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8

TWO (OR MORE?) COGNITIVE APPROACHES TO STEREOTYPE FORMATION

Biased or Reality Based?

Russell Spears and Wolfgang Stroebe

Although the stage for cognitive theories of stereotype formation and stereotyping was set by Allport's (1954) classic volume *The Nature of Prejudice*, two cognitive theories which have dominated research in this area have been Tajfel's accentuation theory of stereotyping (e.g., Tajfel, 1957, 1959, 1969; Tajfel & Wilkes, 1963) and Hamilton's distinctiveness theory of illusory correlation (e.g., Hamilton & Gifford, 1976). Whereas stereotype formation according to accentuation theory is the result of categorization processes, stereotype formation according to Hamilton is (or can be) the result of memory distortions in processing information about different groups. One major difference between these theories is that according to accentuation theory, stereotypes reflect an accentuation of actual differences between social categories, whereas the mechanism proposed by Hamilton does not require real group differences to exist. The focus of this chapter is to address the explanation of stereotype formation by these two theories, particularly in relation to this reality versus bias theme.

Although both of these theories are cognitive in nature, they derive from two very different cognitive approaches to social psychology, namely social judgment and social cognition. Whereas the origins of social judgment theories can ultimately be traced back to Fechner's psychophysics (Eiser, 2012; Eiser & Stroebe, 1971), the social cognition approach derived from the more recent information processing framework relying heavily on cognitive representation of information and memory processes. The central question for social judgment theories is how people select the frame of reference they employ in their judgments. Social identity theory (SIT; Tajfel & Turner, 1979) and self-categorization theory (SCT; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) continued this tradition. The social cognition tradition, on the other hand, derived from information processing and memory research and focuses on encoding and recall of information.

Despite their different theoretical bases, the early research program of Tajfel (e.g., Tajfel, 1957, 1959; Tajfel & Wilkes, 1963; for a review, see Eiser & Stroebe, 1971) shows some parallels to Hamilton's work on illusory correlation. Both research programs are similar in that they constituted attempts to push for a cognitive explanation of stereotype formation and to demonstrate that this involves similar cognitive processes as for nonsocial categories. A second similarity between these cognitive research programs was the tendency to take a (disinterested) outsider, or third-person perspective, to cognition. Even though Tajfel (1959; Tajfel & Wilkes, 1963) emphasized that the effects of superimposed categorizations would become stronger in situations where the categorization had personal relevance for the perceiver, the basic principles of accentuation theory derived from a third-person perspective.

As a result of their different theoretical background, there are marked differences in fundamental assumptions of these two research programs and they arrive at radically different conclusions about the extent to which stereotypes distort social reality. From a social judgment perspective, the judgmental distortion resulting from stereotyping reflects an accentuation of *actually existing* differences between groups. In contrast, there is no such reality constraint for the illusory correlation approach to stereotype formation. In the first two sections of this chapter, we describe both research programs and illustrate the similarities as well as the differences between them. In the final section we introduce a "third" cognitive approach that helps to resolve some of the issues left unanswered.

The Social Judgment Approach to Stereotype Development: Accentuating Differences Between Social Categories

The social judgment approach originated as an application of theories of psychophysical judgment to judging social stimuli (Eiser & Stroebe, 1971). Much of the early research on judging physical stimuli was concerned with the study of "absolute" judgments and how judges develop the frame of reference by which they judge a given stimulus. When participants judge a set of weights in terms of an ordered set of categories from very light to very heavy, their use of these categories adjusts to the range of weights encountered. For example, 500 g will be judged as "very light" if it is the lowest weight of the series being judged, but as "very heavy" if it is the heaviest weight. In other words, these absolute judgments are always relative to the stimulus context in which they are made. This "contrast effect" is the most widespread effect that variation in the (physical) stimulus context has on absolute judgments. Research on the absolute judgment of physical stimuli was guided by theories such as Helson's (1964) Adaptation-Level Theory and Parducci's (1965) Range Frequency Theory.

Tajfel became interested in this type of judgment processes through the classic study of Bruner and Goodman (1947), which formed part of the "new look" proclaiming that perception was a constructive process influenced by individual

motives and needs (Bruner, 1957). Bruner and Goodman (1947) proposed that judges would overestimate the size of a valued object compared to a value-neutral object of identical dimensions. They demonstrated this effect in a study comparing children's judgment of the size of coins and cardboard discs of the same size. Children typically judged the size of the coins to be bigger than the cardboard discs, although these findings could not be replicated by Bruner and Rodrigues (1953) for metal discs. Nevertheless, Bruner and Rodrigues concluded that the judgments in both studies showed a distortion with the smallest coin being underestimated and the largest overestimated.

In an article "Value and the Perceptual Judgment of Magnitude," Tajfel (1957) offered a purely cognitive explanation for these findings. Tajfel argued that this accentuation of differences has nothing to do with value per se, but is due to the fact that the elements of a series of coins vary *concurrently* along two dimensions—size and value—whereas a series of cardboard or metal discs vary along only one dimension, that of size. Whereas size is the focal dimension that is being judged, value is a peripheral dimension that is not being judged but nonetheless affects judgments. The effects found with coins are thus a special case of the more general principle that differences along a peripheral dimension (e.g., value) are correlated with differences along the focal dimension (e.g., size), resulting in an accentuation of the judged differences between the stimuli. This theory explained why there is not only overestimation of the size of large coins but also underestimation of the size of small coins. It also explained why value did not appear to influence size perception of stimuli for which value and size are uncorrelated (e.g., refugees judging the size of a swastika; Klein, Schlesinger, & Meister, 1951).

Tajfel (1957) suggested some important implications of his argument:

Many social objects and events are sharply classified in terms of their value or relevance. When judgments concerning some quantifiable or rateable aspects of stimuli, which fall into distinct categories are called for, difference in value or relevance cannot fail to influence the quantitative judgment in the direction of sharpening the objectively existing differences between the stimuli. . . . These judgmental effects of categorization are probably fairly general; it is likely, however, that they are particularly pronounced when judgments are made in dimensions in which scaling in magnitude is simultaneously a scaling in value . . . when skin color . . . or some facial trait of social 'value' are concerned, there will be a marked sharpening of the differences in the degree of these characteristics perceived as belonging to individuals who are assigned to different categories.

(pp. 202–203)

Supporting this claim, Tajfel cites a study by Secord, Bevan, and Katz (1956) that showed that prejudiced participants "sharpened the . . . physiognomy

possessed respectively by Negroes and whites, more than did a group of non-prejudiced Ss" (p. 203). Tajfel (1957) concludes "that is likely that the same is happening in the case of more abstract social judgments which are implicitly quantitative, such as, for example, those concerning the relative frequency of crimes in various social groups, as perceived by people who have an axe to grind" (p. 203). Thus, although Tajfel extends his cognitive explanation of the influence of value on size perception to the area of stereotypes, he also argues that motivational and cognitive factors can interact to strengthen these judgmental effects.

Tajfel (1959) elaborated his predictions about the effects of superimposed classifications in an article on "Quantitative Judgment in Social Perception":

When a classification in terms of an attribute other than the physical dimension which is being judged is superimposed on a series of stimuli in such a way that one part of the physical series tends to fall consistently into one class, and the other into the other class, judgments of physical magnitude of the stimuli falling into distinct classes will show a shift in the directions determined by the class membership of the stimuli, when compared with judgments of a series identical with respect to this physical dimension, on which such a classification is not superimposed.

(p. 20)

In contrast, a classification that is unrelated to the magnitude of the physical stimuli "will have no effect on the judged relationships in the physical dimension between the stimuli of the series" (p. 21).

These predictions were tested in the classic study by Tajfel and Wilkes (1963), conducted with the aim of demonstrating that "shifts and biases in stereotyped judgments can be subsumed under similar shifts existing in absolute judgments of a series of physical quantities" (p. 101). This probably explains why Tajfel and Wilkes not only predicted that a systematically superimposed classification would result in an increase in the perceived differences between the members of different classes (i.e., interclass accentuation), but also in a decrease in the perceived differences between members of the same class (i.e., intraclass assimilation).

However, Eiser and Stroebe (1971) argued, that whereas accentuation theory predicts that a superimposed classification will increase the judged differences between two classes of stimuli, no specific predictions follow from the differences between the stimuli within each class (i.e., the "intraclass differences"). It is therefore not surprising that neither Tajfel and Wilkes (1963) nor later replications of their study, while supporting the prediction of interclass accentuation, found evidence of intraclass assimilation (e.g., Corneille, Klein, Lambert, & Judd, 2002; Lilli, 1970; Marchand, 1970; but see Lilli & Lehner, 1971).

Tajfel and Wilkes (1963) argued that their findings “represent, in a sense, a simplified exercise in stereotyping. An essential feature of stereotyping is that of exaggerating *some* differences between groups classified in a certain way, and of minimizing the same differences within such groups” (p. 113). In view of the fact that there was no evidence of intra class assimilation in judgments, their findings might also point to the limits of a cognitive explanation of stereotyping or at least of a cognitive explanation that generalizes from the effects of a physical categorization to the effects of socially relevant categorizations on the judgments of changes in socially relevant dimensions.

The Social Cognition Approach to Stereotype Formation: Distinctiveness and Illusory Correlations

With the rise of social cognition in social psychology, social judgment approaches, which were never a dominant influence on social psychology, were pushed to the sidelines. It is informative for the purpose of our analysis to cite Hamilton’s (2005) definition of social cognition here:

Social cognition is a conceptual and empirical approach to understanding social psychological topics by investigating the cognitive underpinnings of whatever social phenomenon is being studied. That is, its focus is on an analysis of how information is processed, stored, represented in memory, and subsequently used in perceiving and interacting with the social world. (p. 2)

In particular the focus on information storage and recall as determinants of judgments adds process assumptions that played no role in social judgment research.

Hamilton and Gifford (1976) developed their distinctiveness theory as an explanation of how stereotypes can be acquired “on the basis of purely cognitive, information-processing mechanisms” (p. 392). The starting point for their analysis was Chapman’s (1967) concept of “illusory correlation” defined as “the report by observers of a correlation between two classes of events which, in reality, (a) are not correlated, or (b) are correlated to a lesser extent than reported” (p. 151). Based on Chapman (1967), Hamilton and Gifford argued that events that are statistically infrequent are distinctive and suggested that “the co-occurrence of two distinctive events should be particularly salient to an observer, resulting in increased attention to and more effective encoding of the fact that the two events occurred together, thereby increasing the subjective belief that a relationship exists between them” (p. 393). They then present the plausible argument that (a) members of minority groups are by definition statistically infrequent and (b) undesirable (nonnormative) behavior is statistically less frequent than desirable behavior and can also be considered distinctive. The association of membership

of a minority group with undesirable behavior could thus lead observers of the majority group to remember that those events co-occur more frequently than they actually do.

In their classic experiment, participants were presented with sentences describing the behavior of persons belonging to one of two groups (A and B). They were informed that (a) the behavior descriptions were drawn from a random sample of the population, (b) that Group B is smaller than Group A and that (c) statements about Group B will be less frequent than statements about Group A. Participants were then presented with 26 statements (18 desirable, 8 undesirable) about Group A and 13 (9 desirable, 4 undesirable) statements about Group B. When later presented again with the 39 behavior descriptions and asked to indicate for each behavior the group membership of the individual engaging in this behavior, participants over-attributed undesirable behaviors to members of Group B: "although only one-third of the undesirable statements described members of Group B, over half of them were attributed to Group B" (p. 397).

When Hamilton and Gifford first submitted their article, they reported only this first study (Hamilton, 1987, personal communication). But as the editor pointed out, distinctiveness due to being statistically infrequent was confounded with distinctiveness due to being counternormative (i.e., undesirable). Because it followed from their argument that "if the co-occurrence of distinctive events is particularly salient to the observer, then it should be possible to produce a *positive* stereotype of Group B by making desirable behaviors less frequent than undesirable behaviors in the stimulus sequence" (Hamilton & Gifford, 1976, p. 400). To test this assumption Hamilton and Gifford replicated the procedure of Experiment 1 but this time making *desirable* behaviors statistically infrequent. In this experiment, participants attributed over half of the desirable statements to Group B, even though this group had only performed one-third of these desirable behaviors. "Thus, the illusory correlation was due to the subject's tendency to over-attribute the desirable behaviors to members of Group B" (Hamilton & Gifford, 1976, p. 403).

Although this second study illustrates that the statistical infrequency of behaviors per se can result in illusory correlations under laboratory conditions, it detracts from a more relevant implication of distinctiveness theory, namely that the association of members of minority groups with behaviors that are distinctive because they are *counternormative* are likely to be better remembered than the association of minority members with normative behavior. This implication of distinctiveness theory offers a plausible and far-reaching cognitive explanation for the formation of stereotypes. We therefore think that Hamilton and Gifford (1976) underestimate the importance of their theory when they argued that they were "*not* suggesting that present-day stereotypes are due as much to information processing biases as to learning processes" (p. 405). The assumption that the association between counternormative behavior and minority groups are distinctive and therefore likely to be remembered offers a powerful cognitive

explanation of stereotype formation. That the same effect can be demonstrated with positive behaviors that are distinctive purely due to their statistical infrequency is theoretically important, but the distinctiveness of negative or counternormative information may be especially important in how prejudice might result from illusory correlations.

Social Identity and Social Reality in Stereotyping

Tajfel's (1969) work on the cognitive bases of prejudice and the accentuation theory of stereotyping was an important foundation stone for the cognitive approach to stereotyping and prejudice. This was acknowledged by no less than Hamilton himself (Hamilton, 1981). However, Tajfel had moved on by this time to developing Social Identity Theory (SIT; Tajfel & Turner, 1979) so it is perhaps no surprise that he had by then become critical of a purely cognitive approach to explain social stereotyping (Tajfel, 1981a, 1981b). As he reaffirmed later, while he agreed that understanding the cognitive mechanics of stereotypes is essential for their full understanding, the "question that arises is whether such a study is all that is needed" (Tajfel, 1981b, p. 145).

SIT incorporated aspects of the social categorization process (including accentuation effects) but had become more committed to a first-person perspective on how identification with groups affects the way we perceive them. This could explain in-group bias in perceptions (and thus the evaluative dimension to stereotyping and prejudice), providing an alternative motivational mechanism to the cognitive approach in which prejudice preceded and explained stereotypes rather than the reverse (cf. Hamilton & Rose, 1980). Consequently, Tajfel became interested in the social functions of stereotypes and how they could help to justify social relations, processes that invoke more motivational and ideological considerations.

The cognitive focus and the grounding in accentuation theory was soon rekindled by the development of Social Categorization Theory (SCT), which Turner developed out of the social identity approach (Turner et al., 1987). This involved, among other things, a central focus on the process of social stereotyping, including the role of bottom-up processes in the perception of social stimuli (Oakes, Haslam, & Turner, 1994). SCT owed a large debt to accentuation theory, which formed a key foundation of its analysis of stereotyping. Central was the assumption that social stereotypes reflected some correspondence between social categories and the underlying dimensions of social judgment (i.e., the traits or other dimensions that are the stuff of stereotype content).

However, the claims of SCT went beyond the mere accentuation of reality (which still implied bias). Just as Hamilton and Gifford (1976) had been radical in showing how a basis for stereotype formation in underlying reality was not necessary, self-categorization theorists were equally radical in proposing that stereotypes actually *reflected* a social reality, and therefore should not be considered

biased at all (Oakes et al., 1994). The argument was that social stereotypes reflect real group differences that become more meaningful, relevant, and operative in the intergroup context where group identity becomes salient. Moreover, this is not just a matter of perceptual focus: social identities also transform behavior to become more “groupy” and to conform to group norms (Turner, 1991), a point that takes us well beyond accentuation theory.

The self-categorization approach to stereotyping drew on Bruner’s distinction between “perceiver readiness” and “fit” to understand the process of how groups become salient and how their associated stereotypes come to the fore (Oakes, 1987; Oakes et al., 1994). Perceiver readiness refers to aspects of the perceiver’s own make-up that might make particular social identities or self-categories salient (e.g., group identification, bringing motivational factors back into the equation). The emphasis on social reality is reflected in the concept of “fit” with real social differences between groups drawing attention (comparative fit). Where the content of these categories also implicates *expected* stereotypic content this is referred to as “normative fit.”

To summarize, for SCT, stereotypes do not reflect biased images of groups, at least when the intergroup context becomes salient. This challenges a key assumption of the cognitive approach, and indeed the very concept of the stereotype going back to the early writings of Lippmann and Allport. Central to this idea is that stereotypes do not have to be negative, or reflect a component in prejudice, but can be positive and even celebrated aspects of identity. The self-categorization approach thus anticipated the debate on color-blind vs. multicultural approaches to group identity (e.g., Rattan & Ambady, 2013). The color-blind perspective assumes that group differences and stereotypes are something to be avoided, because they imply or lead to prejudice, whereas for the multicultural approaches they can reflect valued group differences and contents of group identity.

The cognitive approach of Hamilton with its explanation of stereotype formation in terms of the illusory correlation process presented an interesting challenge to self-categorization researchers. If stereotypes reflect social reality, how does this make sense of evidence of illusory correlations with no objective basis in social reality?

One approach to the issue was to argue that involvement in the groups themselves could impact on and even override the illusory correlation mechanism of stereotype formation. Schaller and Maass (1989) made this point, and investigated the predictions of in-group bias deriving from SIT (Tajfel & Turner, 1979) within the illusory correlation paradigm. They showed that when the perceivers were themselves categorized as members of the minority group, they did not see their own group in more negative terms, but instead showed the classic in-group bias effect. In other words the motivational processes driving in-group bias could override the illusory correlation bias in stereotype formation. However, this finding does not disprove the illusory correlation bias, so much as circumscribe the conditions under which it is likely (e.g., from a majority group perspective).

Other research in the illusory correlation paradigm had also shown that involvement in the categories or stereotyped dimensions could contribute to the perceived salience and differential information processing that forms the basis of Hamilton's explanation of illusory correlation formation (Spears, van der Pligt, & Eiser, 1985, 1986). This again pointed to a bias, albeit with affective inputs. Thus the illusory correlation effect, whether driven by paired distinctiveness or other sources of salience, remained a challenge for those claiming that stereotypes reflect (whether exaggerated or veridical) the underlying social reality.

Categorization, Differentiation, and Illusory Correlation

The most explicit attempt to address this issue, again within the illusory correlation paradigm itself, came in a paper by McGarty, Haslam, Turner, and Oakes (1993). A number of researchers had also attempted to show that other information processing mechanisms could predict and explain the illusory correlation effect (e.g., Fiedler, 1991; Smith, 1991) depending on biases in information processing (e.g., "information loss"; Fiedler, 1991) or as predicted by associative memory models (e.g., Smith, 1991). Perhaps more explicitly than these approaches, McGarty et al. tried to address the idea that stereotypes deriving from the illusory correlation paradigm might reflect *real differences* in the stimuli.

This idea relates to an argument made by Rothbart in the classic 1981 volume edited by Hamilton (Rothbart, 1981). Rothbart raises the possibility that the more positive evaluation of members of Group A, may be driven by the preponderance of evidence that A is associated with positive behaviors, rather than that Group B is associated with the most numerically distinctive category of negative behavior. To relate this to the agenda of reality versus bias, we could reframe this issue in terms of sampling theory and the law of large (vs. small) numbers: there is simply more evidence (and thus more reliable evidence) that A is the positive group (see also van Knippenberg & Spears, 2001).

McGarty et al. (1993) proposed a similar explanation. They suggested that, when confronted with the relatively minimal context of the illusory correlation paradigm, participants try to make sense of the situation by differentiating the groups in evaluative terms. Participants entertain two alternative hypotheses, namely that "A is more positive than Group B" or, alternatively, that "Group B is more positive than Group A." Based on the typical distribution of stimuli (e.g., the 18 +A, 8 -A; 9 +B, 4 -B of Hamilton & Gifford, Study 1), they then argue that there are $(18 + 4 =) 22$ behaviors that confirm the first hypothesis (that A is more positive), whereas there are only $(8 + 9 =) 17$ behaviors that support the second. In short, when the sample information is treated in *absolute* terms rather than as proportions, then there is a real basis to the conclusion that A is more positive than B. McGarty and colleagues thus saw a clear link between their explanation and the classic accentuation principle in which categories are differentiated on the bases of (real) underlying differences (see also Berndsen

et al., 1998). There was thus at least a case to be made, that illusory correlation could be reality based.

It is not our aim to provide, a comprehensive review of the subsequent literature evaluating the evidence for the different explanations of the illusory correlation effect. In the years after the publication, both primary research (e.g., Hamilton, Dugan, & Trolie, 1985; McConnell, Sherman, & Hamilton, 1994) and meta-analytic studies (Mullen & Johnson, 1990) have provided evidence for the distinctiveness-based mechanism. There is also support for other processes, including the categorical differentiation process (e.g., Berndsen et al., 1998). One study that employed source-monitoring techniques to distinguish different components (e.g., memory bias, response biases) produced evidence more consistent with the differentiation explanation rather than memory biases (Klauer & Meiser, 2000). However, our reading of this literature is that (as is often the case) the phenomenon of illusory correlation is probably “over-determined.” (see also final section).

In summary, the question of whether stereotype formation reflects a cognitive bias, or a reality-based process, is open to dispute. In our remaining space we consider some questions as yet unanswered by both the cognitive and social judgment tradition and introduce an additional (cognitive!) approach that helps to address these questions.

Some Unanswered Questions about Stereotype Formation

As we have seen, one unresolved question concerns whether stereotyping is fundamentally biased or reality based. Rather than provide a simple or definitive answer, we think it is more useful to reframe the question and consider ways in which any biases that do occur might help perceivers in dealing with social reality. After all, one strong message from evolutionary approaches to psychology is that biases that delude us regarding the nature of reality will not be very adaptive. Indeed, a theme in the later generation of research conducted under the banner of “heuristics and biases” was that many apparent biases, turned out to be quite adaptive and functional in the long run and in the real world (e.g., Funder, 1987; Hogarth, 1981).

We return to this issue shortly, but first we issue a more specific challenge to the two cognitive approaches to stereotype formation considered thus far. One of the key puzzles of stereotype formation that is perhaps not well addressed by either cognitive approach is the question of why certain stereotypes form for some groups or categories but not others. This question is perhaps best illustrated with a couple of examples. Jean-Paul Sartre (1948) relates the anecdote in his book “Anti-Semite and Jew” of an anti-Semitic woman who has a negative experiences with a Jewish furrier, and attributes this to his being Jewish. Sartre asks the question why she attributes this negativity to being Jewish rather than being a furrier? Similarly, Tajfel (1982) asks why skin color rather than, say, eye color is seen as the basis for group perception, stereotyping and prejudice. He

answers his question by pointing to the social value attached to skin color and ethnicity, but it is not clear that this provides a compelling answer. One might legitimately ask when and why does one category becomes more valued than another?

It is not clear that the illusory correlation mechanism provides an answer to this question (nor was it designed to!). This mechanism simply proposes that co-occurring categories that are distinctive are likely to be paired and does not address which may be more fertile for stereotypes formation. For what it is worth, one might add that Jews are probably less numerically distinctive as a group than furriers!

However it is not clear that accentuation or self-categorization theories provides a convincing or complete answer either. Eye color and hair color are salient cues that *could* provide a basis for an “us vs. them” categorization, but clearly do not routinely do so in the way that some other visible cues can (e.g., the “big three” of ethnicity, gender and age). Eye or hair color may be nondiagnostic of other attributes and so, according to accentuation principles, no stereotype formation would be expected. However, this possibility still does not explain the example of Sartre’s anti-Semitic woman, and why when there is scope to draw a prejudiced inference, she chooses one category over another.

We could trace this back to prior expectations, which as Hamilton also showed was an important source of “illusory correlations” (Hamilton & Rose, 1980). The concept of normative fit for SCT provides a similar solution. SCT could also proffer Bruner’s principle of “perceiver readiness”: in this case the prejudice (anti-Semitism) is there already. However all of these explanations take us beyond the realm of stereotype *formation* and invoke a prior stereotype or prejudice. Tracing the solution back to the history and meaning of the social categories, as Tajfel tried to do, does not escape this circular reasoning and regress. In the following section we propose a solution to this question that can be found in another research tradition, related to but distinct from the cognitive and social judgment approaches, namely social leaning theory. This approach also helps to address the tricky relationship between reality and bias in stereotyping.

A Third Way? Social Learning Theory

The two cognitive approaches addressed here both furnish valuable and distinct insights into the stereotype formation process. This raises the question of whether there is perhaps something to be gained from the insights provided by *other* approaches? There are a number of candidates, many addressed by Hamilton and Tajfel, inter alia, in defining their approach at the time. We do not consider all possibilities here but introduce one approach that might shed further light on the issue of stereotype formation and especially the question of reality versus bias. Specifically, we consider the insights that might be gained from taking a learning theory perspective.

We should say immediately that such frameworks have been used before in order to understand how illusory correlations might arise (e.g., Smith, 1991). Indeed the paired-distinctiveness mechanism owes a debt to associationist principles from cognitive psychology (Chapman, 1967). However, Hamilton was also keen to show how the mechanism he proposed (and others like it), moved us beyond “social cultural” explanations of stereotyping grounded in social learning principles (e.g., Ehrlich, 1973; see Hamilton, 1981). The cognitive approach was in this sense part of the new era of “heuristics and biases” that could explain stereotyping as just such a *bias*.

The social judgment tradition with its roots in psychophysics was also clearly distinct from the learning theory tradition. Whereas both Tajfel (1969) and Hamilton (1981), as respective protagonists of the cognitive approach, had seen fit to explicitly distinguish their approach from the psychodynamic tradition, making such a distinction from the learning tradition, with its roots in behaviorism and animal behavior, was perhaps unnecessary. However, the cognitive revolution also transformed behaviorism and thus brought learning processes more into the cognitive realm (Mackintosh, 1975), opening the door to greater integration with the two cognitive approaches we have considered so far.

So what might a social learning or associationist approach contribute that is not already provided by the cognitive and social judgment traditions? As we have already acknowledged, there is much overlap between learning approaches and the explanations provided by the cognitive approach. However, learning models, also as applied to animal behavior, are perhaps more focused on cognition as a process that is predictive and adaptive, and thus ultimately fosters accurate perception rather than bias. In this respect perhaps one theme emphasized by learning based approaches and research is the importance of the temporal perspective, that learning can take time and that covariation detection may require many trials to reach optimal performance.

To illustrate the value of taking a social learning perspective, we provide three examples from recent research that we think shed further light on the stereotype formation process and on the question of bias versus accuracy. In the third example, we also show how such models might help to explain why some social categories foster stereotype formation whereas others do not, as discussed in the previous section.

In a recent paper, Murphy, Schmeer, Mondragon, Vallee-Tourangeau, and Hilton (2009) address the concern that the illusory correlation findings seem to contradict research from the social learning literature that suggests people are actually quite good at learning associations between stimuli. They propose that it might be that the traditional learning phases of the illusory correlation paradigm (typically 30–40 stimuli) only allow for incomplete learning. They showed in two studies that the illusory correlation effect was essentially curvilinear, not appearing after few stimuli or trials (i.e., before differential distinctiveness is detected; see also McConnell et al., 1994), appearing after an intermediate number

of trials, but disappearing again with further trials, when the association between group and type of behaviors was better learnt.

This finding does not undermine the mechanism proposed by Hamilton and Gifford (indeed it replicates it for the intermediate conditions), but it does suggest that it is more likely to occur in a “window” consistent with the load conditions of the typical illusory correlation experiment. Such conditions are likely to capture the demands of many real life contexts in which stereotypes about new groups are formed. However, the fact that the illusory correlation appears to diminish with increased exposure to the groups suggests that social reality may in time come to eliminate or disconfirm illusory correlations. This remains an interesting empirical question because, as we know, any stereotypes or expectations that are generated can also be difficult to eradicate (e.g., Hamilton & Rose, 1980). However, these results also provide a salutary reminder that social psychologists need to sample the object domain (the range of stimulus samples) in order to make valid generalizations (Hammond, 1978).

Our second application of learning theory directly addresses the reality versus bias issue, as applied to stereotype formation in the illusory correlation paradigm. Jeff Sherman and colleagues (Sherman et al. 2009; see Chapter 7, this volume) applied an associative learning model—Attention Theory (Kruschke, 2003)—to explain both the categorical accentuation principle and the paired-distinctiveness principle. Sherman et al. noted that Attention Theory integrates these two explanatory principles within a common theoretical framework. Moreover, it is able to explain stereotype formation when there is no real basis for this in the stimuli (cf. McGarty et al., 1993). The minimal assumption necessary for this explanation to hold is that one category of information is learnt first, in this case associating the larger Group (A) with primarily positive behaviors (consistent with the earlier explanation proposed by Rothbart, 1981). A second process focused on learning the additional or new information (i.e., about Group B) then selectively focuses attention on attributes that distinguish this from the primary group learnt about, thus highlighting negative behaviors associated with B. This second process is reminiscent of the original paired-distinctiveness explanation of Hamilton and Gifford, but also the categorical differentiation process of accentuation theory and SCT.

Sherman et al. present a series of experiments to support this model, providing an elegant integration of the two explanations of stereotype formation central to this chapter. Although a debate remains about whether the stimuli from the typical illusory correlation paradigm *do* provide a real basis for differentiation or not, this approach is able to accommodate both reality and bias by suggesting that any bias is at least contrasted to the reality based on the larger category. The process would also seem to be functional in facilitating attention to group differences, with groups that generate more reliable sample information appropriately being used as the baseline contrast category.

Our third example does not investigate the illusory correlation paradigm as defined by Hamilton and Gifford as such, but it does investigate a mechanism of stereotype formation that could also be said to reflect an “illusory correlation.” This research also addresses the question posed earlier of how some groups or categories seem to lead to stereotypic associations, and even prejudices, whereas others do not.

Le Pelley et al. (2010) developed a model of stereotype formation that had its roots in animal conditioning research, models developed to explain how animals come to learn and predict the contingencies in their environment (Mackintosh, 1975). Mackintosh’s model proposes a stimulus-specific *associability factor* that influences the rate of associative learning about a conditioned stimulus (CS; e.g., a tone) as a predictor of the unconditioned stimulus (US; e.g., food). The CS maintains a high associability to the extent that it predicts the US better than other CSs. Consequently stimuli that have previously been relatively accurate predictors of outcomes will be learnt more rapidly than stimuli that have been poorer predictors.

Applying this rationale to the stereotyping context, Le Pelley et al. (2010) exposed participants to groups (gangs) that in a training phase of the experiment were consistently predictive of a particular attribute (some gangs were consistently paired with a particular color of clothing, others were not). In a later phase participants learnt whether the gangs were associated with more positive or negative behaviors and provide evaluative ratings of them. When gangs were generally paired with positive behaviors in this second phase, participants learnt this positive association quicker, and thus rated the gangs more positively, when the group membership had been predictive of clothing color beforehand, than for similar gangs whose dress was not color-consistent. Similarly, negative associations were learnt quicker, for gangs associated with negative behaviors in Phase 2, when the gang was previously diagnostic of clothing color in Phase 1.

To summarize, groups that had previously proved diagnostic for one cue (clothing color) led to quicker stereotypic learning than for groups for whom there was no reliable prior predictiveness, even though there was no relation between clothing color and the valence of group behavior. Subsequent research using an evaluative priming procedure has shown that this learning effect can occur relatively automatically for groups that are predictive (Le Pelley, Calvini, & Spears, 2013).

This phenomenon could also be seen as a form of illusory correlation, insofar as an association in one content domain seems to affect the learning of associations in a completely different domain. Moreover, this explanation escapes the circularity of referring back to prior stereotypes or prejudice in explaining when stereotypes are likely to form. Thus if we have previously found eye or hair color to be uninformative about what people are like whereas cultural background or party affiliation is informative, we may more readily learn stereotypes about the latter than the former groups.

Although there is a sense in which this process could be seen as biased (we learn stereotypic associations for some kinds of groups more slowly than for others), there is also an important sense in which it is not. *What* we learn about the group is not biased but based on the actual associations of attributes with group memberships: we just do this more quickly for groups that have proved predictive in the past. This process could be seen as quite functional and adaptive, because it allows us to invest attention and effort in perceiving associations that are likely to be meaningful and helpful, while ignoring the many spurious categorizations in our environment that are not diagnostic of group attributes. This mechanism clearly favors the multicultural approach of identity salience over one that is color-blind, but it does not have to result in prejudice if there is no basis for this in social reality.

Summary and Conclusions

In this chapter we presented an overview of two classic cognitive approaches to stereotype formation and explored the relation between them. These approaches have facilitated each other in ways acknowledged by the central protagonists and Tajfel and Hamilton in particular. Tajfel (1969) laid some key foundations for the cognitive approach to stereotyping and prejudice and proved an inspiration for Hamilton (1981) a decade later. While Tajfel had moved on to focus on more socio-motivational factors, he never denied these cognitive foundations. Hamilton, in turn, never denied the role of other more affective processes (as his later work showed). However, the quest to push the cognitive explanation to its limit was arguably extremely heuristic, and the idea that stereotypes could form without a real basis was compelling for those trying to understand prejudice formation. The illusory correlation paradigm developed by Hamilton was the paradigm case of the cognitive approach in this respect. It also formed an important contrast category which motivated the research of self-categorization theorists to detect some reality behind the bias. The recent lessons from learning theory provide new levels of understanding of the complex relation between reality and bias. They also continue the quest begun by Hamilton to “open the black box” and point to the processes that actually produce stereotyping, rather than resort to explanations that often simply redescribe or defer that which we are trying to explain.

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