THE PREDICTABILITY OF ATTRIBUTIONS FROM ATTITUDES, AND THE EFFECT OF SCHEMA COMPLEXITY ON EXTREMITY AND CONFIDENCE OF ATTRIBUTIONS

JOSEPH PAUL PILON, B.Sc.

The Predictability of Attributions from Attitudes, and the Effect of Schema Complexity on Extremity and Confidence of Attributions

BY

Joseph Paul Pilon, B.Sc.

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Department of Psychology
Memorial University of Newfoundland

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Abstract

The author investigated two hypotheses. H_1: Attitudes about a target will be predictive of attributions made regarding the target. H_2: As the cognitive complexity by which the target is represented increases, the less extreme, and less confident will be subjects' attributions regarding the target. In Experiment 1 the responses of 240 subjects were used to create standardized descriptions of a target. In Experiment 2 , 160 subjects participated in a 2 (attitude) X 2 (complexity) X 2 (outcome) design. Attitude about a target was manipulated using positive and negative descriptions, complexity of processing was manipulated by have subjects think about the target using 3 or 6 characteristics, and outcome of a situation was manipulated by having scenarios end in either a positive or negative outcome. The null hypothesis of H_1 could not be rejected since attitude had no effect on the attributions. No conclusions could be drawn about complexity since the manipulation of schema complexity was unsuccessful. An unanticipated result was that positive outcomes led to more internal attributions. Unlike other studies which found similar results, this one controlled for the preceding situation.

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Do attitudes affect the attributions we make of everyday events, and does schema complexity affect attributions in the same manner it affects attitudes? These are the two questions addressed in the following study. The following sections review the present concept of what schemas are and how they are related to both attitude formation and inferences of attribution. Also reviewed is the effect of schema complexity on evaluative extremity, depression, and attribution.

Schemas and Schema Complexity

The most basic definitions of schemas refer to them as cognitive structures of organized prior knowledge which facilitate the processing of information (Fiske and Taylor, 1984). Linville (1982) has done much work in developing constructs of schemas and schema complexity, and how they affect attitudes. The following is a review of Linville's (1982) concepts of what schemas and schema complexity are.

The structure of schemas

Each schema represents the knowledge one has of a specific domain. These domains can be social (e.g., women, adolescents, teachers, etc.) as well as nonsocial (e.g., cars, toothpaste, computers, chocolate chip cookies, etc.). Organized within the schema are the attributes or features which are descriptive of the categories contained in the domain. For example, in the schema for the domain of cars, are the features used to describe several different types of

cars (e.g., color, number of doors, size of engine, country of origin, etc.).

It is the manner in which these features or attributes are organized which is of the most interest. These features can be thought of as organized into groups or clusters, each cluster representing a description of a category within a domain. Examples of categories within the domain 'cars', could be 'sports car', 'sub compact', and 'classic'.

Each feature is considered to be associated with other features within the cluster. If a person is introverted, then he/she is also ....., or if a car is made in Germany, then it is also ..... Each feature is not restricted to one single description, but may appear as an attribute of several categories within the domain of the schema. However, each cluster is considered unique in that it contains features or a combination of features which are unique to that category. Therefore, when an object (either social or nonsocial) is described using features or a combination of features which are unique to a category, the other features within that cluster are also considered to be descriptive of that object.

It is this property of cognition that is responsible for the reevaluation of the concept of the social perceiver as a naive scientist. Normative theories such as Kelly's attribution theory were based on the assumption that people base their judgments on information they accurately perceive

from the environment (e.g., consistency, consensus, and distinctiveness). In contrast, other versions of attribution theory have emphasized the fact that individuals do not passively perceive their environment, but that they augment incomplete information, as while selectively attending to, encoding, and recalling stimuli (Cantor & Mischel, 1977; Cohen, 1981; and Zandy & Gerard, 1974)

Schema complexity.

An important aspect or characteristic of schemas is their complexity. The greater the number of feature sets represented within a schema, the more complex it is considered to be. Therefore, the most prominent factor indicating the complexity of a schema system is the number of features organized within it. "The greater the number of features, the greater the potential number of feature sets (i.e., clusters), or categories" (Linville, 1982, p. 195).

For example, a simple representation of car engines may only contain 3 categories: four, six, and eight cylinder engines. This schema would contain 3 feature sets, and use only one feature (i.e., number of cylinders) to describe them. A mechanic's representation however, would be far more complex. Contained within his/her schema would be more features sets, or categories of engines, as well as more features used to differentiate them.

The concept of cognitive complexity is similar to that of schema complexity. While schema complexity has been

measured using a trait sorting task (Linville & Jones, 1980; and Linville, 1982), cognitive complexity has been measured using either the Role Category Questionnaire (Delia, Clark, & Switzer, 1974), or the Bieri Rep Test (Durand, 1978). All of these measures attempt to measure the amount of cognitive differentiation within a specific domain. That is, the number of features used to describe the target stimulus. Linville's (1982) trait sorting task is more appropriate than either the Role Category Questionnaire or the Rep test. It is a more direct measure of complexity, and allows the subject greater range in the number of features he/she wishes to use in describing categories within a domain.

Schemas, Attitudes, and Attributions

Schemas and attitudes.

An attitude is defined "as a person's location on a dimension of affect or evaluation" (Fishbein & Ajzen, 1975, p.53). (Fishbein & Ajzen, 1975, used the terms affect and evaluation synonymously.) Specifically, an attitude represents an evaluation, along a bipolar scale from 'favorable to unfavorable', of the attributes an attitude object is believed to have.

While the attitude represents the evaluation of the object's attributes or features, the schema represents the features themselves. According to this view, schemas and attitudes are closely inter-related. Once an object (social

or nonsocial) has been categorized, the feature set of that category is considered descriptive of that object. Some features can and do have an 'evaluative component'. For example, features such as laziness, violent, and manipulative are viewed negatively, while features such as industrious, gentle, and honest are viewed positively.

It is these value-laden features which are combined to produce an evaluation or attitude toward the object. Anderson (1965; 1974) has extensively researched how people integrate several features of a target stimulus to arrive at an evaluation. He found the integration process followed an averaging process. The social desirability of the target is the arithmetic mean of the social desirability of the individual features used to describe the target.

Schemas and attributions.

Schemas and attribution can also be integrated in much the same manner as schemas and attitudes. The same schema that represents the features of a category can also be considered to represent people's category-based expectations (Fiske & Linville, 1980; and Jones & Berglas, 1976). Just as the attitude is made up of the value-laden features, the category-based expectations are made up of the features which describe an individual's capabilities and motivations (i.e., information that could be used to make attributions).

Hypothesis one: Attributions made regarding targets are consistent with the attitudes of the target.

From this integration of schemas, attitudes and attributions, it can be hypothesized that one's attitude toward a target will be predictive of one's attributions concerning that target. Upon being given value-laden information descriptive of a target individual, an attitude or evaluation of the target is developed, and a schematic representation of the target is activated. As Tesser and Leone (1977) have demonstrated, any further cognitions produced will be consistent with the schema. Therefore, any inferences or attributions made regarding the target will be consistent with the attitude. For example, within the schema of a negatively viewed person, exists several negative features of that individual, including such information that would lead to an internal attribution of a negative occurrence.

Four predictions can be made: (1) When the target is viewed negatively, subjects will be more likely to make internal or actor attributions of a negative occurrence. (2) When the target is viewed negatively, subjects will be more likely to make external or situational attributions of a positive occurrence. (3) When the target is viewed positively, subjects will be more likely to make external or situational attributions of a negative occurrence. (4) When the target is viewed positively, subjects will be more

likely to make internal or actor attributions of a positive occurrence. Although this seems like a 'common sense' prediction; I am not aware of any research which as examined this relationship.

Effects of Schema Complexity

Schema complexity and attitudes.

The complexity of a schema has been shown to be a factor in predicting evaluative extremity. Given the same information about a target individual, subjects with a simple representation of the target will develop more extreme, and more confident evaluations then will subjects with more complex representations. For example, positive information processed through a simple schema will result in an extreme positive evaluation, and the same positive information processed through a complex schema will result in a moderate positive evaluation (Chaiken & Yates, 1985; Fiske & Taylor, 1984; Linville & Jones, 1980; Linville, 1982; Millar & Tesser, 1986; Tesser & Leone, 1977; and Valenti & Tesser, 1981).

The reasons that have been given for the effect of schema complexity on attitudes are two fold. First, as categories are described with fewer and fewer features, the probability that all of these features within each category will be evaluatively negative or that all will be evaluatively positive become higher. Therefore, as

positive (or negative) information about the target is given, it is identified as belonging to a category which can be described almost exclusively with other positive (or negative) features. With a complex schema however, a larger number of features are used to described each category, and therefore, each category is more likely to contain a combination of both positive and negative features instead of just positive or just negative. Therefore, when positive information is processed through the complex schema, the target is identified as belonging to a category which is described by both positive and negative features. The result is a less extreme, and less confident evaluation. It should be kept in mind, however, that not all features have an evaluative component. Some features such as 'he/she wears glasses' can be evaluatively neutral.

The second reason for the effect of schema complexity on attitudes is more straight forward. An individual who uses a complex schema will categorize a target according to many different features. When the available information is insufficient for this purpose, such an individual will tend to make more reserved and therefore more moderate judgments. However, because simple schemas are, "characterized by fewer dimensions [features], new information may carry more impact and lead to confident and extreme judgments" (Linville & Jones, 1980, p. 691).

Research from the field of cognitive complexity also supports the concept that higher complexity leads to less confident and less extreme judgments and evaluations (Arnett, 1978; Delia, Clark, & Switzer, 1974; Durand, 1978; O'Keefe & Brady, 1980; Schneier, 1977; Wright & Richarson, 1977).

A recent and practical application of this phenomena is in the area of depression. Linville (1985) postulated "that the less complex a person's cognitive representation of the self, the more extreme will be that person's swings in affect and self-appraisal" (p. 94). Since these 'swings in affect' are characteristic of manically depressive individuals, Linville (1985) hypothesized that high self-complexity could be considered a buffer against depression, and that low self-complexity is a promising cognitive marker for vulnerability to depression. Recent experiments have supported this hypothesis (Barnett & Gotlib, 1988; Linville, 1985; Linville, 1987; and Segal, 1988).

Hypothesis two: Complex schemas produce less extreme, and less confident attributions.

This thesis attempts to integrate schema complexity with the area of attribution. While Linville's work successfully applied schema complexity to attitudes (Linville & Jones, 1980; and LInville, 1982) and to depression (Linville, 1985; and Linville, 1987), it has not explored the effects of schema complexity on attributions.

For the same reasons that a complex schema produces less confident evaluations of target stimuli, it should also produce less confident attributions. In a complex schema, the information has less impact, and is considered insufficient to categorize stimuli confidently. Therefore, the category based expectations are not used as assuredly.

One study from the field of cognitive complexity is relevant here. Therrien (1976) measured the cognitive complexity of 60 subjects as well as their attributions (internal vs external) of pupils' achievements, and the confidence they placed in those attributions. A correlational analysis revealed that the level of cognitive complexity was negatively related to the degree of confidence the subjects had in the attributions they made.

Standardization of Material, and Experimental Design

Manipulation of attitude toward the target was crucial for testing the hypothesises. Therefore, in Experiment 1, pretesting was done to select positive and negative descriptions of a target individual. These descriptions were used for manipulating attitude in the second experiment.

Experiment 2 tested the two hypotheses: (1) That attitudes about a target will be predictive of attributions made regarding the target, and (2) as the complexity by which the target is represented increases, the less extreme,

and less confident will be subjects' attributions regarding the target.

The dependent variables manipulated are (a) the attitude toward a male target individual, (b) the complexity of processing, and (c) the outcome (positive or negative) for the target. The dependent measures include (a) the subjects' attitudes toward the target, (b) the confidence they place in those attitudes, (c) subjects' attributions of causality for the outcome, and (d) the confidence they place in those attributions.

Experiment 1

Method

Subjects.

240 students from first year psychology courses served as voluntary participants. The sex of the subjects was not recorded.

Materials.

The total number of descriptions used was 40: Twenty positive ones, and 20 negative ones. To create these descriptions, seven pairs of adjectives were selected from a list of adjectives rated for likability and meaningfulness (Anderson, 1968). All the adjectives chosen were rated as highly meaningful, and each pair contained an adjective which induces a high level of likableness, and its opposite which induces a very low level of likableness.

The seven pairs of adjectives used were; (1) neat & messy, (2) honest & dishonest, (3) warm & cold, (4) mature & immature, (5) unselfish & selfish, (6) broad-minded & narrow-minded, and (7) ambitious & aimless. All the adjectives chosen are from the extreme ends of the likability scale. Little variance exist between either the seven positive adjectives, or between the seven negative adjectives, in terms of how much likability they induce.

The second step consisted of creating a standard description in which the adjectives could placed. The following standard description was used.

> Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very _____ person, and he tends to be _____ in his day to day activities. Most employees regard him as quite ____, while others view his most prominent characteristics to be his extreme ____ and ____. However, it is worth noting that he has also shown himself to be ____ and ____.

Using this standard description, 10 pairs of descriptions were produced. A positive description contained a combination of five positive adjectives, and two negative adjectives (the first five adjectives were positive and the last two were negative). The order in which the adjectives appeared was chosen randomly using the random numbers generator of a computer program. Once twenty positive descriptions were produced, twenty negative descriptions were produced simply by replacing the adjectives with their opposites. Therefore, each of the twenty positive descriptions had a corresponding negative description.

Design and procedure.

Each subject read one description and then rated it on a 7 point scale for how likely it described a real person (1 = not likely at all, 7 = very likely).

The experimenter explained to the class that the experiment was to create standardized material for a second experiment, and that the procedure would only take a minute. The material was distributed to those who volunteered to participate, and was retrieved upon completion.

Results

A 20 (description) x 2 (positive vs negative) design was used to evaluate the believability of the descriptions. The mean believability rating for each description was calculated. Two criteria were used to select half of the descriptions. The pairs of descriptions used had to be; (1) matched for believability and (2) be rated as highly believable. The mean believability ratings are summarized in Table 1. Using these two criteria, the ten best descriptions were selected (see Appendix B for a list of the descriptions used).

Table 1

Mean Believability Ratings of Positive and Negative Descriptions

Description #	Positive Description	Negative Description
1	4.1	5.5
2	4.8	3.0
3*	5.1	5.5
4	2.8	4.5
5	4.5	3.5
6*	4.8	4.1
7*	5.0	4.3
8	5.0	3.7
9*	4.0	4.8
10*	5.7	5.8
11	3.0	4.0
12*	4.3	4.1
13*	5.1	5.1
14*	5.6	4.6
15*	4.6	5.0
16	3.8	4.5
17*	4.1	4.6
18	4.1	3.6
19	4.5	4.0
20	4.5	4.0

* Description selected for Experiment 2.

Experiment 2

Method

General Description of Procedure and Questionnaire

Both hypotheses were tested within a 2 x 2 x 2 factorial design. The first variable manipulated was the subject's attitude toward a target individual. The second was the complexity of processing used by the subject in evaluating the target, and the third was the outcome favorableness (i.e., whether the outcome of the target's action was positive or negative).

Each subject was given a questionnaire which represented one of the eight experimental conditions (see Appendix C for an example of a questionnaire used). At the beginning of each questionnaire was a description of a target, and instructions to form an image of that target using 3 or 6 characteristics. Having done so the subject was instructed to respond to attitudinal measures of the target, as well as a confidence rating of their judgement.

Next, the subject read a situation the target finds himself in, and this situation either resulted in a positive or negative outcome. After reading the situation and outcome, the subject was asked to make attributions as to what caused the outcome of the situation. Finally, the subject was asked to give a confidence rating of the attributions just made. At the end of the questionnaire, subjects were asked to indicate their gender and age.

Selection of Subjects and Assignment to Treatment Conditions

Subjects were selected from students located in the study areas of the university library. A total of 160 subjects, 82 males and 78 females, were selected. The ranged in age from 18 years to 34 years with a mean age of 21 years. The experimenter entered the study area equipped with 10 questionnaires and approached each student that was sitting alone. No more than 10 questionnaires were passed out at once in order to easily retrieve them all. The potential subject was told that the experimenter was a graduate student attempting to gather data for a thesis and that their help in filling out a short questionnaire would be much appreciated. If the student agreed to participate he or she was given a questionnaire and left alone to complete it. Only two individuals refused to participate. The experimenter returned approximately 10 minutes later to retrieve it and debrief the subject.

Random assignment of subjects to treatment conditions was accomplished be placing all the questionnaires in random order and then handing them out to students. A random numbers generator of a computer program was used to create the random order of the questionnaires.

Manipulation of Variables

Evaluation of target.

The subjects' evaluations of a target were varied by having the subjects the read either a positive or negative

description. Ten pairs of descriptions were used, each pair consisting of a positive and a negative description. Half the subjects read a positive description while the other half read a negative description.

Complexity of processing.

The complexity of processing of the subject was manipulated in a manner similar to that used by Linville and Jones (1980) and Linville (1982). After reading the description of the target, subjects read an instruction sheet asking them to think about the target during the next minute in terms of a list of three or six characteristics. The characteristics used were synonyms of the adjectives used in the descriptions. They included; tidiness, honesty, sensitivity, maturity, self-centeredness, liberalness, and determination.

The characteristics used in each treatment condition were randomly chosen with the constraint that they reflected the same ratio of positive and negative adjectives that appeared in the descriptions. For example, for a positive description the characteristics reflected either 2 positive and 1 negative adjective (the 3 characteristic condition), or 4 positive and 2 negative adjectives (the 6 characteristic condition). A different set of characteristics were chosen for each description.

Favorableness of outcome.

On the last page of the questionnaire was a description of a situation the target encountered and the outcome. For half the subjects, the outcome of this situation was positive, and for the other half, the outcome was negative.

Four different situations were used, each with a positive and a negative outcome (see Appendix D for a list of situations used and their outcomes).

Measures of Attitude and Confidence of Attitude

Two Likert type items were used to measure the subject's attitude toward the target individual: (a) How much do think Mr. Andrews and yourself could become very good friends? (b) How easy do you think it would be to work with Mr.Andrews? Subjects responded using a five point scale (1 = not at all, 5 = very much). Immediately after, subjects were ask to rate how confident they were of their attitudinal judgments using another five point scale.

The attitude and confidence measures served as manipulation checks for; (a) evaluation of the target, and (b) complexity of processing. Subjects who read the positive descriptions were expected to rate the target more favorably than were subjects who read the negative description. Subjects in the simple processing condition should evaluate the targets more extremely than those in the complex processing condition.

Measures of Attribution and Confidence of Attribution

Three separate measures of attribution were used. First, subjects were asked to estimate the percentage of responsibility which could be attributed to the target, and then to estimate what percentage of the responsibility could be attributed to external factors. Subjects responded using a scale from 0% to 100%, with increments of 10. The subjects's responses to these two questions represented his or her internal and external attributions respectively.

The third measure was an open ended question asking the subjects to list the major reasons why the specific outcome occurred. These answers were later rated, by independent judges, for the degree of internal and external attributions they reflected. Judges responded using the same scales used by subjects. The only materials the judges received were the subject's answer and the specific situation and outcome the answer referred to.

The inter-rater reliability for both the level of internal responsibility, $r(159) = .68$, $p<.00001$, and external responsibility, $r(159) = .68$, $p<.00001$, were significant, but low for inter-rater reliability scores. However, the task given to the judges was difficult, and involved responding on an 11 point scale (from 0% to 100%). This may account for much of the variance between the raters' answers. The judge's attribution ratings were

averaged into one internal attribution rating, and one external attribution rating.

Immediately after making the attributions, the subjects was asked to rate the amount of confidence with which they made them. Again a five point scale was used.

Results

Data Screening

Prior to analysis, the attitude scores, confidence of attitude, attribution scores, and confidence of attribution were examined though SPSS^x programs for accuracy of data entry, missing data, outliers, skewness of distributions, homoscedasticity, and multicollinearity. It was not necessary to check for linearity because there were only two levels for each independent variable.

Three scores were missing from the confidence of attribution measure, and were replaced with the mean value from the remaining 157 subjects. Only one subject did not answer the open-ended attribution response, and this score was replaced using the mean from the remaining 159 subjects.

The two attitude measures were found to be significantly correlated, $r(158) = .57$, $p<.0001$, and were added together to form one composite attitude measure. The attitude score therefore ranged from 2 to 10 with 10 representing the most positive evaluation.

The attribution measures included an internal attribution of responsibility, an external attribution of

responsibility, as well as the independent judges' internal and external attribution ratings of the open ended answers (a total of 4 attribution ratings for each subject).

A correlation matrix of the four attribution ratings (the composite internal and external ratings of the judges, and the subjects' own internal and external ratings) showed that they were all significantly correlated (see Table 2). These ratings were therefore combined into one composite internal-external attribution score. The two external attribution ratings were reversed in order to correlate positively with the internal ratings. This composite internal-external attribution score ranged from 0 to 400, with a higher score representing a more internal attribution.

Three dependent measures, confidence of attitude, attribution, and confidence of attribution, were found to have skewed distributions, and were transformed. A logarithmic transformation was performed on the confidence of attitude scores. The attribution scores, and the confidence of attribution scores were squared. All other assumptions were satisfactorily met.

Analysis Using MANOVA

A 2 X 2 X 2 X 2 between-subjects multivariate analysis of variance was performed on four dependent variables: (1) attitude toward target, (2) confidence of attitude, (3) attribution of outcome, and (4) confidence of attribution.

Table 2

Correlation Matrix of Attribution Scores

	Factor			
	1	2	3	4
Internal Attribution score	-			
External Attribution score	-.65*	-		
Internal Attribution score (from judges ratings)	.30*	-.26*	-	
External Attribution score (from judges ratings)	-.30*	.26*	-1.00*	-

Note. N = 160. *p<.001.

The Independent variables were: (a) description of target (positive or negative), (b) number of characteristics (3 or 6), (c) outcome of situation (positive or negative), and (d) sex of the subject.

SPSS^{x} MANOVA was used for the analyses. Using Wilks' criterion, no three or two way interactions were significant, but several main effects were found. The cell means are summarized in Table 3.

The sex of the subject affected only the confidence with which they made judgments. Sex had a marginal effect on the confidence of attitudes, $F(1,144) = 3.79$, $p<.053$, and a significant effect on the confidence of attributions, $F(1,144) = 10.16$, $p<.002$. In both cases, female subjects were less confident.

The favorableness of the description affected two dependent measures; (a) the subject's attitude about the target individual, $F(1,144) = 89.29$, $p<.0001$, and (b) the attributions they made, $F(1,144) = 4.97$, $p<.027$. Positive descriptions resulted in more positive attitudes, and more internal attributions.

The number of characteristics used by the subject to evaluate the target showed no effect on any of the measures.

The outcome favorableness of the situations had an effect on two dependant measures: (a) the attributions made by subjects, $F(1,144) = 5.38$, $p<.022$; and (b) the confidence

Table 3

Cell Means and Standard Deviations of 2 X 2 X 2 X 2 MANOVA

	Attitude[a]		Attitude[b] Confidence		Attribution[c]		Attribution[b] Confidence	
	M	SD	M	SD	M	SD	M	SD
Description								
Pos	6.4***	1.6	3.9	.87	283*	88	3.9	1.19
Neg	4.1	1.4	4.0	.87	264	92	3.8	1.12
Processing								
Simple	5.2	2.0	3.9	.85	264	86	3.8	1.06
Complex	5.4	1.8	4.0	.78	272	93	3.9	1.25
Outcome								
Pos	5.4	1.9	3.9	.80	291*	82	3.6*	.80
Neg	5.2	1.8	4.0	.83	255	95	3.9	.99
Sex								
Male	5.1	1.8	4.0	.91	277	91	4.0**	.85
Female	5.4	2.0	3.8	.82	268	89	3.6	.93

[a]A higher score refers to a more positive attitude.

[b]A higher score refers to a more confident judgement.

[c]A higher score refers to a more internal attribution.

*p<.05. **p<.01. ***p<.0001.

of the attributions made, $F(1,144) = 6.38$, $p<.013$. Positive outcomes resulted in internal attributions and less confident judgements.

Analysis Using Hierarchical Regression

Hierarchical regression, using SPSS^x REGRESSION, was employed to determine how much variance could be accounted for by the independent variables. Some of the significant findings from the MANOVA were not reproduced. The effects of sex on the confidence of attitudes and the effect of the descriptions on attributions were no longer significant.

Four separate regressions were performed, one on each of the dependent variables. The nature of the description was the only independent variable to affect the attitudes toward the target individual, $R^2 = .37$, $F(1,158) = 92.59$, $p<.00001$. Addition of other variables did not reliably improve R^2. No independent variables were found to significantly predict the confidence of attitude.

The favorableness of outcome was the only independent variable to account for a significant portion of the variance of the attributions made, $R^2 = .04$, $F(1,158) = 7.03$, $p<.0088$. Addition of other variables did not reliably improve R^2.

The fourth and last dependent variable analyzed was the confidence of the attributions, and two independent varaibles were found to predict this variable, sex and favorableness of outcome.

Step		R^2	F_{inc}	df	p<
1	sex	.04	8.49	(1,158)	.0041
2	outcome	.09	7.84	(1,157)	.0006

Addition of other variables did not reliably improve R^2.

Discussion

The attitude measure and confidence of attitude measure were used as manipulation checks for two of the independent variables; (a) description of the target, and (b) the complexity of processing. The description of the target was successful in generating a positive or negative attitude toward the target.

Unfortunately, the manipulation of processing complexity was not effective. The simple processing condition should have resulted in more extreme attitudes, and more confident attitudes. The manipulation of processing complexity had no affect on any of the dependent variables, either as a main effect or as part of an interaction. Therefore no conclusions can be drawn from this experiment concerning the effect of schema complexity on attributions.

The MANOVA did yield a significant main effect of the descriptions on the attributions. Regardless of outcome, positive descriptions produced greater internal attributions. What was expected was an interaction between the description and the outcome on the attribution. Positive descriptions with positive outcomes, or negative descriptions with negative outcomes were expected to yield internal attributions, and positive descriptions with negative outcomes, and negative descriptions with positive outcomes were expected to produce external attributions.

The observed main effect makes very little sense, and it is possible that it is a type I error. Consistent with this interpretation is the fact that the corresponding effect was not found to be significant in the subsequent regression analysis. Either way, the description of the target did not interact with the type of outcome as expected, and the second null hypothesis cannot be rejected.

One cannot state from this experiment that attitudes toward a person affect attributions concerning that person. Are the processes involved in attitude formation separate from those involved in attributions? The results found here would suggest this is the case, and it is definitely a question worth further investigation.

An unanticipated result is the effect of outcome on attribution. Positive outcomes result in greater internal attributions. Several other experiments have found the same result (Doyne, Beutler & Calhoun, 1981; Stephan, 1977; Gretarsson & Gelfand, 1988; Dix, Ruble, Grusec & Nixon, 1986; Curtis & Schildhaus, 1980; Taylor & Koivumaki, 1976; and Gibb & Lambirth, 1982). This result can be interpreted using a cognitive-attribution model of depression (Doyne, Beutler & Calhoun, 1981). Depressed individuals tend to make internal attributions for anything that goes wrong, and attribute any positive outcome to either fate or to other people. Non-depressed individuals may tend to indulge in the opposite form of attribution.

While assessing the reliability and validity of the Personal Reactions Inventory (PRI), Doyne et al (1981) had a non-depressed sample of subjects make attributions as to the cause of positive and negative consequences of various behaviors. They found that positive consequences lead to greater internal attributions.

Similar manipulations of outcome favorableness have been carried out in the experiments cited earlier, and found similar results. However these studies all share a confounding factor. The behavior or situations which led to the consequences were not controlled. Often, the negative consequences were a result of negative behavior or an accident, and positive consequences were the result of positive behavior or great effort. An experiment by Gibb & Lambirth (1982) illustrates this confound. The positive outcome is deciding to go to law school, and the negative outcome is deciding to have an abortion (all subjects were female). How great a role do external factors have in deciding to go to law school, and how many women plan and place much effort towards having an abortion? It is no great surprise that deciding to go to law school resulted in greater internal attributions than deciding to have an abortion.

An experiment by Stephan (1977) had subjects make attributions for positive and negative outcomes caused by positive and negative behaviors respectively. For example,

behaviors used by Stephan (1977) were: (a) not waiting for a friend and (b) opening a door for a teacher. The subjects were making attributions based not only on the outcome, but also on the behavior.

In the present experiment, only the outcome of the behavior is manipulated. Four different situations are used, each with a positive and negative outcome. Therefore, from this manipulation, one can more confidently state that the outcome of a situation alone does affect the attributions one makes.

Favorableness of outcome also affected the level of confidence of the attribution. Positive outcomes resulted in less confident attributions, as well as greater internal attributions. It is possible that favorableness of outcome affects the attribution and confidence judgments separately. Alternatively, it may simply be that people are more confident about making external attributions.

If the latter is true, then correlational analysis of outcome, attribution, and confidence would be expected to reveal a greater correlation between attribution and confidence than between outcome and confidence. This however is not the case. The correlation between outcome and confidence is $r(158) = .21$, $p<.004$, while the correlation between attribution and confidence is not significant.

From an actor/observer paradigm, the attributions in Experiment 2 are observer attributions. In much of the literature, these types of attributions result in external attributions (Abramovitch & Freedman, 1981; Bar-Tal & Frieze, 1976; Ender & Bohart, 1974; Schlenker, Bonome & Forsyth, 1977; and Tillman & Carver, 1980). The mean attribution rating for the entire sample is 274 with standard deviation of 90. This is of some interest since it represents more of an internal attribution than an external one. Unfortunately, comparisons between actor and observer attributions cannot be made with this data since no actor attributions were made.

The only other result found in this experiment is that females were less confident than males in their attributions. This is consistent with much other literature examining the confidence with which people make decisions (Brems & Johnson, 1989; Schoen & Winocur, 1988; Andrews, 1987; McCarty, 1986; and Kimball & Gray, 1982). Like most other experiments examining confidence levels of decisions, the differences found have been small, and authors have been reluctant to accord much importance to this finding. Are women being too cautious, or are men being overly confident? This is a difficult question to answer since the level of confidence reported often does not relate to how correct the answer is.

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Appendix A

Example of material used for rating the believability of descriptions.

1 , 0

In an experiment that I will be conducting this semester, subjects will be required to read either a positive or negative description of a target individual. Since no standardized set of positive and negative description exist which suit my needs, I am creating my own. The following description is one of forty different ones that I am having students rate. Please read it carefully and answer the question at the end of the page. Thank you for your cooperation.

Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very broad-minded person, and he tends to be mature in his day to day activities. Most employees regard him as quite warm, while others view his most prominent characteristics to be his extreme neatness and unselfishness.

However, it is worth noting that he has also shown himself to be dishonest and aimless.

PLEASE ANSWER THIS QUESTION.
The description you have just read listed several characteristics that Mr. Andrews has. How likely is it that a person with this set of characteristics actually exists?

CIRCLE THE NUMBER THAT BEST REPRESENTS YOUR ANSWER.
1 = 'NOT LIKELY AT ALL' and 7 = 'VERY LIKELY'

	1	2	3	4	5	6	7
NOT LIKELY AT ALL							VERY LIKELY

Appendix B

List of positive and negative descriptions.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very broad-minded person, and he tends to be mature in his day to day activities. Most employees regard him as quite warm, while others view his most prominent characteristics to be his extreme neatness and unselfishness.

However, it is worth noting that he has also shown himself to be dishonest and aimless.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very narrow-minded person, and he tends to be immature in his day to day activities. Most employees regard him as quite cold, while others view his most prominent characteristics to be his extreme messiness and selfishness.

However, it is worth noting that he has also shown himself to be honest and ambitious.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very mature person, and he tends to be unselfish in his day to day activities. Most employees regard him as quite honest, while others view his most prominent characteristics to be his extreme warmness and broad-mindedness.

However, it is worth noting that he has also shown himself to be messy and aimless.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very immature person, and he tends to be selfish in his day to day activities. Most employees regard him as quite dishonest, while others view his most prominent characteristics to be his extreme coldness and narrow-mindedness.

However, it is worth noting that he has also shown himself to be neat and ambitious.

Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very ambitious person, and he tends to be warm in his day to day activities. Most employees regard him as quite neat, while others view his most prominent characteristics to be his extreme maturity and unselfishness.

However, it is worth noting that he has also shown himself to be dishonest and narrow-minded.

Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very aimless person, and he tends to be cold in his day to day activities. Most employees regard him as quite messy, while others view his most prominent characteristics to be his extreme immaturity and selfishness.

However, it is worth noting that he has also shown himself to be honest and broad-minded.

Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very warm person, and he tends to be mature in his day to day activities. Most employees regard him as quite honest, while others view his most prominent characteristics to be his extreme ambitiousness and broad-mindedness.

However, it is worth noting that he has also shown himself to be selfish and messy.

Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very cold person, and he tends to be immature in his day to day activities. Most employees regard him as quite dishonest, while others view his most prominent characteristics to be his extreme aimlessness and narrow-mindedness.

However, it is worth noting that he has also shown himself to be unselfish and neat.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very neat person, and he tends to be warm in his day to day activities. Most employees regard him as quite unselfish, while others view his most prominent characteristics to be his extreme maturity and honesty.

However, it is worth noting that he has also shown himself to be narrow-minded and aimless.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very messy person, and he tends to be cold in his day to day activities. Most employees regard him as quite selfish, while others view his most prominent characteristics to be his extreme immaturity and dishonesty.

However, it is worth noting that he has also shown himself to be broad-minded and ambitious.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very mature person, and he tends to be ambitious in his day to day activities. Most employees regard him as quite unselfish, while others view his most prominent characteristics to be his, extreme honesty and warmness.

However, it is worth noting that he has also shown himself to be messy and narrow-minded.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very immature person, and he tends to be aimless in his day to day activities. Most employees regard him as quite selfish, while others view his most prominent characteristics to be his extreme dishonesty and coldness.

However, it is worth noting that he has also shown himself to be neat and broad-minded.

Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very neat person, and he tends to be warm in his day to day activities. Most employees regard him as quite unselfish, while others view his most prominent characteristics to be his extreme ambitiousness and honesty.

However, it is worth noting that he has also shown himself to be immature and narrow-minded.

Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very messy person, and he tends to be cold in his day to day activities. Most employees regard him as quite selfish, while others view his most prominent characteristics to be his extreme aimlessness and dishonesty.

However, it is worth noting that he has also shown himself to be mature and broad-minded.

Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very warm person, and he tends to be unselfish in his day to day activities. Most employees regard him as quite honest, while others view his most prominent characteristics to be his extreme broad-mindedness and ambitiousness.

However, it is worth noting that he has also shown himself to be immature and messy.

Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very cold person, and he tends to be selfish in his day to day activities. Most employees regard him as quite dishonest, while others view his most prominent characteristics to be his extreme narrow-mindedness and aimlessness.

However, it is worth noting that he has also shown himself to be mature and neat.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very warm person, and he tends to be unselfish in his day to day activities. Most employees regard him as quite broad-minded, while others view his most prominent characteristics to be his extreme neatness and ambitiousness.

However, it is worth noting that he has also shown himself to be dishonest and immature.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very cold person, and he tends to be selfish in his day to day activities. Most employees regard him as quite narrow-minded, while others view his most prominent characteristics to be his extreme messiness and aimlessness.

However, it is worth noting that he has also shown himself to be honest and mature.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very neat person, and he tends to be warm in his day to day activities. Most employees regard him as quite ambitious, while others view his most prominent characteristics to be his extreme unselfishness and maturity.

However, it is worth noting that he has also shown himself to be dishonest and narrow-minded.

Mr.Andrews and I have been co-workers for the past three years. In that time I have found him to be a very messy person, and he tends to be cold in his day to day activities. Most employees regard him as quite aimless, while others view his most prominent characteristics to be his extreme selfishness and immaturity.

However, it is worth noting that he has also shown himself to be honest and broad-minded.

Appendix C

Example of material used to collect data.

CODE #: 3 0 1 1 ?

Thank you for participating. The following questionnaire is part of a study being done by a graduate student as part of a Master's thesis.

By completing this questionnaire you will be helping to advance the research being done in the field of psychology.

Please follow the directions carefully while you are completing the questionnaire. It shouldn't take more than 2 or 3 miniutes .

The following is a description of an individual given by one of his co-workers. Please read it carefully and turn to the next page and follow the instructions.

Mr. Andrews and I have been co-workers for the past three years. In that time I have found him to be a very neat person, and he tends to be warm in his day to day activities. Most employees regard him as quite unselfish, while others view his most prominent characteristics to be his extreme maturity and honesty.

However, it is worth noting that he has also shown himself to be narrow-minded and aimless.

Without looking back at the description you have just read, take a minute to carefully develop an image of Mr. Andrews, concentrating on the following 3 characteristics:

maturity
honesty
liberalness

After you have taken at least a full minute to form your image of Mr. Andrews, turn to the next page and read the next set of instructions.

Please answer the following questions by circling the number which best indicates you response.

How much do you think Mr. Andrews and yourself could become very good friends?

1	2	3	4	5
Not at all				Very much

How easy do you think it would be to work with Mr. Andrews?

1	2	3	4	5
Not easy				Very easy

How confident overall are you of the answers you have just given on this page?

1	2	3	4	5
Not confident at all				Very confident

Please turn to the next page and read the next set of instructions.

Please imagine Mr. Andrews in the following situation.

Mr. Andrews is washing the dishes when suddenly his wedding ring falls into the sink and down the drain. He plugs the drain quickly, and starts to open the pipes under the sink to look for the ring. Fortunately, his ring was still in the trap-pipe and had not been carried away by the running water.

Please turn the page and answer the next set of questions.

What percentage of the responsibility for finding the ring can be attributed to Mr. Andrews?
CIRCLE THE APPROPRIATE AMOUNT.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

What percentage of the responsibility for finding the ring can be attributied to external factors which were outside the control of Mr. Andrews?
CIRCLE THE APPROPRIATE AMOUNT.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

In your opinion, what could have been some of the major reasons why Mr. Andrews was able to find his ring.

Please give a brief answer in the space provided below.

How confident overall are you of the answers you have just given on this page?

1 2 3 4 5
Not confident at all Very confident

Are you male or female? M F

What is your age? _____

Thank you for participating in this study.

Appendix D

List of situations with positive and negative outcomes.

Mr. Andrews is driving along an icy road, and suddenly loses control of his car. Fortunately, he is capable of regaining control, and safely brings the car to a stop.

Mr. Andrews is driving along an icy road, and suddenly loses control of his car. Unfortunately, he is unable to regain control of his car and hits a telephone pole.

Mr. Andrews is participating in a Squash tournament. Fortunately, he has made the semi-final round, and has a chance of winning a cash prize of $1000.

Mr. Andrews is participating in a Squash tournament. Unfortunately, he twists his ankle during the first game, and can no longer participate in the tournament.

Mr. Andrews is washing the dishes when suddenly his wedding ring falls into the sink and down the drain. He plugs the drain quickly, and starts to open the pipes under the sink to look for the ring. Fortunately, his ring was still in the trap-pipe and had not been carried away by the running water.

Mr. Andrews is washing the dishes when suddenly his wedding ring falls into the sink and down the drain. He plugs the drain quickly, and starts to open the pipes under the sink to look for the ring. Unfortunately, his ring had been washed past the trap-pipe by the running water and was now lost.

While babysitting his nephew, Mr. Andrews is reading a book he has just taken out of the library. The phone rings and he goes to answer it. While on the phone, he suddenly remembers that he has left the book alone with his nephew who will surely be ripping out the pages by now. He rushes back to the living room and rescues the book from his nephew just in time.

While babysitting his nephew, Mr. Andrews is reading a book he has just taken out of the library. The phone rings and he goes to answer it. While on the phone, he suddenly remembers that he has left the book alone with his nephew who will surely be ripping out the pages by now. He rushes back to the living room but is unfortunately too late, for his nephew has already destroyed half the book.