Social Perception and Social Reality: A Reflection-Construction Model

Lee Justin
Rutgers University

This article presents a reflection-construction model of relations between social perception and social reality. The introduction suggests that there is a misunderstanding of social psychological theorizing and research by the belief that social perception is an aspect of the creation of social reality. Strong constructivist perspectives largely ignore or discount accuracy in social perception. To redress this limitation, a new theoretical model is presented, the reflection-construction model, which explicitly specifies several ways in which social perception may lead to social reality. This model incorporates phenomena such as the ability of social perception to accurately predict without influencing social reality, to create social reality through self-fulfilling prophecies, self-sustaining prophecies, and self-defeating prophecies and to lead to biased judgments regarding social reality. When interpreters through the reflection-construction model, empirical research on relations between social perception and social reality often provides more evidence of accuracy than of self-fulfilling prophecy or bias. The evidence, therefore, supports a weaker version of the social constructivist view.

"If men define situations as real, they are real in their consequences." Social scientists have been especially fond of this famous quote by philosopher W. I. Thomas, R.A. Jones, 1977; Markus & Zajonc, 1985; Merton, 1948, probably because it reflects a popular theme of modern social psychology: the power of human beings to construct their own social realities. In contrast, I know of no articles quoting the following comment by Bertrand Russell (1935/1974, p. 55): "It is also clear that, if everyone experience is not to be wholly illusory, there must be some relation between appearance and the reality behind it." The social absence of causes similar to this one seems to reflect an implicit corollary of the constructivist perspective: social perception may often be largely impervious to social reality.

How are social perception and social reality related? Is social reality so malleable that it is readily transformed by erroneous social beliefs? Is social perception highly resistant to social reality? To address these questions, I first document a strong social constructivist tradition within social psychology and trace some of its roots. Next, I present the reflection-construction model, which integrates the potential for social perception to construct social reality with the potential for social perception to be highly sensitive to social reality. Finally, by incorporating causal relations already known to exist, this model generates new insights into relations between social perception and social reality. It also provides a framework for interpreting previous research on relations between social perception and social reality.

Social Construction: The Alleged Power of Belief to Create Social Reality

For about 35 years, one of the major themes of social psychological theorizing and research has been that social reality is constructed by the participants involved in interpersonal interaction. There are at least two versions of this social constructivist perspective, a strong version and a weak version. The strong version assumes that social perception creates social reality as much or more than it reflects social reality (e.g., see Fluke & Nyberg, 1980; Fluke & Taylor, 1984; E.E. Jones, 1986; Markus & Zajonc, 1985; Miller & Tackel, 1946; Snyder, 1984). The strong social constructivist perspective implicitly or explicitly emphasizes the inaccuracy of social beliefs. The one exception is the specific accuracy that comes from beliefs leading to their own fulfillment.

The weak version of the social constructivist perspective also acknowledges that people's errors, prejudices, and misperceptions sometimes create social reality. It also suggests, however, that people's perceptions often may accurately reflect social reality, and even when erroneous, these perceptions do not necessarily have much influence on social reality (e.g., Brophy, 1983; Higgens & Bargh, 1987; Justin, 1988; Schneider, Hastorf, & Edgworth, 1979).

Strong or Straw Constructivist Perspective?

Is much of the remainder of this article, I present a theoretical perspective and review empirical evidence suggesting virtually no support for the strong constructivist perspective. But is this news? Does anyone really believe that social perception is as inaccurate and as powerless an influence on social reality as I have just suggested characterizes the strong constructivist per-
spective? Or is my presentation of the strong constructivist perspective just a straw man?

Consistent with the existence of a strong constructivist perspective, many theorists explicitly emphasize the importance of constructivist phenomena and promote the strong constructivist perspective. In much empirical research emphasizes error and bias in social perception, to theoretical articles directly and explicitly suggest that social beliefs create social reality as much or more than social reality influences social beliefs, and all evidence suggests that accuracy is often overlooked. These first 2 points are discussed next, and the latter 2 points are addressed later in this article.

First and foremost, the existence of the strong constructivist perspective is dramatically illustrated by the explicit claims made by many prominent theorists addressing relations between social perception and social reality. Consider the following quotes:

- "Social perception is a process dominated for more by what the judge brings to it than by what he takes in during a trial. (Giger & Cronbach, 1955, p. 420, emphasis added)
- "Social perception often has significant and nearly direct influence on the perceived target. It creates social reality... the hallmark of the cognitive perspective in social psychology is the constructivist nature of social cognition. (Markus & Zajonc, 1985, pp. 212-213, emphasis added)

Constructivists assert that we do not discover reality, we invent it. (Hare-Martin & Manosevitz, 1985, p. 255)

This viewpoint may be best summarized by an amusing, but (perhaps) only half-joking, comment by Hamilton (cited in Miller & Turnbull, 1986, p. 247). "If I didn't believe it, I wouldn't have seen it."

Also, other researchers clearly have interpreted much current theory and research in social psychology as reflecting the strong form of the constructivist perspective:

- we are left with the uncomfortable conclusion that the give-and-take of social interaction does not reflect a process in which the self is by nature at least, reality becomes redundant, if not denie- (Bond, 1987, p. 39-40, emphasis added)
- the current Zagorin emphasis purported flaws in human judgment to the extent that it might be "newsworthy" to mention this people can make global judgments of personality with any accuracy at all. (Fromm, 1981, p. 83)

Second, consistent with the strong constructivist perspective, many of the major phenomena addressed by social psychologists emphasize error and bias. Fundamental attribution error, false consensus false uniqueness, self-serving bias, self-fulfilling prophecy, self-justification, self-consistency bias, hindsight bias, illusions of control, mindlessness, illusions of control, illusions of invulnerability, base-rate fallacy, conjunction fallacy, hypothesising confirming bias, and so on. Perhaps for these reasons, whole books have appeared in the ways in which social beliefs may be self-fulfilling and the shortcomings of human judgment

ment and inference (R. A. Jones, 1977; Kahneer, Soovic, & Tversky, 1982; Nisbett & Ross, 1940).

On the basis of the written claim made by theorists addressing relations between social perception and social reality, the emphasis on error and bias, the relative dearth of research on accuracy, and the ways in which others have interpreted previous theoretical perspectives and empirical research, I concluded that the strong constructivist perspective is no straw man. Similarly, although much of the research on error and biases has focused on the process of social judgment, it has been minimized as demonstrating inaccuracy in the context of social judgment (Finzer, 1987). This type of misinterpretation may further attest to the often subtle influence of the Zeitgeist created by the strong constructivist perspective. Of the few articles suggesting that social perception often may be reasonably accurate, many have been written as direct challenges to this Zeitgeist (e.g., Pundor, 1987; Malloy & Albrecht, 1990; McArthur & Baron, 1983; McCauley, Sigg, & Segal, 1980). Rebuttals of whether anyone actually believes in the strong constructivist perspective, clearly many choose research topics, write, and interpret research as if they believed

Historical Roots: The New Look in Perception

Both the strong and weak social constructivists, at least within social psychology, received much of their impetus from the "New Look in Perception" research of the 1940s and 1950s (Markus & Zajonc, 1985). The New Look challenged the prevailing view of the times that perception was essentially a passive process involving objective perception of stimuli social or otherwise. In contrast, the New Look viewed pain, needs, fears, and expectations as potentially important influences on perception—influences that at least sometimes undermined the objective nature of perception and produced errors and biases (for reviews, see E. H. Allport, 1955; Bruner, 1957a, 1957b; Endel, 1980).

The New Look's claim that perception involves "going beyond the information given" (Bruner, 1957a) provided the spiritual impetus of the next 30 years of social cognition research. Bruner's famous dictum that often has been interpreted as indicating that all people often disregard the information given and (by people "see" things that are not even there (e.g., Crozier, 1981; Finke & Neidick, 1990; Finke & Taylor, 1984; Higgins & Busch, 1987; E. Jones, 1986; Markus & Zajonc, 1985; Nisbett & Ross, 1980; Swedes, 1984). The titles of two of the most recent reviews in Higgins and Bargh's review of social cognition and social perception attest to the pervasiveness of such interpretations: "Do People Ever Care About the Information Given?" and "Do People Ever Seek the Truth?"

Thus, "going beyond the information given" often has been interpreted in ways that support the strong constructivist perspective. In fact, however, going beyond the information given does not necessarily involve bias, error, or inaccuracy in perception. Bruner (1957, p. 124) claimed, and most current theorists agree, that "all perceptual experience is necessarily the end product of a categorization process" (see Gilhool, 1979, and McKee & Baron, 1983, for exceptions). However, I know of few researchers who assume that the contents of a category are
inaccurate by definition (unless the category is for a social group, i.e., stereotype, a point that is discussed later).

Although perceivers may make errors when assigning stimuli to a category, they also may appropriately assign stimuli to categories. If the content of the category is accurate (e.g., cars usually have four wheels, seats, an engine, and travel much more rapidly than bicycles; professional basketball players are usually tall and athletic), and if a stimulus is appropriately assigned to a category (e.g., that corruption in my front yard is my car; the men on TV are professional basketball players), no error occurs. If I infer that the men on TV are tall (clearly going beyond the information given)—they are only a few inches tall on my TV and there is usually no average-height person with whom to compare them—I am likely to be reasonably accurate.

Thus, "going beyond the information given" need not mean perception is inaccurate. Indeed, a person who failed to categorize the men on TV as professional basketball players (i.e., failed to go beyond the information given) probably would be far less accurate in judging their height. Inferences of any type—accurate, inaccurate, scientific, intuitive, and so on—constitute "going beyond the information given." If scientists, themselves, did not "go beyond the information given" in their empirical data, there would be no theories.

F. H. Allport, in his 1955 review of the New Look, drew on this tendency for social psychology to overemphasize the strong form of the social constructivist perspective:

Where the perception is bound so little by the stimuli and is thought to be so pervasively controlled by socially oriented motives, roles, and social norms, the tendency for individual and group differences, for deviating and hence non-verbal awareness, is very great. (p. 327)

He also warned against it:

What we are arguing here is that social psychologists, in building their theories of perception, assume their share of the responsibility for representing, redefining and integrating their "social-personal" concepts with the common and basically central character of the human perception. (p. 372)

In the next section, I present a reflection-construction model of relations between social perception and social reality that provides just such an integration. It is called reflection-construction because it suggests that not only may social perception create and construct social reality, social perception may accurately reflect social reality. I use the terms social perception and social belief loosely to refer to a wide variety of constructs, such as expectations, stereotypes, schemas, prototypes, and much of personality theory and hypotheses, and so on. These constructs have many similarities. Schemata and expectancies, for example, are viewed as organized knowledge structures that, among other things, guide the processing of new information (e.g., Darley & Fazio, 1978; Darley & Gross, 1983; Fiske & Taylor, 1984; E. E. Jones, 1948; Markus & Zajonc, 1985; Snyder, 1984). Expectancies have been discussed as hypotheses (Darley & Gross, 1983; Snyder 1984); stereotypes have been discussed as categories, schemata, stereotypes, and implicit personality theories (G. Allport, 1954; Aschmore & Tuinstra, 1980). Brown, Dalt, & Lai, 1981; Cohen, 1981; Fiske & Neuberg, 1980; Fiske & Taylor, 1984; Grant & Holmes, 1981). Stereotypes and stereotypes are often assumed to be a source of expectancies regarding individuals belonging to particular social groups, e.g., G. Allport, 1954; Fiske & Neuberg, 1980; Fiske & Taylor, 1984; Tajfel, Coleman, & Leth, 1987; McClelland et al., 1988; Miller & Tversky, 1986; Snyder, 1984; Snyder, Tannen, & Sillerscheit, 1977).

The Reflection-Construction Model of Relations Between Social Perception and Social Reality

Basic Assumptions

Figure 1 presents the reflection-construction model. The model focuses on relations among perceivers' beliefs expectancies, hypotheses, schemata, etc. regarding particular targets and those targets' attributes and behaviors. The model starts with background information, which refers to anything on which perceivers might base their beliefs, i.e., targets' past behavior or targets' social group membership, achievement or personal similarity test scores, and so on. The path A represents the extent to which this background information predicts targets' future behavior or attributes, independent of the influence of the perceivers: Path B represents the extent to which perceivers base their beliefs on the background information; Path C represents the influence of perceivers' beliefs on targets' behavior or attributes; and Path D represents the influence of perceivers' beliefs on judgments of targets' behavior or attributes. The path E represents the extent to which perceivers judge the targets' behavior or attributes. In practice, each path depicted in the model may represent several goals. There may be many types of background information, perceivers develop impressions regarding more than a single characteristic, there may be many types of target behavior that are influenced, and so on. Also, the model assumes that at least some minimal time lag between the variables. Awareness of background information precedes the development of social perceptions, which precedes targets' behavior, which precedes the perceivers' judgments of the target.

In practice, each path depicted in the model may represent several goals. There may be many types of background information, perceivers develop impressions regarding more than a single characteristic, there may be many types of target behavior that are influenced, and so on. Also, the model assumes that at least some minimal time lag between the variables. Awareness of background information precedes the development of social perceptions, which precedes targets' behavior, which precedes the perceivers' judgments of the target.

The reflection-construction model is most with respect to the particular values each of these paths take. In a given situation, anywhere from all to none may be possible, all to none may be negative, and all to none may be negative. Several technical assumptions, however, will simplify presentation and discussion of the model. First, I assume that the background information is scaled so that relations with targets' behavior are non-negative. This is not a conceptual assumption, it is a scaling factor. I also assume that no variable in the model completely determines any other variable. Although the model would still be applicable, such situations virtually never occur in the social sciences. Last, focus on understanding sources of correlations

Because the reflection-construction model is a path model, much of the remaining theoretical analyses draw heavily on the logic and math underlying principles of path analysis, such as decomposition of effects and correlations, and direct, indirect, and total effects, e.g., see Alwin & Hauser, 1975; O. D. Duncan, 1975; Kenny, 1979; and Pedhazur, 1982, for extended discussions of these principles.
among the variables is the model, and therefore I assume that all path coefficients are standardized.

The reflection-construction model draws on one of the main ideas of the lens model (Brunswick, 1955), which suggested that vertical perception involves the use of cues probabilistically related to objective reality. Thus, the model provides a framework for identifying relations between social perception and social reality: the actual relations in any particular situation are an empirical question. Last, the model is only applicable when ethnographic data are available for all relevant paths. If, for example, a certain social attribute is not simply unknown, but absolutely unknowable, it would be impossible to estimate paths representing accuracy or influence.

Applicability to a Single Social Context
This model is most applicable to a single social context. The term single social context describes two sets of boundaries within which the reflection-construction model is useful. One boundary involves time. A social context has a clear beginning and end. The earliest possible beginning for a single social context is the moment at which a perceives first develops expectations about a target. This may occur prior to face-to-face interaction, as when, for example, teachers develop expectations for students on the basis of their records from previous years or when experimenters provide information about targets to research subjects. Sometimes, however, perceivers would have no basis even to consider the existence of a target prior to face-to-face interaction, such as when two people casually meet for the first time at a social event. In such cases, the earliest beginning of the social context would be the initial face-to-face meeting.

The model is equally appropriate when the social context begins at a time more or less arbitrarily set by a researcher. Consider a hypothetical researcher who focuses on relations among parents’ sex role stereotypes and the behavior of their 9-year-old children over the course of a year. Parents’ stereotypes and children’s behavior may be assessed at the children’s 9th birthday and again several times throughout the following year.

In such a study, the social context begins on the child’s 9th birthday. This study would address the extent to which parents’ sex role stereotypes accurately predicted and influenced their children’s behavior between the ages of 9 and 10. It cannot disentangle the extent to which parents’ stereotypes constructed versus reflected their children’s behavior or attributes prior to the children’s 9th birthday. Disentangling issues of reflection and construction prior to 9 years of age would require obtaining data on the parents and children prior to the children’s 9th birthday.

The researcher also decides on an end of the social context under study. This end may occur while the perceived and target are still involved in an ongoing relationship. For example, the hypothetical 1-year study of parents’ sex role stereotypes would end on the children’s 10th birthday. Alternatively, however, the social context may end substantially after the termination of all interaction among perceivers and targets. It includes situations such as teachers’ expectations concerning students’ achievements even after the students have moved on to the next grade level and have different teachers.

The second boundary of single social context specifies perceivers and targets. The reflection-construction model is useful for assessing relations among the beliefs held by one particular set of perceivers (e.g., parents and teachers) and the behaviors or attributes of one particular set of targets (e.g., children and students). Thus, single social context may include situations as limited as those that occur in a laboratory experiment or a job interview and situations as extensive as those that occur among teachers and students over the course of a year or more, and even as long-term as those that occur among parents and chil-
despite the vast differences, these situations are similar in one important way. They all involve perceiving relations among the beliefs that a particular set of perceivers hold regarding a particular set of targets and those targets' actual behaviors or attributes.

A single social context need not involve face-to-face interaction among perceivers and targets. Situational lacking any faceto-face interaction might include laboratory studies of person perception (in which information regarding targets may be presented verbally, in writing, by slides or videotapes, etc.); evaluations of materials submitted by applicants to college or jobs; whenever perceivers form impressions of individuals in the media (including both real individuals, such as political figures, and fictitious people, such as characters in stories, dramas, movies, etc.) and when people develop beliefs about others through rumors, hearsay, and gossip.

Despite the extensive variety of situations it includes, the boundaries defined by single social context are important because they contribute to understanding just when particular perceivers are accurate, biased, and influence targets. For example, when teachers develop impressions of students, the model suggests that they are accurate if they correctly identify preexisting differences among most students. These teachers would be considered accurate even if those preexisting differences resulted from the self-filling effects of other teachers' (or parents') expectations. This is the appropriate criterion for accuracy within a single social context. If Mary has received straight As and scored on the top 5% on standardized achievement tests in previous years, she should be perceived as having been an excellent student by a new teacher, even if the self-filling effects of the high expectations held by previous teachers or her parents contributed to her high achievement.

The reflection-construction model, therefore, is useful for determining the validity of accuracy versus self-filling propriety from a given starting point to a particular endpoint among a particular set of perceivers and targets. Although one of the strengths of the reflection-construction model is that it can be readily adapted to address relations between social perception and social reality in a wide variety of social contexts, it is no more useful for determining the ultimate extent to which individual differences result from influences of social beliefs.

Levels of Analysis

The reflection-construction model may be readily applied to interactions occurring at many levels of analysis—invidual, dyadic, peer group to group, and group to group. At the individual level, the target and perceiver are the same person. Thus, the model could address relations among self-perceptions (self-concept, self-evaluations, etc.), background information (the information on which these self-perceptions might be based), the individual's behavior or attributes, and the individual's judgments regarding his or her behavior or attributes. The model could be used to address phenomena such as self-effi- cacy (Bandura, 1977), personal prophecies (Rosen, 1989), and self-verification (Swann, 1987).

The reflection-construction model also may address intergroup relations. To what extent are the beliefs one group holds about another accurate versus self-filling? For example, the concerns of college administrative personnel may increase if fraternity drinking and hazing continues. Does the increase in administrative contact create or reflect fraternity practices? Does the administration exaggerate the extent to which fraternity members engage in drinking and related care problems? The reflection-construction model could be used to address exactly these types of questions regarding intergroup perceptions.

It is crucial, however, not to confound levels of analysis. For example, consider a football coach who chooses to start one quarterback over another not because their talents differ, but because one is more confident. If confidence really enhances performance, then from the athlete's standpoint, a self-filling prophecy has occurred (individual level of analysis). But at the dyadic level (coach to athlete), the coach simply has accurately identified an appropriate basis for selecting one athlete over another.

Similarly, consider a situation in which state and local government fund public schools through property taxes. In general, such a policy will lead to greater spending per pupil in wealthy areas than in poor areas. If funding influences quality of education, then such policies may create a self-filling prophecy whereby sociopolitical factors exacerbate differences in the intellectual achievement of upper-class and lower-class students. At the dyadic level, however, third-grade teachers are simply accurate if they evaluate the performance of 4 students as better than that of D students, regardless of the causes of that achievement differential. Although the reflection-construction model may be applied to any level of analysis, the remainder of this article focuses on dyadic interactions.

The reflection-construction model seems to be quite simple; it has only four conceptual variables and five conceptual paths. Furthermore, effects corresponding to every path have been documented (e.g., see Brophy & Good, 1974; Darley & Fazio, 1980; Fiske & Neugerb, 1990; Justim, 1989). In some ways, therefore, this model is 'valid wine in a new bottle'—it depicts various plausible relations between social perception and social reality. Next, however, I show that simply by integrating these effects known to exist, this model provides some entirely new insights into relations between social perception and social reality.

Accuracy of Prediction

In contrast to most previous reviews of relations between social beliefs and social reality (e.g., Darley & Fazio, 1980; Fiske & Neugerb, 1990; E. E. Jones, 1966; Miller & Turnbull, 1986; Snyder, 1984), the reflection-construction model explicitly allows for the possibility that perceivers may be accurate. This model incorporates several conceptually separable aspects of accuracy. First, it concerns the validity of personal social perception. Social perceptions based on more valid information can be considered more accurate than those based on less valid information (Brophy, 1983; Danis, 1975). However, even perceptions based on valid information sometimes inaccurately predict future behavior (Kahreman & Tversky, 1973). Consequently, how much perceivers expect targets' behavior or attributes without causing that behavior or those attributes is a second aspect of accu-
r(P,T) = Path C + (Path A × Path B).

where r(P,T) is the correlation (r) between perceivers' beliefs (P) and targets' behavior or attributions (T). Path C represents the influence of the perceiver's beliefs on the target's behavior or attributions (this includes, but is not restricted to self-fulfilling prophecies). Although it is possible to consider self-fulfilling prophecies as accuracy (Swann, 1984), it is also useful to distinguish between the perceived accuracy of beliefs that lead to their own fulfillment and beliefs that successfully predict targets' behavior or attributions without causing that behavior or those attributions. Only the latter phenomenon is discussed here as accuracy.

The model incorporates accuracy because it shows that perceivers' beliefs will predict (i.e., converge with) targets' characteristics when both variable (perceivers' beliefs and targets' characteristics) are spurious related to background information regarding the targets' characteristics (Path A × Path B). This spurious relationship represents accuracy; predictive validity without influence. The model depicts a relatively simple idea: If perceivers base their social beliefs on factors that successfully predict targets' behavior or attributes, those beliefs also will predict targets' behavior or attributes.

Accuracy as a source of behavioral confirmation. The reflection-construction model highlights two different sources of targets' behavioral confirmation of a perceivers' beliefs. In the past, the term behavioral confirmation only has been used to refer to self-fulfilling prophecies (e.g., Miller & Turnbull, 1986; Snyder, 1984). This model shows, however, that targets also may behaviorally confirm a perceivers' beliefs because those beliefs are based on information (Path B) that was an appropriate basis for prediction (Path A).

For example, teachers may develop expectations on the basis of validated standardized achievement test scores. Because such test scores successfully predict student achievement (Ainscow, 1982), so will teachers' expectations, even in the absence of self-fulfilling prophecies. The existence to which teachers' expectations predict achievement safely because both their expectations and student achievement were based on students' previous achievement represents predictive accuracy without (self-fulfilling) influence.

Identifying accurate and inaccurate social beliefs. Whenever Path A and B are both positive, perceivers' beliefs are accurate to some degree. Equation 1 shows that if Path A and B are both positive, we expect an increase in either path increases accuracy. The regression-construction model shows that even when the predictive validity of background information, independent of self-fulfilling prophecy (i.e., Path A), is quite low, Path B must be high to maximize accuracy.

For example, targets' physical attractiveness may predict their popularity and warmth even when perceivers are completely unaware of targets' attractiveness (Goldman & Lewis, 1977; Kennedy, 1989). In terms of the model, the background information of physical attractiveness may predict targets' behavior (e.g., Path A may be positive), even without any self-fulfilling prophecy (i.e., Path C is zero). In face-to-face interaction, perceivers who base their initial expectations on targets' physical attractiveness will accurately predict the warmth differences between attractive and unattractive targets (although it is possible that perceivers would exaggerate such differences). Perceivers who did not use physical attractiveness as a basis for initial expectations would inaccurately predict no differences between attractive and unattractive targets.

This can be readily demonstrated by entering specific numbers for Equation 1. For example, assume that Path A is .3, representing a modest predictive validity of attractiveness for warmth. In the absence of self-fulfilling prophecy (Path C is 0), when Path B is .7, .3, and .0, the correlations between expectations and targets' behavior are .21, 0.9, and 0, respectively.

The relevance of this analysis for accuracy of expectations, even expectations based on social group membership (i.e., stereotypes), should now be obvious. Unless the background information is irrelevant to targets' characteristics (i.e., unless Path A is near 0), expectations based on that information will accurately predict differences among targets; expectations that do not use the valid information will fail to accurately predict differences among targets.

Three combinations of Path A and B reflect erroneous beliefs: (a) Path B is nonzero, and Path A is zero. Beliefs are based on irrelevant information; (b) Path B is zero, and Path A is positive. Perceivers fail to base their belief on relevant information; and (c) Path B is negative, but Path A is positive (perceivers are relevant background information to develop beliefs in the opposite direction). In all these cases, the value of the obtained coefficients will indicate the degree of inaccuracy. For example, when Path A is positive, a .5 value for Path B is far less accurate than the optimal .1, but far more accurate than a value of 0.0. Even a .05 value for Path B is not as inaccurate when Path A is .1, as when Path A is .7. Theoretically, the reflection-construction model views accuracy as a quantitative value, rather than qualitative characteristic of social perception; that is, there are usually degrees of accuracy.

The model also shows that Paths A and B provides an upper limit on accuracy of perceivers' predictions. Consider two situations for which the predictive validity of background information is .5. Even if this information is maximally used (i.e., Path B is 1.0), then 0.5 is the extent to which perceivers' beliefs will predict without causing targets' behavior. Thus, for example, physically attractive college women are warmer and more socially skilled than unattractive college women (e.g., Goldman & Lewis, 1977; Kennedy, 1989). In the absence of any information other than physical attractiveness, perceivers will be more accurate if they assume an attractive college woman is warmer and more socially skilled, if the correlation between attractiveness and
warmth is about .3, then as shown by Rosenberg's (1965) bimo-
mal effect size indexing even these most accurate expectations
will be wrong for about 35% of all targets.

Self-Fulfilling Prophecy and Other Influences on Social
Beliefs on Targets' Behavior or Attributes

Self-fulfilling prophecies involve one person leading another to
act in ways consistent with the first person's initially erroneous
social beliefs (Darley & Fazio, 1980; Merriam, 1948; Snyder, 1984). Path C in Figure I represents the causal influence of perceivers' beliefs on targets' behavior. Positive values for Path C represent self-fulfilling prophecies.

Changing targets' behavior. The reflection-construction model highlights several important aspects of self-fulfilling prophecies. First, self-fulfilling prophecies involve perceivers changing targets' behavior, at least in comparison with what targets' behavior would have been had no self-fulfilling prophecy occurred. This model provides a clear distinction between expectations influencing targets' actual behavior and expectations influencing perceivers' judgments of targets' behavior. This distinction has been largely overlooked in educational per-
spectives on teachers' expectation effects (e.g., Brophy, 1983; Brophy & Good, 1974; Cooper, 1975; West & Anderson, 1976). In addition, the term self-fulfilling prophecy has been used to refer to potentially biased in the absence of behavioral confir-
mation (Sherman, Judd, & Park, 1989; Williams, 1976).

Most theoretical perspectives on expectations, however, empha-
size the importance of distinguishing between changing targets' actual behavior and changing the perceivers' own judg-
ments of that behavior (Darley & Fazio, 1980; E. E. Jones, 1964; Jussim, 1980; Merriam, 1948; Miller & Turnbull, 1986; Snyder, 1984). The distinction is important because self-fulfilling prophecies refer to erroneous expectations changing ob-
jective social reality; influences of expectations on judgments refer only to images of social reality that occur in the mind of the perceivers. Such effects are clearly distinguished in the re-
fection-construction model. Path C represents expectation effects changing targets' behavior, and Path D represents an influ-
ence on expectations of judgments of targets' behavior.

This model demonstrates that simple correlations between perceivers' expectations and targets' behavior are relatively un-
informative; they may represent self-fulfilling prophecy and no ac-
curacy at all, accuracy and no self-fulfilling prophecy at all, or virtually any combination of both. Therefore, studies report-
ing only zero-order correlations among perceivers' expectations and the behavior of targets within which they interact (Brophy & Good, 1974; Crano & Mettler, 1978; Huey & Butcher, 1986; Huffman & Stubbs, 1977) are incapable of distinguishing between accuracy and self-fulfilling prophecies.

One unforeseeable implication of this model is that even when perceivers' expectations are uncorrelated with targets' future behavior, a self-fulfilling prophecy may have occurred. This would happen when perceivers develop expectations in the di-
rection opposite that indicated by the background information (e.g., Path A is negative whereas Path 8 is positive). If a self-
fulfilling prophecy occurs, Path C too is positive. Because Paths A and C are positive and Path B is negative, the net correlation between perceivers' expectations and targets' behavior may be
near zero, even when a self-fulfilling prophecy occurs (see Equation 1).

Conceptually, this means that a self-fulfilling prophecy ne-
gates a preexisting difference among targets. Although I know of no research documenting such effects, they are hypotheti-
cally possible. For example, a White manager may believe Blacks are lazy (Path B is negative) and, when in fact Blacks work harder than Whites (Path A is positive), if a self-fulfilling proph-
ecy occurs (Path C is positive)—the manager actually discover-
\* See Table 1 for a list of the direct and indirect effects of standardsized

 reflections on teacher perceptions of talent (see Jussim, 1969).

1 Self-fulfilling effects were not equally estimated in any of these studies. It is unlikely that West and Anderson (1976) or Williams (1976) were aware of the phenomena because the first published description

See Table 1 for a list of the direct and indirect effects of standardsized

 reflections on teacher perceptions of talent (see Jussim, 1969).

1 Self-fulfilling effects were not equally estimated in any of these studies. It is unlikely that West and Anderson (1976) or Williams (1976) were aware of the phenomena because the first published description
This analysis has two additional implications for understanding teacher-expectation effects. First, most naturalistic studies find little evidence of small self-fulf...
Reflection-Construction Analysis of Empirical Research on Self-Fulfilling Prophecies

Interpersonal expectation effects are one of the main pillars of the constructivist perspective because of their supposed power to create social reality. Consider the conclusions reached by some of the most prominent theorists in the field:

- Attempts to understand the personal characteristics of others, in interactions with them, are determined by the fact that one knows to find out what one expects. This happens not only because information processing is selective, but also because experiences cause one to act in ways that elicit behavior interpretable as confirming these expectations, even when the expectancy might have been mistaken. (E. E. Jones, 1986, p. 41)

- Teachers' expectancies influence students' academic performance to a greater degree than students' performance influences teachers' expectancies. (Miller & Turnbull, 1986, p. 236)

Events in the social world may be as much effects of individuals' beliefs as they are causes of these beliefs. (Snyder, 1984, p. 294)

The reflection-construction model provides the first clear framework for rigorously and empirically assessing the validity of these strong claims. Specifically, the quotes by Miller and Turnbull (1986) and Snyder (1984) suggest that Path C often is stronger or stronger than Path B-the quote by E. E. Jones, ignores accuracy altogether. Interestingly, however, when the reflection-construction model is applied to understanding the experimental and naturalistic evidence on self-fulfilling prophecies, a different conclusion emerges: Path B is usually stronger than Path C.*

Experimental studies. Many experimental studies have shown that the belief perceivers develop on the basis of erroneous information provided by experimenters sometimes lead to self-fulfilling prophecies (see reviews by Darley & Fazio, 1980; E. E. Jones, 1986; R. A. Jones, 1977; Miller & Turnbull, 1986; Snyder, 1984). Such research shows that, in principle, erroneous expectancies may influence the behavior of targets. Such research, however, was not intended to address the accuracy of social beliefs. Consequently, such research cannot possibly address the relative sizes of Paths B and C. Because accuracy limits the potential for self-fulfilling prophecy, these studies provide no evidence whether, or even the existence of self-fulfilling prophecies in daily life.

These points are worth considering only because researchers and the lay public have instead often interpreted classic experimental demonstrations of self-fulfilling prophecies as providing information about expectancy effects in daily life. For example, in an article titled "The Self-Fulfillment of the Self-Fulfilling Prophecy," Wineburg (1987) documented some of the extreme claims regarding naturally occurring teacher-student relations made on the basis of Rosenthal and Jacobsen's (1968) seminal Pygmalion experiment. Similarly, Snyder et al.'s (1977) classic experiment is also frequently cited, not as evidence that erroneous stereotypes might lead to their own fulfillment but as evidence that they do lead to their own fulfillment. For example, Skow and Sherman (1986, p. 116) cited the Snyder et al. experiment as a basis for the following claim: "Once such an erroneous expectation is held about an individual, of course, self-fulfilling prophecy during interaction should ensure that the hypothesis is behaviorally confirmed" (emphasis added).

Similarly, many of the strong preconstructivist claims quoted throughout this article were based mainly on reviews of experimental research. The psychologists are generally fully aware of the dangers involved in generalizing from experimental studies of limited ecological validity to daily life. With expectancy effects, however, many articles have been written as if the experimental studies readily generalize to naturally occurring social perception and social interaction. Why such ready leaps of faith? Again, it seems, the strong social constructivists' perspective has provided a Eistgen's in which such interpretations seem reasonable and appropriate.

Meta-analyses. Several researchers have performed meta-analyses assessing the strength of self-fulfilling prophecy effects. All effects sizes described in this section are reported in terms of the Pearson correlation coefficient, r, to render them more comparable to other meta-analytic effects. (a) Among two experimental and naturalistic studies (e.g., Raudenbush, 1984; Rosechnal & Rubins, 1978; Smith, 1980), even these effect sizes, however, may overestimate the power of the expectation effects in daily life. Many of the expectancy "effects" estimated for naturalistic studies were based on zero-order correlations (Rosenthal & Rosjna, 1978; Smith, 1980). The reflection-construction model shows that some of the correlations between teacher expectancies and student achievement may result from effects of achievement or beliefs. Therefore, the effect sizes estimated for naturalistic studies probably overestimate the influence of naturally occurring expectations on social reality.

Two meta-analyses have focused explicitly on conditions af

*One must exercise caution when comparing standardized coefficient sizes because their size partially depends on the variances of each variable. Restriction of range on one variable may artificially lower its relation to another. Researcher's, therefore, obtain almost any pattern of coefficients they prefer by restricting the range of desirable variables and increasing it for preferred variables.

Nonetheless, throughout this article, I compare standardized coefficients for several reasons: First, most previous researchers have focused on identifying and assessing self-fulfilling prophecies and peripheral issues to be resolved. For example, there is no indication that there were any representational biases. It would have been in favor of finding expectancy effects. And yet, one of the major points of this review is that, when viewed through the reflection-construction model, even theses studies generally provide more evidence of accuracy than of self-fulfilling prophecy or personal force.

Second, I sometimes compare effects of background information on teachers' expectations (Path B) with effects of teachers' expectations on students (Path C). Teachers' expectations are identical within a given study in both sets of analyses, so it is misleading for them to be more variable in one analysis than in another. Student achievement is usually both background information and outcomes (e.g., achievement at the beginning and end of the school year) and so the variance in student achievement in usually relatively stable over the course of year (e.g., Rotter, 1966; Rotter, 1966; Rotter, 1966; Rotter, 1966; Rotter, 1966; Rotter, 1966).
fecting the size of self-fulfilling prophecy effects. The past in-
vestigated whether grade level of student and timing of the
expectancy induction affected the size of teacher expecta-
tion effects in 18 experiments (Raudenbush, 1984). The stron-
gest self-fulfilling prophecy effects occurred with students in
the first, second, and third graders and with the expectancy
induction occurred early in the school year. However, even
these strongest effects were under .2.

Another recent meta-analysis of 37 studies on how individual dif-
fferences among perceivers and targets moderated self-fulfilling
prophecy effects uses Cooper & Haggard, (1988). It was found
that the sizes of the prophecy were more likely to occur among
perceivers who had more of a need for social influence and
among targets who were more skilled at detecting nonverbal
clues. However, the largest effect size for any personality moder-
ator was under .2.

Meta-analytic effects compared with correlations among
teachers' expectations and student achievement. In contrast to
these relatively small effects of expectations, research generally
reveals modest to high correlations (.4-.9) between teacher
expectations and student achievement (Bryk & Good, 1974;
Corno & Melton, 1975; Hoge & Butcher, 1984; Humphreys &
Sugihara, 1977; Jussim, 1989; Williams, 1976). According to the
reflection-construction model, the correlation between
\textit{teacher}'s expectations and students' achievement equals accu-
racy plus self-fulfilling prophecy (see Equation 1). Algebraic
manipulation of Equation 1 shows that

\begin{equation}
\text{Pach A X Path B} = r(k, T) - \text{Pach C},
\end{equation}

where \( r(k, T) \) is the correlation between teachers' perceptions or
expectations (P) and student targets' behavior (T). In other
words, accuracy equals the zero-order correlation between ex-
pectations and targets' behavior minus self-fulfilling prophecy.

When the effects of two or more variables are interpreted in terms of the
reflection-construction model, the evidence shows clearly that teacher
expectations do not predict student achievement mainly be-
cause the expectations are self-fulfilling. Path C, represent-
ing self-fulfilling prophecy effects (see generally r .1 to .3
(Raudenbush, 1984; Rosenthal & Rubin, 1978; Smith, 1980).
The reflection-construction model indicates that much of the de-
crease in the correlation between teacher expectations and
student achievement (path C) is accounted for by the e

Path analysis. Thus far, I have only applied the model to results obtained across a wide variety of studies and have pro-
vided only indirect evidence of accuracy of teacher expecta-
tions. More direct evidence would be provided by research that
addresses four criteria: (a) It must examine naturally occurring ex-
pectations, because accuracy is irrelevant to experimental re-
search involving the intentional induction of erroneous expecta-
tions; (b) zero-order correlations between teachers' expecta-
tions and students' future achievement must be reported
to compare them to self-fulfilling prophecy effects; (c) it must use
students' previous performance as a basis for teachers' expecta-
tions and students' future performance (because this is what is
seen as obvious potential sources of experience-related—Pach A X Path

B—between teachers' expectations and student achievement); and (d) it must estimate effects of teachers' expectations on
students' future performance beyond effects accounted for by
students' previous performance (i.e., it must estimate Path C when controlling for Path A).

Two published studies have met these criteria (Jussim, 1989;
Williams, 1976). In both studies, zero-order correlations
between teachers' expectations and students' achievement
were reduced 60%-100% when controlling for parental predic-
tions of both, such as past performance and smoking motivation.

Therefore, Equation 3 shows that in these two studies, the
accuracy accounted for 60%-100% of the zero-order correlations
between teachers' expectations and student achievement. The only two studies that met the criteria neces-

Path B analysis. In Path B studies, the self-fulfilling

prophecy accounted for about 40%-60% of the zero-order

measure of self-fulfilling prophecy (Path C). (b) accuracy ac-
counted for 60%-100% of the zero-order correlations between


Two frequently cited but problematic studies: More

naturalistic. Two naturalistic studies are frequently cited as attesting to the

power of teachers' expectations to create their own reality. Rist (1970) observed a kindergarten teacher segregate children

along social class lines and direct most of her attention to the

upper-class children. Furthermore, he observed this "social

system to persist at least through second grade.

The evidence that this study provides in support of powerful

self-fulfilling effects of teachers' expectations is extremely lim-

It focused on a very small sample, a single kindergarten class of 30

students. Rist's (1970) observations addressed how the teacher acted on her expectations for far more than how the students reacted to the teacher. In a follow-up (p. 443), Rist indicated that at the end of the kindergarten year, there were no statistically significant differences in IQ among

63

BELIEF AND REALITY
the students Rist himself categorized as recipients of high versus low teacher expectations! Rist (1970) also indicated that by the end of first grade, the high-expectancy students were assigned to a higher reading group than were the low-expectancy students. Once students were assigned to a high-track or low-track group, however, they generally stayed there through second grade. Because low-track groups are actually taught less, it seems likely that by the end of second grade, there may have been genuine performance differences between recipients of high and low teachers' expectations. It is impossible to know the extent of such differences, however, because Rist did not provide quantitative analyses. A naturalistic study by Crano and Melton (1978) also is frequently cited as evidence of powerful self-fulfilling prophecy effects. On the basis of a cross-lagged panel correlational analysis, they concluded that teachers' expectations influenced student achievement to a greater extent than student achievement influenced teacher expectations. Unfortunately, although Crano and Melton could not have known it at the time, the use of cross-lagged panel correlations as a basis for determining causal predominance was discredited shortly after their study was published (Rogosa, 1980). Current researchers, however, should be aware that their study provided no evidence regarding causal relations among teacher expectations and student achievement. Thus, two of the naturalistic studies most frequently cited (e.g., Darley & Fazio, 1980; E. E. Jones, 1986; Miller & Turnbull, 1986; Myers, 1987; Snyder, 1984) are attesting to the power of self-fulfilling prophecies provide little such evidence. However, the naturalistic studies using more rigorous or appropriate methods and analytic techniques (Brattisani et al., 1984; West & Anderson, 1976; Williams, 1976) generally have been overlooked in social psychological perspectives on interpersonal expectations and find far more evidence of accuracy than self-fulfilling prophecy. Why have these flawed studies been emphasized while the more informative research demonstrating accuracy has been largely overlooked? This may yet again reflect the influence of the strong constructivist perspective.

Naturally Occurring Self-Fulfilling Prophecies in Contexts Other Than the Classroom

Perhaps self-fulfilling prophecy effects are stronger in contexts other than the classroom. Teachers are trained experts, and opportunities abound for effective assessments of students. In comparison to perceivers in many social situations, teachers may be more likely to develop accurate expectations. Even when inaccurate, teachers may have numerous opportunities to revise their erroneous expectations because students can demonstrate their competence many times over the course of the school year. In contrast, however, most social perceivers may never rigorously measure many social characteristics of others. In daily interactions, people do not give others formal tests of warmth, extraversion, or even intelligence in the same way that teachers explicitly assess, for example, success at arithmetic. Perhaps, therefore, social perceivers more readily maintain erroneous expectations and create social reality to a larger extent in many contexts outside the classroom.

However, I know of only one study assessing effects on targets' 'beliefs of perceivers' naturally occurring prophecies in situations other than the classroom (Berman, 1979). Berman assessed the extent to which clinicians' expectations regarding the outcome of therapy were accurate or self-fulfilling. A group of 44 therapists was divided into 22 pairs. Each pair of therapists then interviewed two patients. After this interview, the therapists assessed each therapist's expectations regarding the likely outcome of therapy for each of the two patients they interviewed. Each therapist then treated one of the two patients for 4 months.

If therapists' expectations were accurate, they should correlate with the outcome of the patients they did not treat. In fact, however, this study yielded no evidence of accuracy. None of the correlations of therapist expectation with any of the outcome measures reached statistical significance (ranging from -0.25 to 0.22). If therapists' expectations created self-fulfilling prophecies, they should correlate more strongly with the outcome of the patients they treat than with the outcome of the patients they did not treat. The results regarding self-fulfilling prophecy were mixed. Therapists' expectations significantly correlated with two of the six patient-reported outcome measures (both correlations were about .3) and none of the four therapist-reported outcome measures.

The implications of this study we limited by the relatively small sample, the relatively brief time frame, and the lack of assessment of patient outcome independence of both patient and therapist. Nonetheless, it is also interesting for several reasons. First, the methodology of having perceivers provide expectations for targets and then only interact with a subset of those targets may be extremely useful for disentangling self-fulfilling prophecy from accuracy in many other settings. Second, it is currently the only naturalistic study providing greater evidence of self-fulfilling prophecy than of accuracy. Third, the relatively modest self-fulfilling effects of therapists' expectations in outpatient settings with results obtained from the classroom studies.

The naturalistic evidence regarding self-fulfilling prophecies in contexts other than the classroom is limited to this single study. Furthermore, given the limitations of Berman's (1979) study, his findings probably should be viewed as preliminary and suggestive. Research on naturally occurring self-fulfilling prophecies in therapist-patient relations and in virtually all other naturalistic situations is sorely needed.

Judgments Regarding Targets

Regardless of whether targets objectively confirm perceivers' beliefs, strong social constructivist perspectives suggest that perceivers often will interpret targets' behavior as confirming their beliefs (Darley & Fazio, 1980; Fiske & Neuberg, 1990; Fiske & Taylor, 1984; E. E. Jones, 1986; P. A. Jones, 1977; Miller & Turnbull, 1986; Snyder, 1984). Previous theoretical perspectives

1 Brattisani, Winocur, and Marshall (1984) and Williams (1976) focused nearly all of their attention on their results providing evidence of self-fulfilling prophecies and perceptual biases. This, too, may reflect an influence of the Zeitgeist created by the strong constructivist perspective.
of employees' performance evaluations. For example, employees who are perceived as being trustworthy and competent are more likely to be promoted than those who are perceived as untrustworthy and incompetent. These perceptions can have a significant impact on the behavior of subordinates and can influence the decisions of managers.

One way to reduce the impact of social desirability bias is to use anonymous evaluations, where employees are asked to rate their colleagues' performance without knowing who is being rated. This can help to reduce the pressure to conform and can lead to more accurate evaluations.

Another way to reduce the impact of social desirability bias is to use forced-choice rating scales. In these scales, employees are asked to choose the most accurate of a set of possible ratings, rather than providing a single rating. This can help to reduce the tendency to give socially desirable ratings.

Finally, research has shown that providing feedback on employees' performance can help to reduce the impact of social desirability bias. Employees who receive feedback on their performance are more likely to rate their colleagues accurately than those who do not receive feedback.

In conclusion, social desirability bias can have a significant impact on the accuracy of performance evaluations. Researchers and managers should be aware of this bias and use strategies to reduce its impact. By doing so, they can ensure that performance evaluations are more accurate and fair.
behavior. Thus, I call this constructive accuracy, meaning that perceivers may use their inner models and experience to create a valid image of reality even when they do not directly base their judgments on the objective stimulus information. Some researchers may argue that this model simply applies Bayes's theorem to the specific case of interpersonal perception. When there is uncertainty to judgments, expectations based on accurate background information should influence judgments. This is another version of the idea that base rates should influence judgments when individualizing information is less than perfectly diagnostic (e.g., Kanouse & Tversky 1973; McCauley et al. 1982; Tversky & Kahneman, 1974). Nonetheless, the current model suggests the need for a reinterpretation of research showing that expectations influence judgments. Such research generally has been interpreted as evidence of bias, accuracy, prejudice, and so on (e.g., Bodenhausen, 1989; Darley & Fazio, 1980; Fiske & Neuberg, 1990; Fiske & Taylor, 1984; E. E. Jones, 1986), whereas the current model shows that expectations influencing judgments may enhance accuracy.

Empirical research on false consensus has demonstrated a related phenomenon. False consensus (sometimes discussed as projection) involves perceivers allegedly erroneously assuming that others are similar to them in the absence of much evidence (e.g., Ross, Greene, & House, 1977). In fact, however, if perceivers 'attributes actually correlate with targets' attributes, the more perceivers assume others are similar to them (i.e., the greater the false-consensus effect or projection), the more highly their judgments of others will correlate with those others' actual attributes (Hoch, 1987).

Expecting influence judgments: Bias. Perceptual biases occur when perceivers view targets as conforming more closely to their social beliefs than is warranted on the basis of targets' behavior or attributes (Cocker, 1981; Darley & Fazio, 1980; Fiske & Taylor, 1984; E. E. Jones, 1986; Miller & Zunshine, 1986). In reflection-construction terms, this means that social beliefs correlate more strongly with perceivers' judgments of targets than with targets' actual behavior or attributes.

The reflection-construction model indicates that bias occurs only under specific circumstances: when the influence of social information on judgment is neutral, which makes up for the extent to which failing to judge targets exclusively on the basis of their behaviorowers the correspondence among targets' actual behavior and perceivers' judgment of that behavior. This is because

$$r(R, j) = \frac{Path + j}{Path C \times Path E} + \frac{Path A \times Path B \times Path E}{Path A \times Path B} \text{ (5)}$$

where $r(R, j)$ is the correlation between perceivers' social beliefs (R) and their judgments of targets' (J). Equation 5 yields the following conditional inequality: Path D > Path C - (Path C \times Path E)^2 + (Path A \times Path B) - (Path A \times Path E), perceivers' social beliefs will correlate more strongly with their own judgments of targets' behavior than with targets' actual behavior ($r(R, j) > r(R, T)$). This conditional inequality and Equations 1 and 5 show that a perceptual bias occurs only when Path D more than makes up for the extent to which the correspondence between targets' behavior and perceivers' judgments is enhanced as a result of failing to judge targets totally on the basis of their behavior.
Figure 2: Three models showing how category-based judgments may enhance construct accuracy. (All models are hypothetical, accuracy of judgments of heights a guess in Model 2.)

---

BELIEF AND REALITY

MODEL 2

Path A

Basketball or Golf?

Path B

Beliefs regarding Target's height

Path C

Individual Target's height

Path E

Perceivers' judgments of individual Target's height

Path D


MODEL 3

Path A

Basketball or Golf?

Path B

Beliefs regarding Target's height

Path C

Individual Target's height

Path D


MODEL 4

Path A

Basketball or Golf?

Path B

Beliefs regarding Target's height

Path C

Individual Target's height

Path D


Participants playing basketball or golf (Path D is 3), and in actual height has a minor influence on judgments (Path E is 1). The particular coefficients were chosen for simplicity and for illustrative reasons; the same broad implications of the model hold for any set of coefficients.

Model 3 is exactly the same with one exception: There is no direct influence of category-based beliefs on judgments of the height of particular individuals (Path D is 0 instead of 3). Model 3 represents perceivers who realize that professional basketball players are taller than most others but who do not allow this stereotype to influence judgments of particular individuals on Ti. Model 4 depicts perceivers who do not hold a stereotype of professional basketball players as being particularly tall. For them, Path B is zero. These perceivers have no basis for generating different predictions for players and basketball players. Therefore, this example also assumes that their expectations regarding height have no influence on their judgments of individual targets' heights: thus, Path D is zero. The correlation between expectations and targets' objective height and Ti is Models 2 and 3 and 0 on Model 4. Because there is no self-fulfilling prophecy here, these correlations represent pure accuracy of prediction without influence this is an exan-
behavior and attributing (pp. 31–32) approaches to accuracy suggested by the reflection-construction model are clearly consistent with Brunswick's (1952) probabilistic conception. The reflection-construction model's claim that social perception is more complex than the mere perception of a social world is clearly consistent with Brunswick's (1952) lens model in several ways. First, Brunswick's model completely overlooked self-fostering prophecies. Second, the lens model did not focus on perceptual biases. Consequently, Brunswick's model primarily addressed ways in which perception reflected reality; it largely overlooked or de-emphasized constructivist phenomena.

Although much of the current article challenges the strong constructivist perspective, it should not be interpreted as suggesting that social perception only reflects social reality. At least sometimes, social perception indeed creates social reality. In contrast to the lens model, the reflection-construction model provides a clear framework for distinguishing the extent to which social perception reflects or creates social reality.

Limitations to the Reflection-Construction Model

The reflection-construction model is not intended to address many important issues involved in understanding relations among social perception and social reality. For example, it is mute with respect to many of the social and psychological processes by which social perception relates to social reality and (b) identifying conditions under which different phenomena, e.g., self-fostering prophecies vs. accuracy, are more or less likely to occur. Numerous theorists have addressed normatively appropriate processes for social judgment, hypothesis testing, and inference (e.g., Kihlman et al., 1982; Kenny & Albright, 1987; Klauerman & Ha, 1987; Kruglanski, 1984; Neubert & Ross, 1980). Others have addressed the processes by which and conditions under which expectations influence social judgment and lead to self-fostering prophecies (e.g., Bodenhausen, 1988; Brockway, 1983; Coopet & Good, 1983; Darley & Fazio, 1980; Fiske & Neuberg, 1980; Harris & Rosenthal, 1983; Justman, 1986; Snyder, 1984).

In contrast, within a social context (whether laboratory or naturalistic), the reflection-construction model primarily addresses questions such as (a) How much does social perception correspond to social reality because of accuracy or self-fostering prophecies? (b) How much is social perception based on social reality? (c) How many of the phenomena of self-fostering prophecy effects? (d) Have perceivers' expectations led to biases or accuracy in impressions of targets, or both? The reflection-construction model is often limited to addressing many processes simply by adding intervening variables and views between the conceptual variables already presented and by assimilating the model under different conditions hypothesized to enhance or reduce the influence of any of the phenomena the model already incorporates.

Similarly, the model is most appropriate for understanding relationships between social perception and social reality within a single social context. It is not intended to address other unique questions concerning the extent to which, for example, self-fostering prophecies over the life span lead to individual differences in personality attributes, academic or occupational achievement, or behavior in general.

Strong and Weak Constructivist Perspectives

Empirical research shows that (a) the extent to which naturally occurring teachers' expectations create self-fostering prophecies generally is quite limited; (b) even meta-analyses that have addressed conditions under which self-fostering prophecy effects are most powerful have found small effects; (c) these effects are most often found in laboratory contexts, and even then they have been shown to be inaccurate; (d) perceivers often judge targets not on the basis of stereotypes but, on the basis of targets that have been described; and (e) expectations influence judgments regarding individuals.

When the reflection-construction model is used as a framework for interpreting experimental research on accuracy, bias, and self-fostering propensity, it shows that (a) among studies that assessed both self-fostering prophecy and accuracy, teacher expectations have predicted student achievement more because they are accurate than because they create self-fostering prophecies; (b) when social beliefs are inaccurate, their influence on judgments represents bias alone; and (c) when social beliefs are valid, the more they influence judgments, the more accurate those judgments will be if perceivers do not or cannot judge targets solely on the basis of their attributes or behavior.

My conclusion that self-fostering and biasing effects of social beliefs are relatively small, especially when compared to accuracy, should not be misinterpreted as indicating that they are trivial or unimportant. Whether effects of, 1 to 3 are considered important, depend on both theoretical and practical considerations beyond the scope of this article (e.g., see Funder, 1987; Justman, in press; Rosenthal, 1985, 1989). Because of their relevance to social issues such as equality of opportunity, and because of their relevance to theoretical issues such as the construction of social reality, such effects are quite important.

Nonetheless, an application of the reflection-construction model to the empirical evidence shows that the weak social constructivists have been shown to be incorrect about as often as they have been shown to be inaccurate; (e) perceivers often judge targets not on the basis of stereotypes, but on the basis of targets that have been described; and (e) expectations influence judgments regarding individuals.

When the reflection-construction model is used as a framework for interpreting experimental research on accuracy, bias, and self-fostering propensity, it shows that (a) among studies that assessed both self-fostering prophecy and accuracy, teacher expectations have predicted student achievement more because they are accurate than because they create self-fostering prophecies; (b) when social beliefs are inaccurate, their influence on judgments represents bias alone; and (c) when social beliefs are valid, the more they influence judgments, the more accurate those judgments will be if perceivers do not or cannot judge targets solely on the basis of their attributes or behavior.

My conclusion that self-fostering and biasing effects of social beliefs are relatively small, especially when compared to accuracy, should not be misinterpreted as indicating that they are trivial or unimportant. Whether effects of, 1 to 3 are considered important, depend on both theoretical and practical considerations beyond the scope of this article (e.g., see Funder, 1987; Justman, in press; Rosenthal, 1985, 1989). Because of their relevance to social issues such as equality of opportunity, and because of their relevance to theoretical issues such as the construction of social reality, such effects are quite important.

Nonetheless, an application of the reflection-construction model to the empirical evidence shows that the weak social constructivists have been shown to be incorrect about as often as they have been shown to be inaccurate; (e) perceivers often judge targets not on the basis of stereotypes, but on the basis of targets that have been described; and (e) expectations influence judgments regarding individuals.

When the reflection-construction model is used as a framework for interpreting experimental research on accuracy, bias, and self-fostering propensity, it shows that (a) among studies that assessed both self-fostering prophecy and accuracy, teacher expectations have predicted student achievement more because they are accurate than because they create self-fostering prophecies; (b) when social beliefs are inaccurate, their influence on judgments represents bias alone; and (c) when social beliefs are valid, the more they influence judgments, the more accurate those judgments will be if perceivers do not or cannot judge targets solely on the basis of their attributes or behavior.

My conclusion that self-fostering and biasing effects of social beliefs are relatively small, especially when compared to accuracy, should not be misinterpreted as indicating that they are trivial or unimportant. Whether effects of, 1 to 3 are considered important, depend on both theoretical and practical considerations beyond the scope of this article (e.g., see Funder, 1987; Justman, in press; Rosenthal, 1985, 1989). Because of their relevance to social issues such as equality of opportunity, and because of their relevance to theoretical issues such as the construction of social reality, such effects are quite important.

Nonetheless, an application of the reflection-construction model to the empirical evidence shows that the weak social constructivists have been shown to be incorrect about as often as they have been shown to be inaccurate; (e) perceivers often judge targets not on the basis of stereotypes, but on the basis of targets that have been described; and (e) expectations influence judgments regarding individuals.

When the reflection-construction model is used as a framework for interpreting experimental research on accuracy, bias, and self-fostering propensity, it shows that (a) among studies that assessed both self-fostering prophecy and accuracy, teacher expectations have predicted student achievement more because they are accurate than because they create self-fostering prophecies; (b) when social beliefs are inaccurate, their influence on judgments represents bias alone; and (c) when social beliefs are valid, the more they influence judgments, the more accurate those judgments will be if perceivers do not or cannot judge targets solely on the basis of their attributes or behavior.

My conclusion that self-fostering and biasing effects of social beliefs are relatively small, especially when compared to accuracy, should not be misinterpreted as indicating that they are trivial or unimportant. Whether effects of, 1 to 3 are considered important, depend on both theoretical and practical considerations beyond the scope of this article (e.g., see Funder, 1987; Justman, in press; Rosenthal, 1985, 1989). Because of their relevance to social issues such as equality of opportunity, and because of their relevance to theoretical issues such as the construction of social reality, such effects are quite important.

Nonetheless, an application of the reflection-construction model to the empirical evidence shows that the weak social constructivists have been shown to be incorrect about as often as they have been shown to be inaccurate; (e) perceivers often judge targets not on the basis of stereotypes, but on the basis of targets that have been described; and (e) expectations influence judgments regarding individuals.

When the reflection-construction model is used as a framework for interpreting experimental research on accuracy, bias, and self-fostering propensity, it shows that (a) among studies that assessed both self-fostering prophecy and accuracy, teacher expectations have predicted student achievement more because they are accurate than because they create self-fostering prophecies; (b) when social beliefs are inaccurate, their influence on judgments represents bias alone; and (c) when social beliefs are valid, the more they influence judgments, the more accurate those judgments will be if perceivers do not or cannot judge targets solely on the basis of their attributes or behavior.

My conclusion that self-fostering and biasing effects of social beliefs are relatively small, especially when compared to accuracy, should not be misinterpreted as indicating that they are trivial or unimportant. Whether effects of, 1 to 3 are considered important, depend on both theoretical and practical considerations beyond the scope of this article (e.g., see Funder, 1987; Justman, in press; Rosenthal, 1985, 1989). Because of their relevance to social issues such as equality of opportunity, and because of their relevance to theoretical issues such as the construction of social reality, such effects are quite important.

Nonetheless, an application of the reflection-construction model to the empirical evidence shows that the weak social constructivists have been shown to be incorrect about as often as they have been shown to be inaccurate; (e) perceivers often judge targets not on the basis of stereotypes, but on the basis of targets that have been described; and (e) expectations influence judgments regarding individuals.
BELIEF AND REALITY

at such an accumulative process, but the study has as many limitations that it must be viewed only as suggestive. I know of only two other studies that have addressed the issue of accumulation of expectancy effects. Both a field experiment (Rosenthal & Jacobson, 1968) and instructional research (Wigert & Anderson, 1976) showed that, apart from accumulating, self-fulfilling prophesies dissipate from the 1 st to the 2 nd year. Clearly, however, whether self-fulfilling prophecy effects accumulate over periods longer than 1 year remains an inadequately addressed empirical question.

Self-fulfilling prophecies and perceptual biases also may occur to large extents in contexts other than the classroom. The minimal naturalistic evidence on this issue remains a limitation to psychologists' understanding of how social perception creates social reality and a challenge for those arguing that such effects are quite large. Perhaps the effects are quite large, researchers will never know, though, until they investigate ways in which intrinsically occurring social perception creates and reflects reality among husbands and wives, parents and children, friends, clinicians and patients, employers and employees, coaches and athletes, and so on.

Of course, the possibility that conditions exist under which such self-fulfilling prophecies and biases occur provides an empirical evidence that such conditions actually exist. An absence of evidence is not a basis for supporting an argument constructivist position. Some of the greater claims regarding the power of belief to create social reality may be true, but there is currently little evidence of such powerful effects occurring under naturalistic conditions. Experimental research has identified a host of errors and biases and has convincingly shown that if erroneous, social perception sometimes creates social reality; it is at least possible, however, that accuracy characterizes naturally occurring social perception to a greater extent than once believed.

References


Olsen, K. K. (1972). Psychotic attractiveness and evaluations of chil-

Duckitt, J. L. (1974). Differential local perception and attribution of
interpersonal violence: Testing the lower limits of stereotypy.


