the dynamics of source change. He focused on the direction of the differences between the message and the attitude toward the object. He assumed that the receiver's attitude toward the source would increase under only two conditions, as shown in Figure 11. First, assuming that the receiver's current attitude toward the object were positive, the attitude toward the source, "s," would only increase if the message, m, were greater than the object attitude, "a." The second condition for positive source change would be if the current Attitude Toward Object were negative, but the message was more negative than the attitude toward the object. In this situation, positive change in attitude toward the source would also occur.

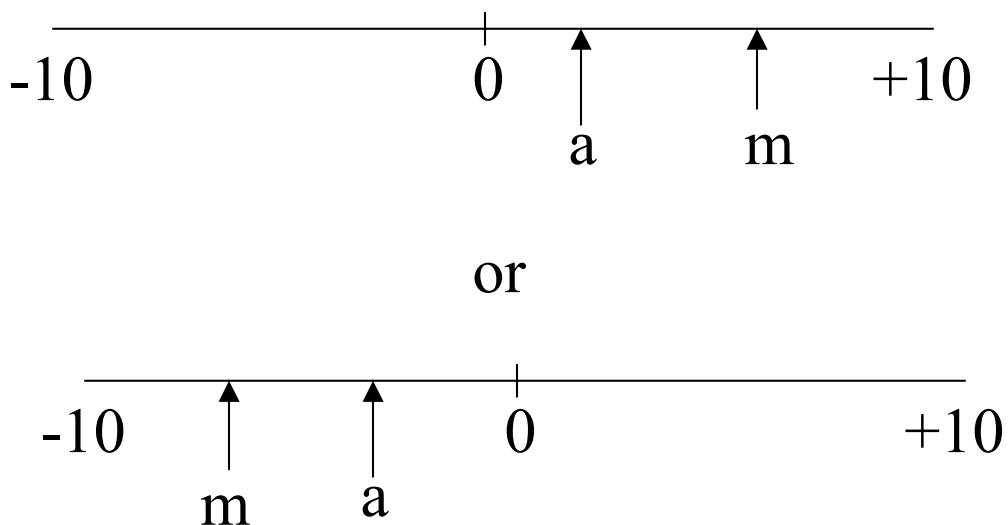
When these conditions are not met, then the receiver would degrade the source. For example, suppose the receiver hated the object or issue being evaluated, so variable, "a," might be -9.0 . Now suppose the source sent a message, "m," about the object that was negative, but not that extreme, say $m = -2$. The receiver, according to Cohen's model, would interpret the source as being "wish-washy," or too lenient, and would lower his or her opinion of the source.

Let attitude towards Object = a

Let message = m

Let attitude toward source = s

The Attitude Toward the Source, s,
would increase under these two
conditions



**Figure 11 The assumptions of Cohen's model of source change
Within an information process framework**

Cohen's model is displayed in Figure 12. He found a nonlinear function for the rate of change in the source that was compatible with his assumptions. The rate variable, change in att toward source, is a nonlinear, dimensionally correct function containing a second degree polynomial, namely,

$$ds/dt = (\alpha * a * gap) / \text{SQRT}(1 + (a^2)),$$

Where

α = adjustment fract for source change

a = Att Towards Object, and

gap = attitude message gap

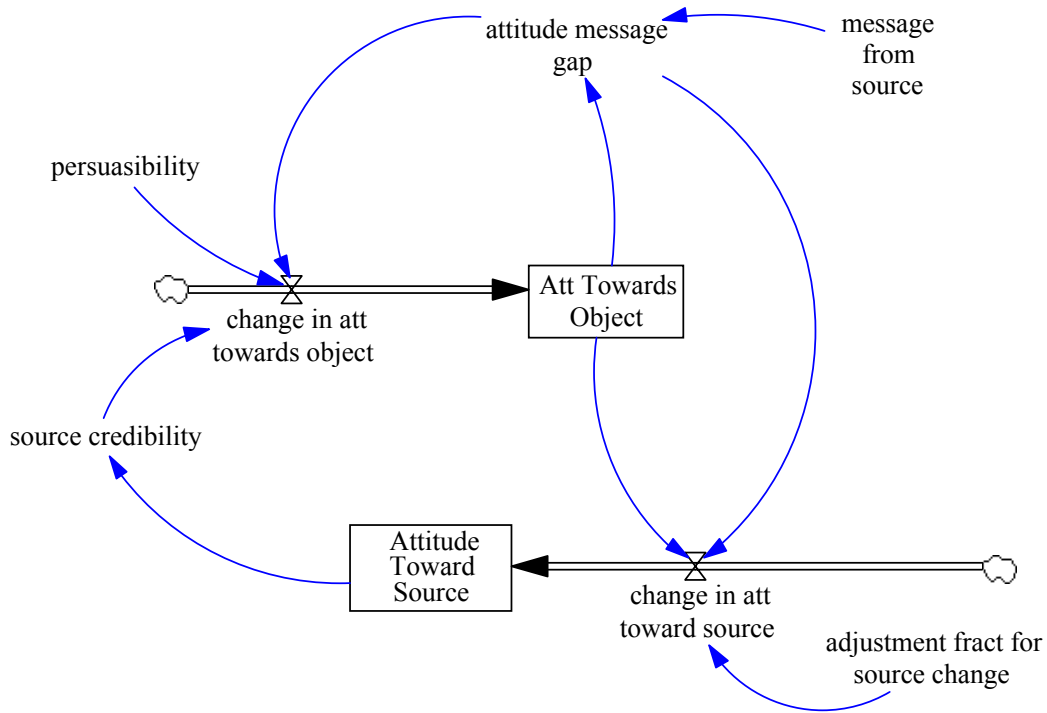
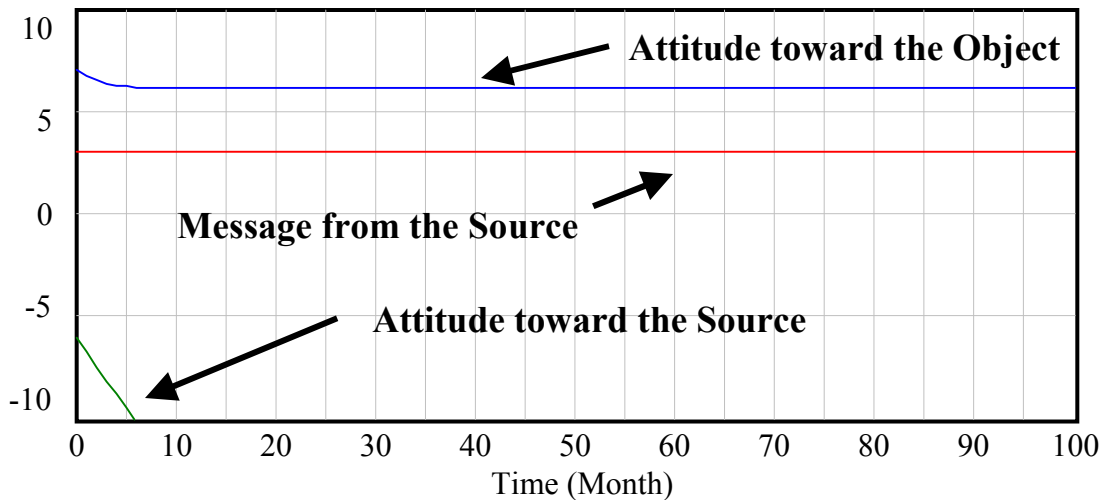


Figure 12. Cohen's model of source change.

Simulating Cohen's information process model of attitude change. Figure 13 shows the results of the first run of Cohen's model. As one can see, Cohen's model generates very different trajectories from either the behavioral models or the mirror model. There is a steady state error for the receiver's attitude toward the object. This is because, since the message, "m," was below "a," the receiver decreased his/her attitude to the lowest attitude value, and since credibility is based on the source attitude, "s," credibility went to zero and the attitude toward the object went into equilibrium before it reached the message value.

Attitude Towards Object and Source



Att Towards Object : Cohen m-3 a7 s -6 —————

message from source : Cohen m-3 a7 s -6 —————

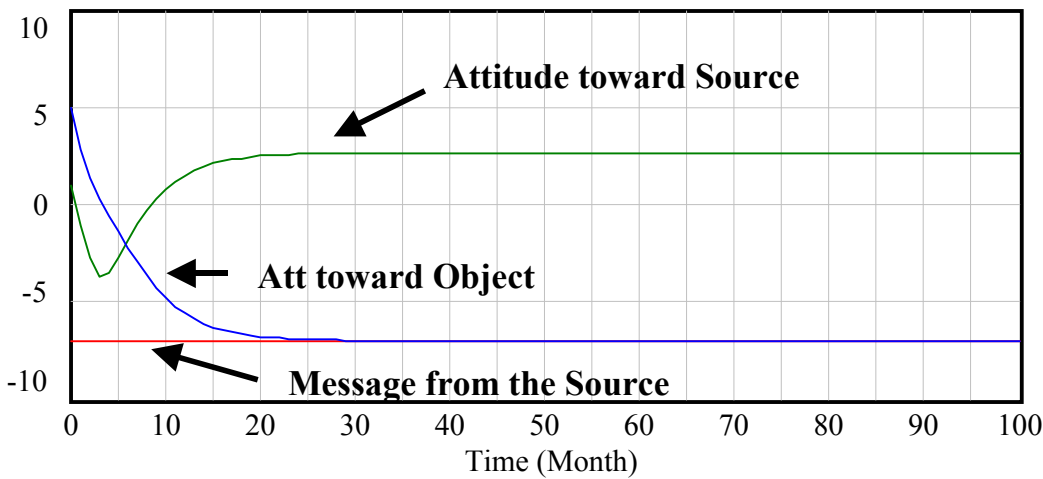
Attitude Toward Source : Cohen m-3 a7 s -6 —————

Figure 13. The results of Cohen’s model of source change for the test run

Cohen’s reversal effect. The model has an interesting prediction that, under suitable conditions, the receiver’s attitude toward the source may start out one way, but reverse itself as conditions change. Figure 14 shows the reversal phenomenon. Initially, “m” was set to be quite negative, namely -7 , a was set to be moderately positive, $+5$, and finally “s” was set to be barely positive, namely $+1$. Under this condition, the attitude toward the source should fall, because it does not meet either of the two conditions illustrated in Figure 11. Now two things are happening at once. The Attitude toward the Object, “a,” is dominated by its negative loop process and begins to decrease over time. Although simultaneously “s” is dropping, the key thing to look for is when a goes negative around the fourth month. When that happens, both “a” and “m” are negative and $m < a$. This meets one of the conditions for the Attitude toward the Source to increase. Thus one observes a reversal in this variable as “a” continues to be more and more negative, going into equilibrium when “a” equals “m.”

This behavior was not seen before. It provides a very strong test of the differences between these models. That is the beauty of model building. They frequently provide a theoretical framework for good theory-based empirical research. This set of test conditions will show up again when assessing the behavior of the models described in the last part of this paper.

Attitude Towards Object and Source



Att Towards Object : Cohen m-7 a5 s 1 —————

message from source : Cohen m-7 a5 s 1 —————

Attitude Toward Source : Cohen m-7 a5 s 1 —————

Figure 14. Reversing directions. The behavior of Cohen’s model when the attitude toward the source initially decreases.

DISSONANCE THEORY

The last model of attitude change deals with the dynamics of dissonance, which is still very much considered a viable theory and in vogue (e.g., see Meyers, 2000). Today, much of the application of dissonance theory deals with how people cope with the discrepancy between attitudes and action. Nevertheless the essential theory is the same as thirty years ago.

Dissonance theory originated with the pioneering work of Leon Festinger (1957). The main idea behind dissonance theory is that, when the receiver gets a message that is discrepant from his/her own attitude or belief, the receiver begins to experience dissonance. In order to dissipate this dissonance, in the situation described in this paper, the receiver can do only two things to lower dissonance, namely either change the attitude to decrease the gap, or change his/her attitude, toward the source, “s,” in the negative direction. The direction of source change is very important in dissonance theory. A dissonance model would never generate the trajectories found in Figures 10 and 14 for example. Dissonance theory makes some very strong predictions about the direction of change in the attitude toward the source, “s.”

Although there could be several approaches to modeling dissonance theory, in this paper we will show one relatively simple version that captures many of the features of the verbal theory. The model assumes that the change in the attitude toward the object, “a,” is identical in form to the information processing model previously discussed. Thus,

$$da/dt = \text{credibility}*(m-a), \quad (4)$$

where credibility takes on the form found in the table function below.(Figure 15).

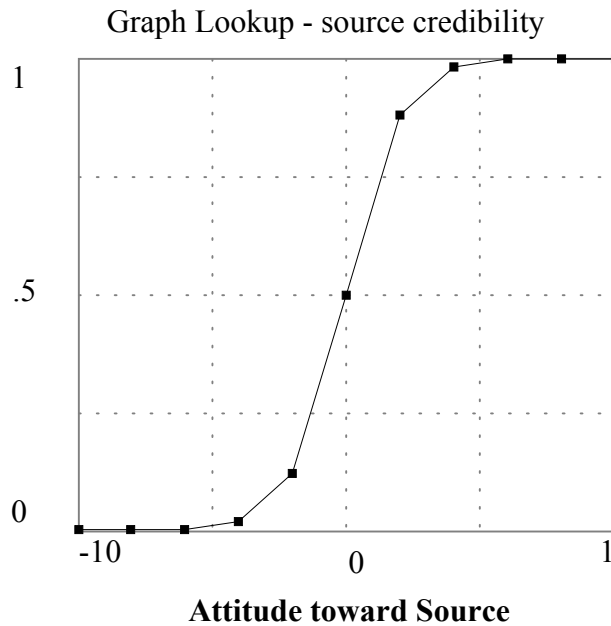


Figure 15. Table function showing source credibility as a function of the Attitude toward Source

Derogating the source is also a possibility. It too should be a function of the gap between the message, “m,” and the value of the Attitude toward the Object, i.e. (m – a). However, the direction of this difference is not important, so the rate of change of “s,” is assumed to be proportional to |m-a|. Another important assumption is that, if a source is completely credible, there is no source derogation. This implies that the rate of source change is inversely related to source credibility.

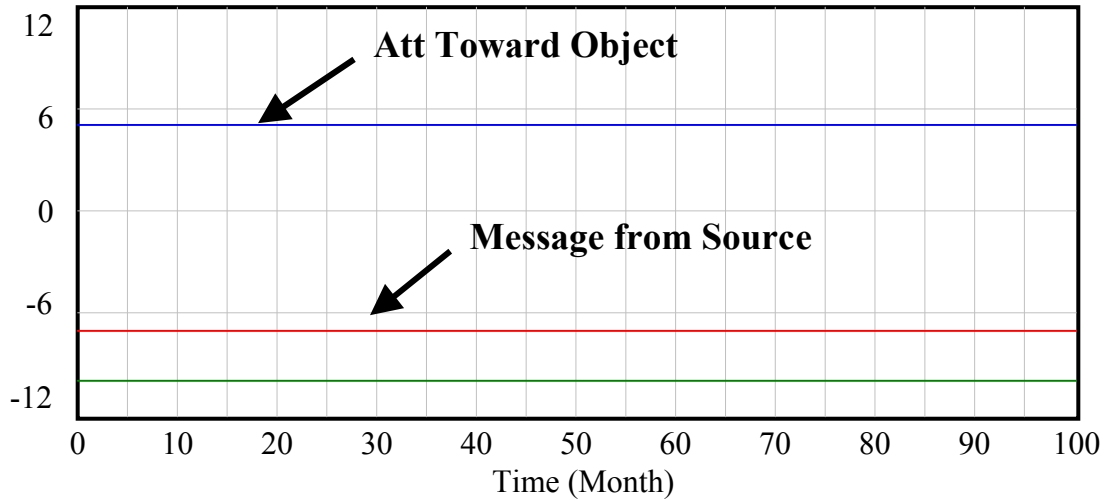
Putting these assumptions together, the following rate equation was used to capture the dynamics of source change.

$$ds/dt = -\beta(1 - \text{credibility})|m - a|, \tag{5}$$

where β is the symbol for the model parameter, beta adjustment fraction for source change.

Dissonance as an auxiliary. Finally, there is the matter of defining the concept of dissonance per se. Hunter et. al. unfortunately did not treat dissonance as an emotional state that increases when the receiver gets a discrepant message from the source and is dissipated though either through attitude change or through source derogation, or a

logistic function of “s,” also equals zero.. There is no dissonance in this particular case. The results of this run are shown in Figure 17.



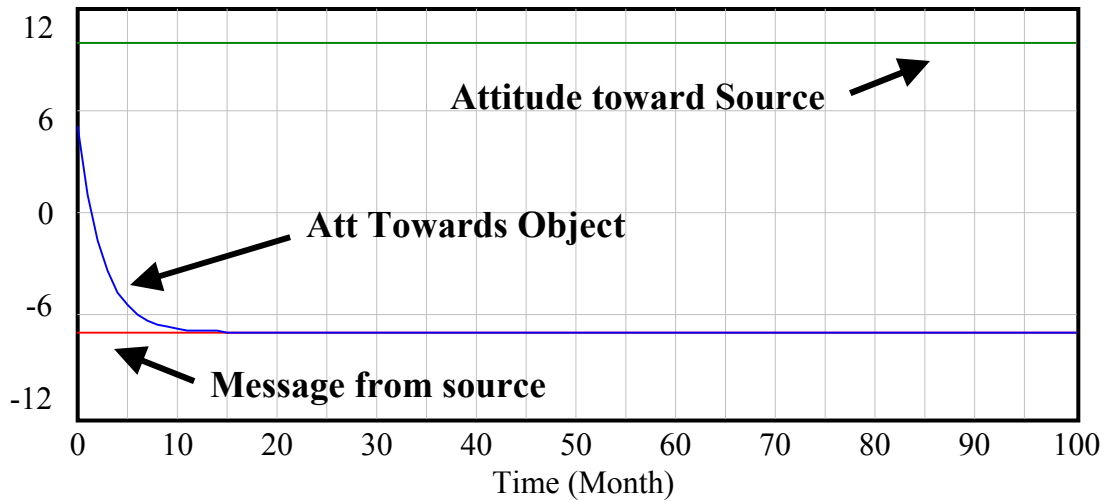
Att Towards Object : dissc m-7 a5 s -10
 message from source : dissc m-7 a5 s -10
 Attitude Toward Source : dissc m-7 a5 s -10

Figure 17. Output of the model where source had no credibility

As one can see, since there was no dissonance the message was completely ignored.

Run # 2. Source Has Perfect Creditability: s = +10, a = 5, m = -7.

In this run, “s” is set at its maximum value, which in turn implies that the source is perceived as perfectly credible. If that is the case, our rate equations indicate that there should be no source derogation, only change in the attitude toward the object. Indeed, one can see from Figure 18 that there was no source change, only the change in the attitude toward the object.



Att Towards Object : dissc m-7 a5 s 10 —————

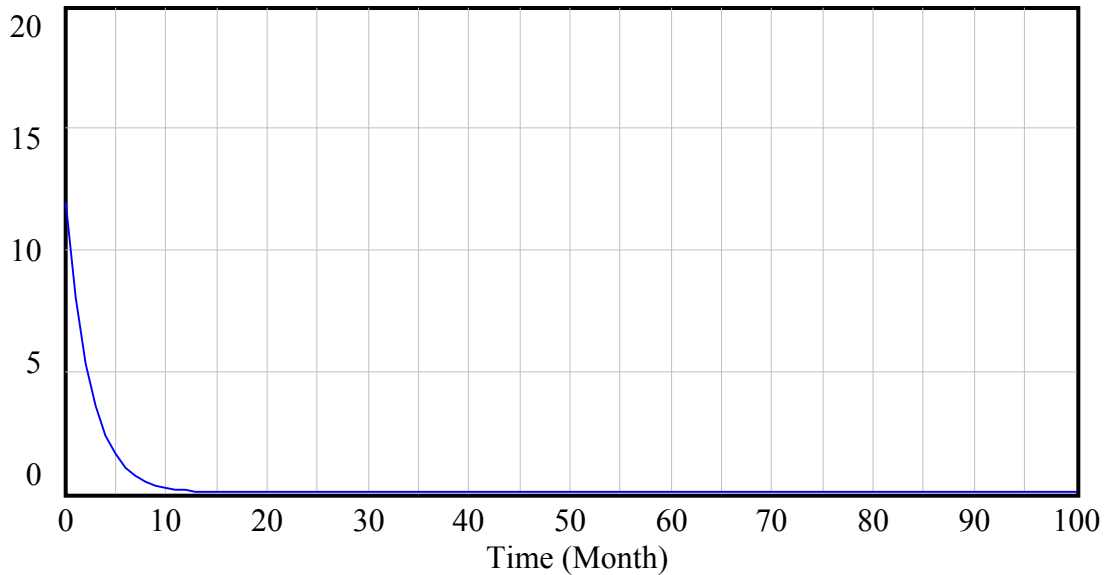
message from source : dissc m-7 a5 s 10 —————

Attitude Toward Source : dissc m-7 a5 s 10 —————

Figure 18. The results of a simulation run when $s = 10$.

Was there any dissipation of dissonance? Figure 19 shows that dissonance decreased over time because the receiver lowers his/her attitude toward the object to match the message.

Dissonance

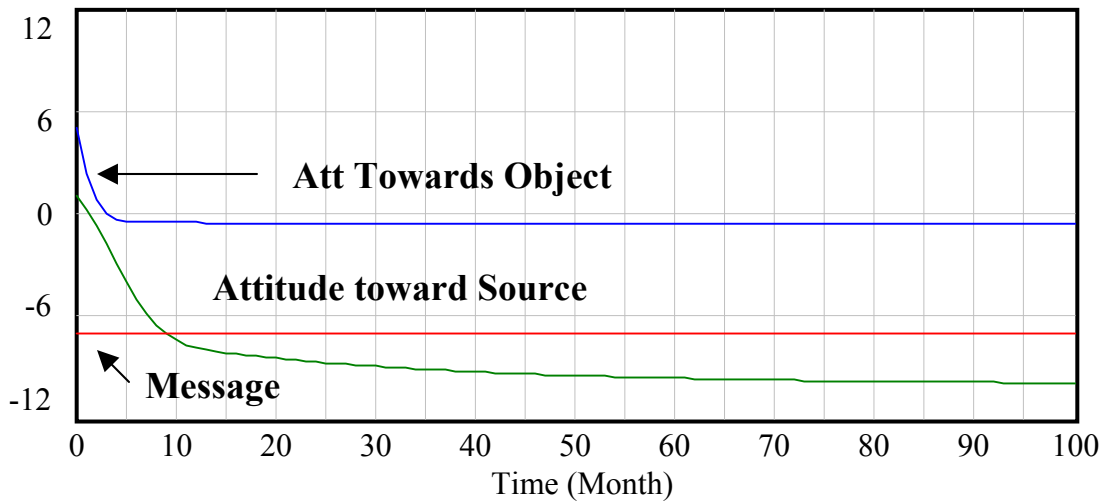


Dissonance : $\text{dissc } m-7 \text{ a}5 \text{ s } 10$

Figure 19. The dissipation of dissonance through changing the attitude toward the object

Run #3. Simulating the dissonance model in the test run situation.

In the test situation, i.e., $m = -7$, $a = 5$, and $s = 1$, the theory would say that if source change occurs at all, it will always be in the negative direction. The dissonance model is incapable of showing a reversal effect, which was one of the most startling features of Cohen's information processing model. The results of the test run for the dissonance model are seen in Figure 20. With this parameterization, both attitude and source change occurred. However, as "s" became more negative, credibility went down to a point where it inhibited the rate equation to a point where the variable, "a", went into equilibrium. The point of equilibrium, however, is in negative territory, according to Figure 20. That would have been sufficient to generate a reversal effect on the attitude toward the source, "s", in Cohen's model. The reversal never occurred in the dissonance case.



Att Towards Object : $\text{dissc } m=-7 \text{ a}5 \text{ s}1$ —————

message from source : $\text{dissc } m=-7 \text{ a}5 \text{ s}1$ —————

Attitude Toward Source : $\text{dissc } m=-7 \text{ a}5 \text{ s}1$ —————

Figure 20. The results of the test run for the dissonance model, where $m = -7$, $a = 5$, and $s = 1$.

MODERN EMBELLISHMENTS.

This paper has presented some models that summarize theoretical frameworks that are still in contention and seemingly interesting to researchers working on attitude change. Currently, there is a strong emphasis on cognitive processes and other emotional processes that might affect attitude change. The literature still talks about classical conditioning theories and imitative “modeling” approaches to attitude change (Aiken, 2002). From a cognitive approach, one frequently sees research studies that show how, under some circumstances, people will focus on the quality of the argument or go in the opposite direction by spending time trying to find a counter-argument. Finding time for a counter-argument takes time away from the persuasive aspect of the messages. This is a mechanism for not feeling the full persuasive force of a message. It is a type of mechanism to discount the message if the gap, $m - a$, is large. There is some interest in modeling the dynamics of argumentation by system dynamicists. Having a model that includes discounting might be useful in looking at argumentation dynamics.

An interesting place for the introduction of this cognitive process of discounting would be to see if the reversal effect in Cohen’s model, in which initially s decreased over time and then reversed itself when the attitude toward the object became negative. The extended model is shown in Figure 21. If discounting occurs, and it is a strong

mechanism used by someone to resist the influence of the message, then perhaps there will be no reversal, and the receiver will continue to like the source less and less.

The equation for the discounting variable is

$$\text{Effect of cognitive discounting} = 1/(1 + \psi*(m - a)^2), \quad (7)$$

where ψ is the strength of the tendency to look for counter-arguments.

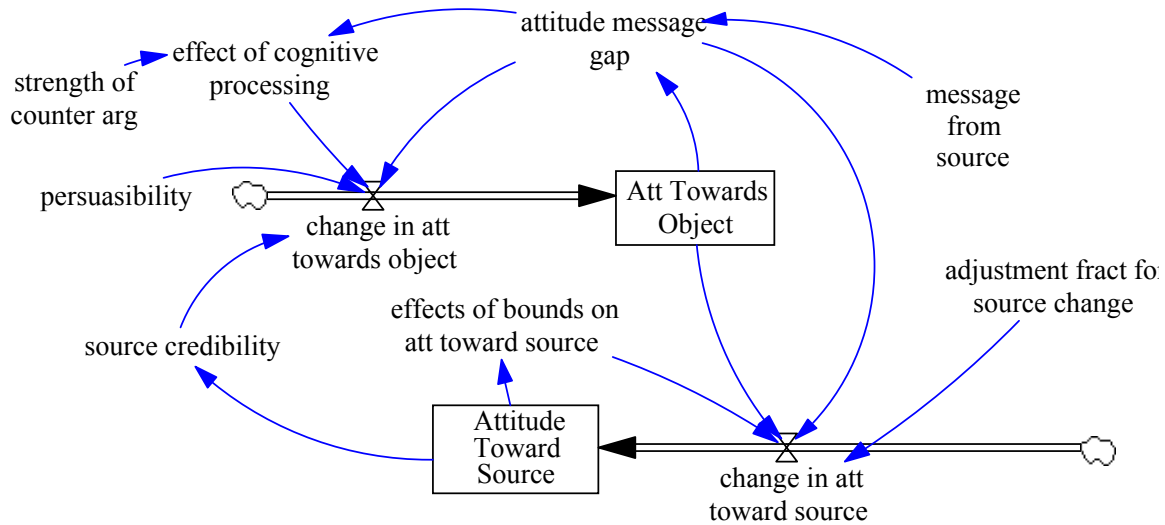
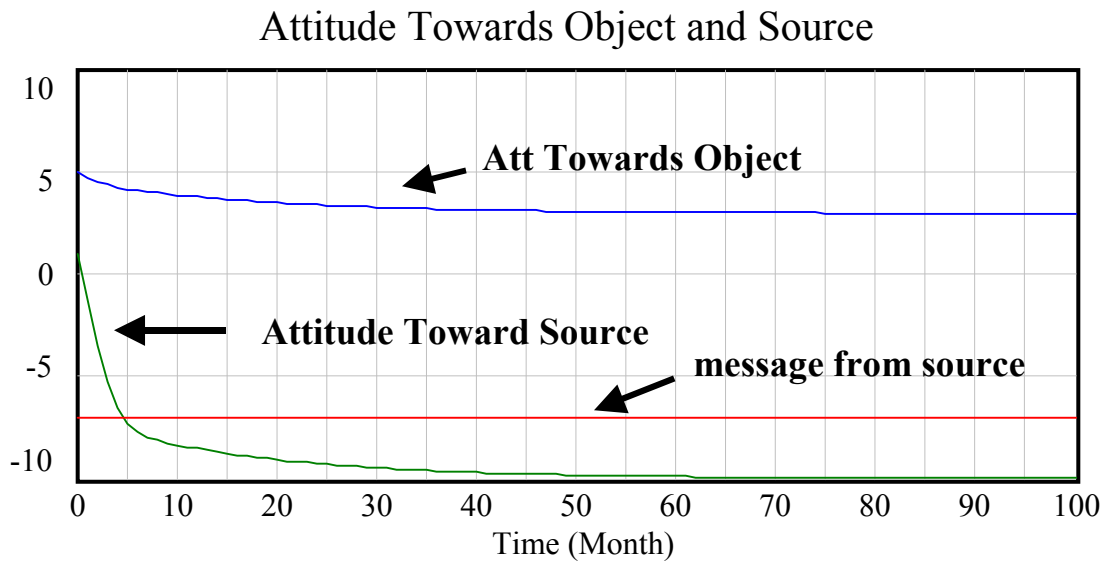


Figure 21. A flow diagram of Cohen's model of attitude change, in which the receiver takes time out to think about counterarguments

Run 1. Thinking about counterarguments-persuasibility reset to .7 and $\psi = 0.1$

Figure 22 below shows what happens to Cohen's model when a cognitive inattention process is introduced. For this run, the author increased the persuasibility parameter from .3 to a very high value of .7. The parameter associated with the strength of the use of this cognitive mechanism was set to .1 Figure 22 shows the steady decline of the receiver's attitude toward the source person. Note again that the attitude toward the object reached equilibrium considerably above the message and in positive territory. Note that the receiver's attitude toward the source continued to go down after it crossed into negative territory. There was not reversal effect found in this run.



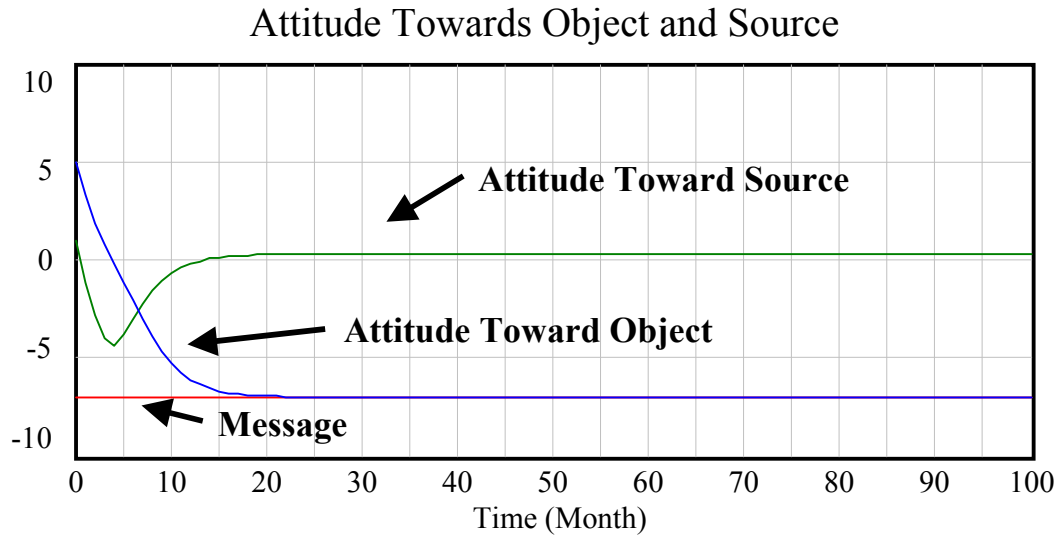
Att Towards Object : Cohen m-7 a5 s 1high pers —————
 message from source : Cohen m-7 a5 s 1high pers —————
 Attitude Toward Source : Cohen m-7 a5 s 1high pers —————

Figure 22. The effect of the receiver’s inattention to the message While searching for counter arguments.

Run #2 Checking For a Reversal Effect when ψ is extremely small

In the next run, the strength of the tendency to look for counterarguments was set to .01, a relatively small value. Persuasibility was again set high at a value of .7. Figure 23 shows the results. Initially, looking for counterarguments has a small effect of delaying the movement of variable a towards the message. However, the variable, “a,” eventually moved into negative territory and the attitude toward the source changed directions at that point. Again, under those circumstances, i.e., when ψ is extremely small, the model generates a reversal effect.

Indeed, ψ seems to be an excellent potential policy lever if one can affect the tendency to find counterarguments. From both sides, this could be useful for training be better listeners as well as perhaps find ways to prevent people from using this mechanism when messages are delivered.



Att Towards Object : Cohen m-7 a5 s 1high pers —————

message from source : Cohen m-7 a5 s 1high pers —————

Attitude Toward Source : Cohen m-7 a5 s 1high pers —————

Figure 23. Cohen’s model when the ψ was set to .01, implying the receiver did not have a strong tendency to look for counterarguments

CONCLUSIONS

Three different approaches to attitude change have been presented. The first, which dealt with behavioral explanations of how people change their attitudes, opinions and values proved to be problematic. Developing a model and looking at its loop structure helped to focus on the matter of control. If one of the purposes of the source person is to influence and persuade the receiver with a set of messages, one would think that it should be possible to move the person to the level of the message, not below or above the message. The models showed the inability of the behavioral approach to have that degree of control.

Information processing models easily solved the control problem. Both the mirror and Cohen’s model utilized proportional control to persuade the receiver to endorse the value of the message. Cohen’s model in particular, came up with an interesting potential social phenomenon, where under certain conditions, the attitude toward the source would reverse itself and move in the opposite direction from its initial response to the message. The author independently derived a model that also gave a reversal effect. In any event, we saw that the negative loop associated with the tendency to think about counterarguments could moderate this effect quite severely. Nevertheless, it is an interesting effect. For example, students, who go into required courses, may come in with a set of negative attitudes toward the course and perhaps the instructor. Sometime those students

find that they like the course and shift their assessment of the instructor as well. It does happen on occasion.

Finally, a third current approach to attitude change is to embrace a cognitive dissonance perspective. The dissonance model, although interesting, perhaps needs some work on developing the notion of the generation and dissipation of dissonance. On the one hand, the verbal theory indicates that dissonance is an emotional state. Yet dissonance was not treated as a level, accumulating and dissipating over time. One direction would be to include an independent dissonance stock in future models

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