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ABSTRACT

In order to explore the hypothesis that sex-linked biases in causal attributions, widely shared by female and male perceivers, may derive in part from the perceiver's naive sex-linked expectations regarding the potential impact of causal forces on women's and men's behavior, three experiments were carried out. The first experiment was conducted to test the hypothesis that such attributional tendencies may derive from divergent, naive expectations regarding the source of the greatest variance in men's and women's behavior. The second experiment was conducted to test the possibility that these divergent naive expectations regarding the behavior of women and men may translate into attributional biases. The third study was conducted to explore the impact of the perceiver's naive variance expectations on his desire for information upon which to base causal attributions. (Author/SPT)

CAUSAL EXPLANATIONS FOR THE BEHAVIOR OF WOMEN AND MEN: TWO DIFFERENT SCHEMA?*

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Grady (1975) has suggested that there are two loci of sex differences: subject sex differences, or differences within the individual, and stimulus sex differences, or differences that arise in response to the sex of the stimulus person. Subject sex differences have been established in the areas of verbal ability, mathematical ability, visual-spatial ability, and aggression (Maccoby & Jacklin, 1974). However, in many of the areas where subject sex differences have been hypothesized (achievement motivation, self-esteem, independence), stimulus sex differences have been found instead. Of particular interest here, are findings of stimulus sex differences in studies in which subjects of both sexes were asked to attribute causes for men's and women's behavior (Deaux & Taynor, 1973; Deaux & Emswiller, 1974; Etaugh & Brown, 1975; Feather & Simon, 1975; Feldman-Summers & Kiesler, 1975; Hansen, O'Leary, & Stonner, 1976).

The majority of these studies have examined causal explanations for success and failure using Weiner's two dimensional taxonomy for the perceived determinants of achievement behavior (Weiner, 1974). Within Weiner's 2 x 2 framework, female and male observers generally agree that a man's successful performance on a task is caused by internal, stable factors (high ability) while a woman's equally successful behavior on the same task is attributable to external and/or unstable factors (good luck and/or great effort). In contrast, observers of both sexes are likely to attribute a man's failure to external and/or temporary factors (bad luck and/or task difficulty) and a woman's equal failure to stable, internal factors

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(low ability). Deaux (1976) recently argued that such sex differences in causal attributions may be explained in terms of sex-linked tasks, sex-linked behaviors, and sex-linked performance outcomes.

Currently, we wish to explore the hypothesis that sex-linked biases in attributions, widely shared by female and male perceivers, may derive, in part, from perceiver's naive sex-linked expectations regarding the potential impact of causal forces on women's and men's behavior. Specifically, some of our research (Hansen, et al., 1976; Lowe & Hansen, 1976) had suggested that perceivers of both sexes generally attribute women's behavior more to personal factors and men's behavior more to environmental factors. We, therefore, sought to examine one plausible source of our hypothesized sex-linked attribution bias.

At the crux of most attribution theories is a simple covariation principle outlined by Heider (1958); a behavior is attributed to that factor with which it is perceived to vary. Kelley (1967), for example, proposed an attribution process whereby behavior is attributed to the source of greatest potential variance. It is not surprising, therefore, that theorists have proposed that perceivers' naive beliefs about the potential of causal forces to produce behavioral variance are important in the attribution process. Heider, for example, argued that enjoyment of an object typically is viewed as a property of the object. That is, perceivers tend to assume minimal variance across people's enjoyment of any particular object. Thus, given any one person's enjoyment of any one object, perceivers, generally, will assume that most people would enjoy the object and that the behavior is readily attributable to the object. Similar arguments have been made by Jones and Nisbett (1971) in their discussion of primary and secondary properties of entities. McArthur (1972) extended this proposition to the distinction between manifest and subjective behaviors. She suggested that emotions and opinions are viewed as being elicited by objects and that accomplishments and actions are viewed as being emitted by persons. We, therefore, would hypothesize that

perceivers would naively expect one actor's emotional responses to a number of objects to be more varied than a number of person's emotional reactions to a particular object. This, of course, logically would yield a tendency to attribute emotions to objects (that is, to the source of the greatest variance). Likewise, we would hypothesize that perceivers would naively expect a number of person's accomplishments in any one setting to be more varied than any one person's accomplishments across many settings. Again, we would expect an actor's accomplishment to be attributed to the source of the greatest variance: the person.

Currently, we wish to extend this analysis to our hypothesized tendency for perceivers to attribute women's behavior to personal and men's behavior to environmental factors. The first experiment was conducted to test the hypothesis that such attributional tendencies may derive from divergent, naive expectations regarding the source of the greatest variance in men's and women's behavior. We expected perceivers of both sexes to view differences between women as greater than differences between the entities to which they were responding. Conversely, we expected perceivers to view men as less varied than the entities to which they were responding.

Experiment 1

The experiment was designed as a 2 x 2 x 2 x 2 mixed factorial with two levels of each of sex of subject, sex of stimulus person, behavior category (emotion and accomplishment), and behavior (subjects were exposed to one of two emotional behaviors and one of two accomplishment behaviors). Forty-eight females and 48 males participated in the study.

Each subject was exposed to two behavioral variance problems: An emotion and an accomplishment. The order of exposure was randomly determined. The four behaviors used in the study can be seen on the handout. The particular emotion and the particular accomplishment selected for each subject was randomly determined.

The format of each variance problem was the same, with word changes appropriate to the behavior.

Accomplishment example. "Twelve different persons worked on 12 different tasks. Some succeed and some fail. To what extent do you think each of the following two factors accounted for the fact that some succeeded and some failed: (1) differences between the persons, and (2) differences between the tasks." Subjects responded on two 11-point scales labelled at 0 ("accounted for very little") and at 10 (accounted for a very great deal").

Half of the subjects were given problems where the persons were described as women and half received problems describing men's behavior. Thus, behavior category was a within subject variable and sex of subject, sex of SP, and behavior were between subjects variables.

Results

Sex of subject and behavior (accomplish 1 vs. 2 and emotion 1 vs. 2) produced no significant effects or interactions. As expected, sex of SP and behavior category produced significant main effects on both dependent measures. No interactions were obtained.

Differences between persons. As predicted, differences between women were seen as accounting for more behavior variance than differences between men ($\underline{M}$ = 7.02 and $\underline{M}$ = 4.41). Further, differences between persons (both men and women) were seen as a more potent determinant of variance in accomplishment than in emotional behaviors.

Differences between entities. Conversely, as expected, differences between entities was seen as a source of greater variance in men's than in women's behavior ($\underline{M}$ = 7.08 and $\underline{M}$ = 3.52). Further, differences between objects were seen as producing more variance in emotional behaviors than differences between tasks on accomplishments ($\underline{M}$ = 6.53 and $\underline{M}$ = 4.08).

Discussion

The data strongly supported the predictions. The findings of McArthur (1972) were substantiated. Differences in emotional reactions were described more in terms of differences between objects and less in terms of differences between persons than differential accomplishments. More importantly, our predictions regarding the behavior of men and women were supported. Differences between women were seen as more important determinants of their varied behavior, while differences between entities were seen as having more impact on the differential behaviors of men. On occasion, these divergent naive expectations regarding the behavior of women and men may translate into attributional biases. As a test of this hypothesis, a second study was conducted.

Experiment 2

In experiment 2, 24 women and 24 men were exposed to the behaviors used in the first study depicted as performed by either a man or a woman. The study was a 2 x 2 x 2 mixed factorial with two levels of sex of subject, sex of SP, and behavior category (successful accomplishment and emotion). Again, subjects were exposed to one of two emotions and one of two accomplishments. However, level of behavior was not taken out as a "way" in the design. Thus, sex of subject and sex of SP were between subjects and behavior category was a within subjects variable.

After reading a behavioral statement (e.g., John or Mary successfully completes a task), perceivers were asked to indicate the extent to which "the characteristics of the person" and "the characteristics of the task" caused the behavior. Responses were made on separate 11-point scales labelled at 0 ("had very little impact") and at 10 ("had a very great impact").

Results

Again, sex of subjects produced no significant effects or interactions. The

effects evidenced on causal attributions in study 2 paralleled those found on naive expectations in study 1. Emotions were seen as less personally caused ($\underline{M}$ = 4.01 and $\underline{M}$ = 6.84) and as more environmentally caused than accomplishments ($\underline{M}$ = 6.08 and $\underline{M}$ = 3.75). More importantly, women's behavior was attributed more strongly to personal factors ($\underline{M}$ 6.84 and M = 3.83) and less strongly to environmental factors than men's behavior ($\underline{M}$ = 3.63 and $\underline{M}$ = 6.21). No other effects or interactions were obtained.

Discussion

These findings indicated that perceivers' naive expectations regarding the potential impact on causes, whether derived from the type of behavior portrayed or the sex of the performer, can be translated into attributional biases. However, a number of attribution theories (e.g., Jones & Davis, 1965; Kelley, 1967, 1971) imply that perceivers may desire more information than that provided by the experimenter in these studies and may, in fact, hold attributions in abeyance until such information is gathered. We, therefore, sought to explore the impact of naive variance expectations on the information gathering process.

Two theoretical considerations led us to hypothesize that perceivers would seek information about the variance across people's behavior when attempting to establish the cause for a woman's behavior and variance across entities when attempting to discover the cause for a man's behavior. First, Heider's (1958) discussion of "common sense" psychology suggested that lay perceivers, unlike the scientist, may seek information to confirm rather than to disconfirm a naive hypothesis. In this view, perceivers of women's behavior would seek information about variance across persons in order to confirm the naively hypothesized causal potency of difference between women. Likewise, a naive analysis of men's behavior would call for information about variance introduced by entities. Second, a number of theorists have suggested that perceivers gather information so as to

reduce the greatest uncertainty (e.g., McArthur, 1972, 1976). Again, the information most useful in reducing uncertainty would be information about the naively hypothesized source of greatest variance. We, therefore, predicted that perceivers of women's behavior would desire information about variance across persons (called consensus by Kelley, 1967), while perceivers of men's behavior would desire information about variance across entities (distinctiveness).

Experiment 3

The experiment was designed as a 2 x 2 x 2 mixed factorial with two levels of sex of subject, sex of stimulus person, and behavior category. As in the previous study, behavior category was a within subjects variable: Subjects were exposed to both an accomplishment or an emotion (behavior level was again randomly determined but not taken out as a factor in the design). The stimulus behaviors were the same as those employed in the previous studies. Subjects were asked to rate the importance of two types of information: "If you were attempting to establish the cause for the (behavior portrayed), how important would it be for you to know," (a) consensus information ("Do most people or do very few people behave in this manner?"), and (b) distinctiveness information ("Does this person behave in this way often or only in the presence of this entity?"). Subjects responded on two scales labelled at 0 ("very unimportant") and at 10 ("very important").

Results

Again, sex of subject produced no significant effects. Unlike studies one and two, behavior category produced no significant main effects. Further, sex of SP did not produce a main effect on the importance of distinctiveness information. However, perceivers of women's behavior did rate access to consensus (information about variance across persons) as more important than did perceivers of men's behavior (M = 5.01 and M = 3.17).

Significant interactions. The interactions of behavior category and sex of SP were significant on both dependent measures. The analysis of these effects is shown on the handout. As can be seen, the sex of the SP had no effect on perceivers' desire for either distinctiveness or consensus information when the behavior portrayed was an accomplishment. However, the sex of the SP had a dramatic effect when perceivers were exposed to emotional behaviors. Perceivers rated access to distinctiveness much more important and access to consensus much less important when the emotional behavior was performed by a man than a woman. These findings, then, supported our predictions.

Discussion

Study 3 was conducted to explore the impact of perceiver's naive variance expectations on their desire for information upon which to base causal attributions. The hypothesis that perceivers of men's behavior would rate distinctiveness information as more important and consensus information as less important than perceivers of women's behavior was obtained for emotions but not accomplishments. Subjects of both sexes may desire more information than is provided by the experimenter when asked to make causal attributions for the emotional responses of women and men and may indeed hold attributions in abeyance until such information (distinctiveness for men; consensus for women) is gathered.

The main effects obtained for behavior category in studies 1 and 2 suggest that perceivers make different assumptions when attributing cause for emotions than accomplishments. In the case of accomplishments information regarding the sex (Mary vs John) of the person successfully completing a task may be sufficient to invoke sex-linked attributional biases and render perceivers' desire for further information unnecessary.

Conclusion

The results of this line of attribution research suggest that perceivers have different naive expectations regarding the greatest potential source of behavior variance in women's and men's behavior. Further, these naive expectations may lead perceivers to base causal attributions for men's and women's behavior on different causal information. Finally, these biases appear to imply that women's behavior is over attributed to personal factors and men's behavior is over attributed to environmental factors suggesting that sex (Mary vs. John) has considerable psychological salience as an information processing category (Grady, 1977). To the extent that males and females share expectations regarding behavioral differences between the sexes, the expression of such differences may constitute a self-fulfilling prophecy. But the expectations for and beliefs in sex differences appear to be stronger than the behavioral potentiol of women and men warrants.

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EXPERIMENT ONE
ACCOUNT FOR VARIANCE IN BEHAVIOR

2(sex of subject) x 2(sex of stimulus person) x 2(behavioral category: accomplishment vs emotion) x 2(behavior 1 vs 2)

VARIANCE PROBLEMS:

Emotion 1: Twelve different women (men) watch twelve different comedians. Some of the women (men) laugh and some don't laugh. To what extent do you think each of the following factors accounted for the fact that some laughed and others did not laugh?

Emotion 2: Twelve different women (men) see twelve different dogs. Some of the women (men) run away from the dogs and some do not run away. To what extent to you think the following factors accounted for the fact that some run away and others do not run away?

Accomplishment 1: Twelve different women (men) work on twelve different tasks. Some of the women (men) succeed and others do not succeed. To what extent do you think each of the following factors accounted for the fact that some succeeded and others did not succeed?

Accomplishment 2: Twelve different women (men) played twelve different games. Some of the women (men) won a prize and others did not win a prize. To what extent do you think the following factors accounted for the fact that some won prizes and others did not win prizes?

Factor one: Differences between the women (men) accounted for the fact that some women (men) laughed (ran away, succeeded, won prizes) and others did not laugh (run away, succeed, win a prize).

Factor two: Differences between the comedians (dogs, tasks, games) accounted for the fact that some women (men) laughed (ran away, succeeded, won prizes) and other women did not laugh (run away, succeed, win prizes).

RESULTS:

Factor one: differences between persons accounted for variance

	Accomplishments	Emotions	
Male SP	5.85	2.96	4.41
Female SP	8.54	5.50	7.02
	7.19	4.23	

Factor two: differences between entities accounted for variance

	Accomplishments	Emotions	
Male SP	5.75	8.42	7.08
Female SP	2.42	4.63	3.52
	4.08	6.53	

Summary of significant effects:

1. obtained on differences between persons
   - Sex of SP $F(1, 88) = 34.65$, $p < .001$
   - Behavior Cat. $F(1, 88) = 44.01$, $p < .001$
2. obtained on differences between entities
   - Sex of SP $F(1, 88) = 67.39$, $p < .001$
   - Behavior Cat. $F(1, 88) = 31.55$, $p < .001$

EXPERIMENT TWO
CAUSAL ATTRIBUTIONS

2(sex of subject) x 2(behavioral category: accomplishment vs emotion)[1] x 2(sex of stimulus person)

ATTRIBUTION PROBLEMS:

Emotion 1: Mary (David) laughs at a comedian. To what extent do you think each of the following factors might have caused Mary (David) to laugh at the comedian?

Emotion 2: Louise (John) runs away from the dog. To what extent do you think each of the following factors might have caused Louise (John) to run away from the dog?

Accomplishment 1: Virginia (Harry) successfully completes the task. To what extent to you think each of the following factors might have caused Virginia (Harry) to successfully complete the task?

Accomplishment 2: Helen (George) wins a prize in the game. To what extent do you think each of the following factors might have caused Helen (George) to win a prize?

Factor 1: Something about Mary (David, etc.) probably caused her (him) to laugh at the comedian (run from the dog, etc.).

Factor 2: Something about the comedian (dog, task, game) probably caused Mary (David, etc.) to laugh at the comedian (run from the dog, etc.).

RESULTS:

Factor 1: Personal attributions

	Accomplishments	Emotions	
Male SP	5.33	2.34	3.83
Female SP	8.35	5.67	7.01
	6.84	4.01	

Factor 2: Environmental attributions

	Accomplishments	Emotions	
Male SP	5.08	7.33	6.21
Female SP	2.42	4.83	3.63
	3.75	6.08	

Summary of significant effects:

1. obtained on personal attributions
   - Sex of SP $F(1, 44) = 43.16$, $p < .001$
   - Behavior Cat. $F(1, 44) = 34.55$, $p < .001$

2. obtained on environmental attributions
   - Sex of SP $F(1, 44) = 29.82$, $p < .001$
   - Behavior Cat. $F(1, 44) = 24.33$, $p < .001$

[1] Level of behavior (behavior 1 vs behavior 2) was randomly determined for each subject but was not taken out as a "way" in the design.

EXPERIMENT THREE
CAUSAL INFORMATION

2(sex of subject) x 2(sex of stimulus person) x 2(behavioral category: accomplishment vs emotion)[1]

CAUSAL INFORMATION PROBLEMS:

Emotion 1: Mary (David) laughs at a comedian. If you were attempting to determine what caused Mary (David) to laugh at the comedian, how important would it be for you to know the answers to each of the following questions?

Emotion 2: Louise (John) runs away from the dog. If you were attempting to determine what caused Louise (John) to run away, how important would it be for you to know the answers to the following questions?

Accomplishment 1: Virginia (Harry) successfully completes the task. If you were attempting to determine what caused Virginia (Harry) to successfully complete the task, how important would it be for you to know the answers to the following questions?

Accomplishment 2: Helen (George) wins a prize in the game. If you were attempting to determine what caused Helen (George) to win a prize, how important would it be for you to know the answers to the following questions?

Question 1 (Distinctiveness--variance across entities): Does Mary (David, Louise, etc.) laugh at most clowns or at very few clowns (run from most dogs or from very few dogs, etc.).

Question 2 (Consensus--variance across persons): Do most people laugh at this comedian or do very few people laugh at this comedian (run from this dog or do very few people run from this dog, etc.)?

RESULTS:

Question 1: Distinctiveness[2]

	Accomplishments	Emotions	
Male SP	3.67_b	5.89_c	4.78
Female SP	4.67_{bc}	2.10_a	3.39
	4.17	3.99	

Question 2: Consensus[2]

	Accomplishments	Emotions	
Male SP	4.11_b	2.22_c	3.17
Female SP	3.89_b	6.14_a	5.02
	4.00	4.18	

Summary of significant effects:

1. obtained on question 1 (distinctiveness)
   Sex of SP x Behavior Cat. F (1, 32) = 10.97, $p < .002$

2. obtained on question 2 (consensus)
   Sex of SP F (1, 32) = 10.91, $p < .002$
   Sex of SP x Behavior Cat. F (1, 32) = 13.79, $p < .001$

[1]Level of behavior (behavior 1 vs behavior 2) was randomly determined for each subject but was not taken out as a "way" in the design.

[2]Distinctiveness and Consensus cell means not sharing a common subscript differ at the .05 level as indicated by a Duncan range statistic.