Précis of *Social Perception and Social Reality*: *Why accuracy dominates bias and self-fulfilling prophecy*

Lee Jussim

Department of Psychology, Rutgers University, Piscataway, NJ 08544.
Jussim@rci.rutgers.edu
http://www.rci.rutgers.edu/~jussim

Abstract: *Social Perception and Social Reality* (Jussim 2012) reviews the evidence in social psychology and related fields and reaches three conclusions: (1) Although errors, biases, and self-fulfilling prophecies in person perception are real, reliable, and occasionally quite powerful, on average, they tend to be weak, fragile, and fleeting. (2) Perceptions of individuals and groups tend to be at least moderately, and often highly accurate. (3) Conclusions based on the research on error, bias, and self-fulfilling prophecies routinely greatly overstate their power and pervasiveness, and consistently ignore evidence of accuracy, agreement, and rationality in social perception. The weight of the evidence – including some of the most classic research widely interpreted as testifying to the power of biased and self-fulfilling processes – is that interpersonal expectations relate to social reality primarily because they reflect rather than cause social reality. This is the case not only for teacher expectations, but also for social stereotypes, both as perceptions of groups, and as the bases of expectations regarding individuals. The time is long overdue to replace cherry-picked and unjustified stories emphasizing error, bias, the power of self-fulfilling prophecies, and the inaccuracy of stereotypes, with conclusions that more closely correspond to the full range of empirical findings, which includes multiple failed replications of classic expectancy studies, meta-analyses consistently demonstrating small or at best moderate expectancy effects, and high accuracy in social perception.

Keywords: Accuracy; bias; expectancies; person perception; self-fulfilling prophecies; social perception; social psychology, stereotypes

1. Introduction

Is social perception – how people go about understanding other people, both individuals and groups – routinely compromised by a slew of flawed and biased processes, so that it becomes primarily a "reign of error" (Merton's [1948] oft-repeated phrase)? Much social psychological scholarship would seem to converge on the conclusion that the answer is "yes." And for many good reasons. Social and cognitive psychologists have clearly and successfully identified and documented a vast array of errors and biases that can and do sometimes undermine the validity, rationality, and reasonableness of lay judgment and social perception. Thus, for over half a century now, leading scholars of social perception have emphasized error and bias:

> Social perception is a process dominated far more by what the judge brings to it than by what he takes in during it. (Gage & Cronbach 1955, p. 420)

> . . . the literature has stressed the power of expectancies to shape perceptions and interpretations in their own image. (E. E. Jones 1986, p. 42)

> It does seem, in fact, that several decades of experimental research in social psychology have been devoted to demonstrating the depths and patterns of inaccuracy in social perception … This applies … to most empirical work in social cognition. (Jost & Kruglanski 2002, pp. 172)

Such conclusions are the norm, not the exception, in social psychology. Consider next this passage from Clark and Clark-Polner's (2012) review of *Social Perception and Social Reality* (Jussim 2012):

> Without relying on Jussim's examples (though he presents many), we opened a social psychology textbook that was, simply, the one most accessible to us (Gilovich, et al. 2006). It included references to "striking" demonstrations of stereotypes influencing interpretations of events, to research in which self-fulfilling prophecies has been "powerfully" illustrated (p. 455), and to self-fulfilling prophecies perpetuating a "reign of error" (quoting Merton, 1957, in the last case, pp. 455–456). The same chapter did not include a discussion of accuracy in perceptions or of accuracy captured in stereotypes themselves. (Clark & Clark-Polner 2012)

Thus, social psychology has a longstanding consensus that social perception is dominated by error and bias.

Lee Jussim is Professor of Psychology at Rutgers University, where he was Chair from 2010–2013. He has authored more than 100 publications, focusing primarily on social perception. This Précis was completed while he was a Fellow at Stanford's Center for Advanced Study in the Behavioral Sciences, 2013–2014. *Social Perception and Social Reality: Why Accuracy Dominates Bias and Self-Fulfilling Prophecy* (2012, Oxford University Press), the book on which this Précis is based, received the 2013 Publisher's Prose Award for best book in Psychology.

Social Perception and Social Reality, however, reviews almost 100 years of research and reaches a very different conclusion: People's social perceptions (perceptions regarding individuals and groups) are often reasonable, accurate, and arrived at through approximately rational processes. How can anyone make such a claim, given the overwhelming evidence of error, bias, and self-fulfilling prophecy, and the overwhelming consensus that such effects are powerful and pervasive? Although answering that question required an entire book, this article summarizes some of those arguments.

This Précis is organized around reviewing and critically evaluating the empirical literature in social psychology and related fields, on the roles of error, bias, self-fulfilling prophecy, and accuracy in social perception. Very broad and seemingly unrelated literatures converge on three conclusions:

(1) Errors, biases, and self-fulfilling prophecies in person perception are real and occasionally powerful, but generally are weak, fragile and fleeting.

(2) Perceptions of individuals and groups tend to be at least moderately accurate.

(3) scholarly conclusions tend to overstate the power and pervasiveness of expectancy effects, and often ignore evidence of accuracy, agreement, and rationality.

This pattern occurs over and over again across a wide variety of research areas within social perception. For short, therefore, I simply refer to it in this précis as "the tripartite pattern."

Although chronology per se was not the main organizing principle, *Social Perception and Social Reality* reviews the literatures that bear on these questions in approximately chronological order. This is because it was important to first identify the scientific and scholarly foundations on which the dominant emphasis on error and basis were based. Thus, in this Précis target article I begin with some of the earliest evidence on stereotypes, and on the "New Look in Perception", both of which emphasized error and distortion in social perception (Section 2: "The scientific roots of emphasis on the biasing and self-fulfilling power of social expectations"). This emphasis received an intellectual "booster shot" with the publication of several articles in the late 1960s and 1970s on self-fulfilling prophecies (Section 3: "The once raging and still smoldering Pygmalion controversy" and yet a second shot when research in the 1970s and 1980s began demonstrating a slew of expectancy-confirming biases (Section 4: "The awesome power of expectations to create reality and distort perceptions").

Because of the combination of these diverse literatures, by the 1980s it was clear to many social psychologists that expectancy-confirmation was a powerful and pervasive phenomena. *Social Perception and Social Reality* reconsiders and critically evaluates this evidence, concluding that such emphases were overstated, even on the basis of the research conducted up to that time (Section 5: "The less than awesome power of expectations to create reality and distort perceptions"). Of course, demonstrating that error and bias are overstated is not equivalent to demonstrating that accuracy was high. However, accuracy itself is controversial in social psychology, and those controversies (Section 6: "Accuracy controversies") and some key data (Section 7: "The accuracy of teacher expectations"), are reviewed next. Last, I turn to one of the most difficult and controversial topics – the accuracy and inaccuracy of

stereotypes, both as perceptions of groups (Section 8: "The unbearable accuracy of stereotypes"), and their role in increasing or reducing the accuracy of person perception (Section 9: "Stereotypes and person perception").

2. The scientific roots of emphasis on the biasing and self-fulfilling power of social expectations

2.1. The early research on stereotypes

One of the first arguments that our perceptions are not necessarily strongly linked to objective reality came from a journalist. In a broad-ranging book called *Public Opinion*, Walter Lippmann (1922/1991) touched on stereotypes – and defined them in such a way as to color generations of social scientists' views of stereotypes. Lippmann suggested that to understand the world in its full complexity is an impossible task. So people simplify and reduce the overwhelming amount of information they receive. Stereotypes, for Lippmann, arose out of this need for simplicity. He believed that people's beliefs about groups were essentially "pictures in the head."

A "picture in the head" is a static, two-dimensional representation of a four-dimensional stimulus (most real-world stimuli have width, length, and depth, and also change over time). A picture is rigid, fixed, and unchanging. It is over-simplified and can never capture the full complexity of life for even one member of any group. This should sound familiar – it constitutes the working definition of stereotypes that many people, including many social scientists, still hold today. Thus, it constitutes one of the earliest perspectives suggesting that people's social beliefs may not be fully in touch with social reality.

Social psychologists ran with these ideas. Katz and Braly (1933) concluded that the high levels of agreement they observed regarding national, racial, and ethnic groups could not possibly reflect personal experience and instead most likely reflected the shared expectations and biases of the perceiver. This analysis was flawed because agreement *per se* is not evidence of inaccuracy (often, though not always, it reflects accuracy – e.g., Funder 1987). In a similarly flawed manner, LaPiere (1936) interpreted his empirical results as demonstrating that stereotypes were inaccurate rationalizations of antipathy towards outgroups, even though (except for some anecdotes) he did not assess people's stereotypes.

Gordon W. Allport (1954b), in perhaps the most influential social psychological book written about stereotypes and prejudice, distinguished between, on the one hand, rational and flexible beliefs about groups, and on the other, stereotypes. Long ignored in many citations to G. W. Allport (1954/1979) is the fact that he clearly acknowledged the existence of rational and flexible beliefs about groups. He merely did not consider such beliefs to be stereotypes. For G. W. Allport, stereotypes are faulty exaggerations. All-or-none beliefs, such as "all Turks are cruel," are stereotypes that are clearly inaccurate, overgeneralized, and irrational, because there are virtually no social groups whose individual members universally share some set of attributes. G. W. Allport also characterized stereotypes as unjustifiably resistant to change, steeped in prejudice, and leading to all sorts of errors and biases in social perception, and concluded they were a major contributor to social injustice. Overall, therefore, the early research on

stereotypes helped set the stage for social psychology's later emphasis on error and bias.

2.2. Early social perception research

2.2.1. The new look in perception. The New Look of the 1940s was, in large part, a reaction against the prevailing view at the time that perception reflected the objective aspects of external stimuli. The dominant behaviorist perspective of the period banished fears, needs, and expectations from study, dismissing such internal states as unscientific. Then came the New Look researchers who, en masse, set out to demonstrate ways in which exactly such internal states could influence and distort perception (see F. H. Allport [1955] for a review). The main claims of the New Look could be captured by two concepts: Perceptual vigilance and perceptual defense. Perceptual vigilance referred to the tendency for people to be hypersensitive to perceiving stimuli that met their needs or were consistent with their values, beliefs, or personalities. Perceptual defense referred to the tendency for people to avoid perceiving stimuli that was uncomfortable or threatening.

2.2.2. Hastorf and Cantril (1954). Towards the end of the New Look era, Hastorf and Cantril (1954) published a paper that, though not formally part of the New Look program of research, is generally cited as an early classic supposedly demonstrating the powerful role of beliefs and motives in social perception. In 1951 Dartmouth and Princeton played a hotly contested, aggressive football game. A Princeton player received a broken nose; a Dartmouth player broke his leg. Accusations flew in both directions: Dartmouth loyalists accused Princeton of playing a dirty game; Princeton loyalists accused Dartmouth of playing a dirty game. Hastorf and Cantril (1954) showed a film of the game to 48 Dartmouth students and 49 Princeton students, and had them rate the total number of infractions by each team. Dartmouth students saw both the Dartmouth and Princeton teams as committing slightly over four (on average) infractions. The Princeton students also saw the Princeton team as committing slightly over four infractions; but they also saw the Dartmouth team as committing nearly ten infractions.

Because the Dartmouth and Princeton students diverged in the number of fractions they claimed were committed by Dartmouth, Hastorf and Cantril (1954) concluded that Princeton and Dartmouth students seemed to be actually seeing different games. The study has long been cited as a demonstration of how motivations and beliefs color social perception (e.g., Ross et al. 2010; Schneider et al. 1979; Sedikedes & Skowronski 1991). As Ross et al. (2010, p. 23) put it: "The early classic study by Hastorf & Cantril (1954) … reflected a radical view of the 'constructive' nature of perception that anticipated later discussions of naïve realism."

2.2.3. F. Allport's prescience about overemphasis on error and bias. The New Look eventually faded away due to intractable difficulties overcoming alternative explanations for its findings (F. Allport 1955). Nonetheless, it had a profound and lasting influence on social psychology. Despite losing many intellectual battles with those challenging their interpretations at the time, the New

Lookers ultimately won the war – and the victory was nearly absolute. Within social and personality psychology, the idea that motivations, goals, and expectations influence perception is now so well-established that it is largely taken for granted.

Floyd Allport saw this coming:

> Where the perception is bound so little by the stimulus and is thought to be so pervasively controlled by socially oriented motives, roles, and social norms, the latitude given for individual and group differences, for deviating and hence non-veridical awareness, is very great. (F. H. Allport 1955, p. 367)

He also warned against overemphasizing bias and inaccuracy:

> What we are urging here is that social psychologists, in building their theories of perception, assume their share of the responsibility for reconciling and integrating their 'social-perceptual' concepts, fraught with all their deviations and special cognitive loadings, with the common and mainly veridical character of the basic human perceptions. (F. H. Allport 1955, p. 372)

Floyd was right on both counts – his concern that the New Look could lead to an overemphasis on subjective influences on perception could not have come more true; and he was right to urge social psychologists to develop theories that presented a more balanced vision of the roles of error, bias, and accuracy in social perception.

One can readily see this emerging pattern of overstated emphasis on error and bias in Hastorf and Cantril's (1954, p. 133) own extraordinary and extreme interpretations of their study:

> "There is no such 'thing' as a 'game' existing 'out there' in its own right which people merely 'observe'" and "The 'thing' simply is not the same for different people […]."

With such interpretations it is, perhaps, understandable why some (e.g., Ross et al. 2010) would cite the study as emphasizing radical constructivism. Unfortunately, however, the study's results did not support such extreme conclusions. First, there was no difference in the infractions perceived by Dartmouth and Princeton students regarding the Princeton team. Thus, for half the data, the students saw essentially the same game, and there was no evidence of bias or "radical constructivism" at all.

Perceptions of the Dartmouth team did show about a six perceived infraction difference between the Princeton and Dartmouth students. This is indeed bias, and it was statistically significant. However, it is also useful to consider *how much* of a bias this was. Most college football games have about 100 plays, or more. If one conservatively estimates that this particular game only had 60 plays (a low estimate biases conclusions in *favor* of bias), then bias of six means that 54 judgments, or 90%, were unbiased. So, half the judgments (for the Princeton team) were completely unbiased; half the judgments were 90% unbiased. At least 95% of the time, judgments were unbiased.

This study, then, is indeed foundational for modern social psychology, but not for the reasons it is usually cited. Instead, it should be foundational because:

It demonstrated that bias was real but quite modest.
It demonstrated that unbiased responding overwhelmingly dominated social perception.
Conclusions regarding the extent to which the data supported strong claims about the power of bias were greatly overstated by the original authors and by many of those subsequently citing the study.

This tripartite pattern does indeed anticipate much of the next 60 years of research on social perception.

3. The once raging and still smoldering Pygmalion controversy

Although Merton (1948) first developed the self-fulfilling prophecy concept, it was Rosenthal and Jacobson's (1968) book, *Pygmalion in the Classroom*, that launched self-fulfilling prophecies as a major area of inquiry in the social sciences and education. Rosenthal and Jacobson (1968) performed a study in which elementary school teachers were led to believe that certain of their students (who were actually randomly selected) would show dramatic IQ increases over the course of the year. Confirming the self-fulfilling prophecy hypothesis, on average, those late bloomers did indeed show greater IQ increases than their classmates. The study has frequently been cited in support of arguments claiming that self-fulfilling prophecies are pervasive, and potentially a powerful force in the creation of social inequalities and injustices. (e.g., Gilbert 1995; Jones 1990; Weinstein et al. 2004; see Wineburg [1987] for a critical review).

Are such claims justified? The combination of uncritical social psychological acceptance of the study and scathing methodological and statistical criticisms (Elashoff & Snow 1971; Snow 1995) complicates answering this question. Nonetheless, even if one takes its results entirely at face value, the justified conclusions are considerably more narrow than claims of powerful and pervasive self-fulfilling prophecies suggest, as can be shown by the answers to six simple questions about the study:

1. Were teacher expectations typically inaccurate? This was not assessed.

2. Did stereotypes bias expectations? This was not assessed.

3. Were self-fulfilling prophecies powerful and pervasive? They were not typically powerful. The overall effect size equaled a correlation of .15. The mean difference in IQ gain scores between late bloomers and controls was four IQ points. Nor were they pervasive. Significant teacher expectation effects only occurred in two of six grades (in year one) and in one of five grades in year two. Self-fulfilling prophecies did not occur in eight of eleven grades examined.

4. Were powerful expectancy effects ever found? Yes. The results in first and second grade in year one (15 and 10 point bloomer-control differences) were quite large.

5. Were self-fulfilling prophecies harmful? No. Rosenthal and Jacobson (1968) only manipulated positive expectations. They showed that false positive expectations could be self-fulfilling. They did not assess whether false negative expectations undermine student IQ or achievement.

6. Did self-fulfilling prophecies accumulate over time? No. The mean IQ difference between bloomers and controls in year one was about 4 points; in year two it was under 3 points.

The finding that teacher expectations might sometimes produce self-fulfilling prophecies was interesting and important on its merits. Nonetheless, these results provided little terra firma for theoretical testaments to the power of beliefs to create reality, or practical concerns

about the role of self-fulfilling stereotypes in oppression and inequality.

That is all true *if the study is taken at face value*. However, it is not clear that the study's results *should* be taken at face value. Snow's (1995; Elashoff & Snow 1971) critiques raised questions about the ability of the study to reach any conclusions about self-fulfilling prophecies. For example, there were five "bloomers" with wild IQ score gains: 17–110, 18–122, 133–202, 111–208, and 113–211. If one excluded these five pairs of bizarre scores, the difference between the bloomers and the controls evaporated.

Such controversies sparked attempts at replication. Nearly two-thirds failed, providing fodder for the critics (Rosenthal & Rubin 1978). But over one-third succeeded, when only 5% should succeed if there was really no effect. One of the earliest meta-analyses showed that there was an overall statistically significant effect of experimentally manipulated expectations (Rosenthal & Rubin 1978).

It might seem this should end the controversies, but it did not. A paper titled, "The self-fulfillment of the self-fulfilling prophecy" contested the central and most controversial aspect of the original Pygmalion study – the effect on IQ (Wineburg 1987). (The Rosenthal & Rubin [1978] meta-analysis included many self-fulfilling outcomes and did not focus on IQ, so did not resolve this issue.)

Several reviews and meta-analyses have addressed the IQ controversy, with some authors emphasizing the existence of the effect on IQ (Raudenbush 1984; 1994) and others remaining deeply skeptical (e.g., Snow 1995; Spitz 1999; Wineburg 1987). Nonetheless, one conclusion does clearly emerge from this ongoing controversy: If there is an effect on IQ, it is not very large. Even the meta-analyses reporting the strongest effects showed that the mean and median effect sizes, overall, were $r < .10$ (Raudenbush 1984; 1994). The strongest effects on IQ occurred in a handful of experiments in which teacher expectations were manipulated within the first two weeks of the school year, and even those were merely $r = .21$ (Raudenbush 1984; 1994). Others have concluded that the average IQ effect was actually closer to $r = 0$ (Snow 1995; Wineburg 1987).

What, then, are justifiable take-home messages from Pygmalion and the subsequent controversies and follow-up research? Self-fulfilling prophecies in the classroom are real, but far from inevitable. Although such effects are occasionally powerful, they are generally weak, fragile, and fleeting. Self-fulfilling outcomes can occur on a wide variety of variables, including grades and standardized tests. However, if there is any effect on IQ, it is typically small.

For all its limitations, *Pygmalion* also became a seminal study, at least in part, because it provided a simple and elegant methodology for examining self-fulfilling prophecies – experimentally manipulate expectations and then assess effects on targets. Thus, many social psychologists were about to fall in love with expectancy effects. I review this material here twice: Once in the unabashedly enthusiastic manner typically used to describe this research in the social psychology literature (as suggested by my heading for section 4: "The awesome power of expectations to create reality and distort perceptions"); and then again, in a separate section that critically examines this research ("The less than awesome power…" as section 5's title indicates). By conveying a sense of this initial enthusiasm, I hope to provide some insight into the good reasons why so much writing about expectancy effects has emphasized

their power and pervasiveness. (Indeed, I could not think of a better way to explain why this research is still commonly discussed or cited in a similarly uncritical and enthusiastic manner to this day [e.g., Jost & Kruglanski 2002; Ross et al. 2010; Weinstein et al. 2004] than to present this research in an enthusiastic and uncritical manner.)

4. The awesome power of expectations to create reality and distort perceptions

Despite the many limitations to *Pygmalion* in particular, and to teacher expectation research more generally, social psychological reviews generally accepted its conclusions and ran with its implications enthusiastically (e.g., Darley & Fazio 1980; Jones 1986; Miller & Turnbull 1986). *Pygmalion* hit a sensitive social and political nerve. It was published in the late 1960s, when liberalism was at a political peak. The consciousness of much of the country had been raised regarding the extent to which racism and discrimination contributed to the massive inequalities between Whites and minorities. So when the Rosenthal and Jacobson (1968) study came along, and to this day, it has frequently been interpreted as demonstrating a widely generalizable mechanism of racial and social oppression.

4.1. Social psychology falls in love with self-fulfilling prophecies

Many social psychologists were able to tell compelling stories about the results of *Pygmalion* in particular, and the power of self-fulfilling prophecies more generally (e.g., Darley & Fazio 1980; Gilbert 1995; Jones 1986; Jost & Kruglanski 2002). Many studies yielded results seeming to support this perspective. Self-fulfilling prophecies occur, in part, because expectations lead perceivers to treat high expectancy targets differently than they treat low expectancy targets, and this differential treatment evokes expectancy-confirming target behavior. One classic pair of studies demonstrated this process: White interviewers' nonverbal behavior discriminated against Black interviewees, and when White interviewees were subjected to the same behavior, their interview performance declined (Word et al. 1974). Similarly, teachers were at least sometimes more supportive of White students than of Black students (Rubovitz & Maehr 1973; Taylor 1979). When women believed an attractive male interviewer was sexist, they presented themselves as more traditional, scored lower on an anagrams test, wore more makeup and accessories, and talked less (von Baeyer et al. 1981; Zanna & Pack 1975). An observational study of children in kindergarten through second grade concluded that teachers' social class-based expectations created a "caste system" advantaging middle class students over lower class students (Rist 1970).

One of the most influential and highly-cited classics of this era demonstrated the self-fulfilling effects of the physical attractiveness stereotype (Snyder et al. 1977). Men were misled (through photographs) to believe a woman in another room was either attractive or unattractive. Not only did they behave in a friendlier and warmer manner to the women believed to be attractive, those women reciprocated with warmer and friendlier behavior themselves.

Thus, originally false beliefs about the social skill of the attractive became (self-)fulfilled.

Self-fulfilling prophecies were not restricted to stereotypes. Competitive people saw the world as competitive and evoked competitive behavior even from people predisposed to be cooperative (Kelley & Stahelski 1970). People who falsely believed others are hostile evoked hostile behavior (Snyder & Swann 1978a). Israeli military instructors evoked expectancy-confirming performance from military trainees (Eden & Shani 1982). Self-fulfilling prophecies seemed to be everywhere psychologists turned.

4.2. Expectancy-confirming biases

Self-fulfilling prophecies are not the only effect of expectations. Interpersonal expectancies also bias *judgments* of social reality. The extraordinary power of stereotypes regarding demographic categories, occupation, roles, mental diagnoses and many other social categories to bias judgments is a common theme in social psychological scholarship. For example, in one classic study, after viewing a fourth grade girl take a test, perceivers judged her to have performed more highly and to be smarter if they believed she was from a higher rather than lower social class background (Darley & Gross 1983). Yet another concluded that mental illness labels (e.g., "schizophrenia") led to such powerful expectancy biases that it became impossible to distinguish the sane from the insane (Rosenhan 1973). People constructed false "memories" about the supposed facts of a woman's life based on their stereotypes of whether she was lesbian or heterosexual (Snyder & Uranowitz 1978). Similar findings obtained for stereotypes based on race, gender, and many other categories. In this context, it is perhaps unsurprising that one major review declared stereotypes to be the "default" basis of person perception (Fiske & Neuberg 1990).

Such biases were not restricted to stereotypes, and occurred for expectations regarding intro/extraversion, friendliness, and intelligence (e.g., Kulik 1983; Rothbart et al. 1979; Williams 1976). Furthermore, such biases also infected social information-seeking. In an influential series of studies, Snyder and Swann (1978b) found that not only do people systematically seek information that confirms their hypotheses, they constrain targets' ability to do much other than confirm the initially erroneous expectation.

The extent to which expectations influence, change, and color (or, for stereotypes, taint) our interactions with and perceptions of other people seemed to be nothing short of stunning. The social psychological enthusiasm for expectancy-induced biases was at least comparable to that expressed for self-fulfilling prophecies. Here are some quotes representative of a widespread consensus in social psychology:

> Owing to a variety of cognitive biases, a perceiver's initial expectancies for a target are apt to be maintained, regardless of whether the target's behavior confirms, disconfirms, or is ambiguous with respect to the perceiver's expectancy (cited in Deaux & Major 1987, p. 381)

> Specifically, all of these processes are biased in the direction of maintaining the preexisting belief system, that is, the very

stereotype that initiated these biasing mechanisms. (Hamilton et al. 1990, p. 39)

The thrust of dozens of experiments on the self-fulfilling prophecy and expectancy-confirmation processes, for example, is that erroneous impressions tend to be perpetuated rather than supplanted, because of the impressive extent to which people see what they want to see and act as others want them to act. (Jost & Kruglanski 2002, pp. 172–73)

A *particularly pernicious* example of self-fulfilling beliefs and expectations, and the one most studied by social psychologists, is that of stereotypes and other negative beliefs about particular groups of people. Some of these effects are obvious, although no less important for their obviousness. If it is widely believed that the members of some group disproportionately possess some virtue or vice relevant to academic or on-the-job performance, *one is likely* (in the absence of specific legal or social sanctions) to make school admission or hiring decisions accordingly – and in so doing to deprive or privilege group members in terms of opportunities to nurture their talents, acquire credentials, or otherwise succeed or fail in accord with the beliefs and expectations that *dictated* their life chances. (Ross et al. 2010, p. 30, emphasis mine).

5. The less than awesome power of expectations to create reality and distort perceptions

In fact, however, this emphasis on the power of interpersonal expectancies was unjustified. It was not justified by the classic early studies that remain highly cited today; it was not justified by other, less well-known research on expectancy effects from the same era; and it was not justified by the subsequent research.

This can be readily seen from Table 1, which presents the average effect size for both self-fulfilling prophecies and biases, as obtained in every relevant meta-analysis I could find. Except for the .52 effect among military personnel, all range from about 0 to about .3 and do not show powerful or pervasive expectancy effects. In light of the conclusions emphasizing their power, how can the effects be as modest as shown in Table 1?

That answer is complex, because it involves a scientific tradition that once emphasized telling compelling theoretical/political stories over attention to effect sizes and replication. It involves some blatant cherry-picking (highlighting studies that make for great stories, and systematically ignoring studies inconsistent with the preferred story). And it involved an apparent suspension of the skepticism that often justifiably characterizes scientific scholarship.

Many of the most influential and highly-cited classics of the expectancy-confirmation literature either suffered from serious methodological or interpretive problems, or have proven difficult to replicate. I review only two examples here, and the book presents many more.

5.1. Rist (1970)

Rist (1970) conducted an observational study of kindergarten through second grade, and concluded that teachers' social-class–based expectations were so powerfully self-fulfilling that they created a "caste system" serving to maintain the advantages of middle-class students. According to Google Scholar, this study has been cited over 1600

times. It is quite striking, therefore, to discover that it actually provided no evidence of self-fulfilling prophecies whatsoever. Rist (1970) reported only a single piece of evidence regarding student achievement, and that was in a footnote (Note 5, p. 443). That footnote reported that, at the end of the year, *there were no differences* in the IQ scores among the kindergarten students who were targets of high or low social class teacher expectations. In other words, his only quantitative assessment of achievement provided no evidence that teacher expectations produced changes in student achievement.

Rist (1970) did provide a wealth of information about teacher treatment of students. In short, the teacher assigned the students to tables based on their social class, and proceeded to direct most of her attention to the middle-class students. Rist's (1970) "caste system" conclusion was based on his observation that this table assignment pattern continued partially intact through second grade. However, it was only partially intact, and, indeed, there was actually considerable movement among students from kindergarten to first grade and again from first grade to second grade. If there was a "caste system," it was a strikingly fluid one that produced no observed impact on students' achievement by the only measure of such impact reported.

5.2. Rosenhan (1973)

Rosenhan (1973, cited over 2,000 times) tested – and claimed to confirm – one of the most audacious hypotheses in all of psychology: that the insane are indistinguishable from the sane. This is so extreme that readers might naturally wonder if I am setting up some sort of straw argument by overstating Rosenhan's claims. Here is what Rosenhan (1973) himself wrote in his paper:

If sanity and insanity exist, how shall we know them? The question is neither capricious nor itself insane. However much we may be personally convinced that we can tell the normal from the abnormal, the evidence is simply not compelling. (opening sentences, p. 250).

Based in part on theoretical and anthropological considerations, but also on philosophical, legal, and therapeutic ones, the view has grown that psychological categorization of mental illness is useless at best and downright harmful, misleading, and pejorative at worst. (p. 251)

Psychiatric diagnoses, in this view, are in the minds of the observers and are not valid summaries of characteristics displayed by the observed. (p. 251)

We now know we cannot distinguish insanity from sanity. (p. 257)

I have not overstated Rosenhan's claims; instead, his claims themselves are vast overstatements. To understand how and why, it is necessary to first summarize his report. He had eight people ("pseudopatients") with no prior histories of mental illness admitted to psychiatric hospitals in order to see if the professional staff could identify them as sane. To get admitted, all eight complained that they had been hearing voices. Upon admission, they ceased displaying all intentionally false expressions of disturbed

Table 1. *Average expectancy effect sizes* typically range from small to moderate*

Meta-analysis	Topic/research question	Number of studies	Average expectancy effect
Self-fulfilling prophecy:			
Rosenthal & Rubin (1978)	Do interpersonal expectations create self-fulfilling prophecies?	330	.29[1]
Raudenbush (1984)	Do teacher expectations have self-fulfilling effects on student IQ?	18	.06
McNatt (2000)	Do manager's expectations have self-fulfilling effects on employees' performance?	6	.23
McNatt (2000)	Do military officers' expectations have self-fulfilling effects on trainees?	11	.52
Bias in judgment, memory and perception:			
Swim et al. (1989)	Do sex stereotypes bias evaluations of men's and women's work?	119	−.04[2]
Stangor & McMillan (1992)	Do expectations bias memory?	65	.03
Mazella & Feingold (1994)	Does defendant social category affect mock juror's verdicts? Defendants':		
	Attractiveness	25	.10
	Race (African-American or White)	29	.01
	Social class	4	.08
	Sex	21	.04[2]
Kunda & Thagard (1996)	Do stereotypes bias judgments of targets in the absence of any individuating information?	7	.25
Kunda & Thagard (1996)	Do stereotypes bias judgments of targets in the presence of individuating information?	40	.19

*Effect sizes are presented as the correlation coefficient, *r*.
Table 1 *Notes*:
1. This excludes the results of 15 studies on animal learning included in Rosenthal and Rubin's (1978) meta-analysis. Expectations for animals are not "interpersonal" expectations.
2. A negative coefficient indicates favoring men; a positive coefficient indicates favoring women.

behavior and they did not intentionally alter any other aspect of their life history.

They were kept institutionalized for an average of 19 days. When they were released, none were identified as sane; all were released with a diagnosis of "schizophrenia in remission." Rosenhan (1973) also provided qualitative examples of staff interpreting normal behavior as evidence of pathology (e.g., pacing halls out of boredom was interpreted as nervousness). Thus, Rosenhan concluded that the sane were indistinguishable from the insane because diagnosis pervasively colored the institutional staff members' interpretations of the pseudo-patients' behavior and life histories.

However, there is actually far more evidence of reasonable, rational, and valid judgment on the part of the doctors and staff than first appears. How the pseudopatients initially got themselves admitted should give some reason for pause. *They were admitted complaining of auditory hallucinations.* Regularly hearing voices saying things like "thud," "empty," and "hollow" (what they claimed to be hearing) is not remotely normal. Therefore, an initial diagnosis of some form of psychosis does not seem to reflect gross distortion on the part of the psychiatric staff.

How rigidly resistant to change were the doctors' and staffs' expectations? Rosenhan's (1973) interpretation was that they were highly rigid. After all, none were diagnosed as sane. But let's focus on Rosenhan's actual results, rather than his interpretations. First, the average hospital stay was 19 days, and most were kept under two weeks. How this reflects rigidity was never articulated.

How about the diagnosis of "schizophrenia in remission"? Rosenhan argued that it showed that there was nothing these completely sane pseudopatients could do to convince the doctors that they were really sane. However, "schizophrenia in remission," at that time, meant "the patient is showing no current signs of schizophrenia" (Spitzer 1975; Spitzer et al. 1978). Thus, in Rosenhan's own data, and in contrast to his conclusions, the staff did indeed recognize that the pseudopatients were behaving in a manner devoid of evidence of psychosis.

Rosenhan (1973) also reported a follow-up study in which staff at institutions were informed to be on the lookout for pseudopatients. Because none were actually sent, *any* identification of a person as a pseudopatient is an error, and all such errors were interpreted by Rosenhan as supporting his extraordinary "the sane are

indistinguishable from the insane" hypothesis. How many such errors did the psychiatrists make? Although Rosenhan (1973) did not report the data necessary to compute this figure exactly, it can be plausibly estimated as no higher than 6%, and probably considerably lower.

To keep the math simple, let's assume there were only two psychiatrists and we interpret "at least one" to mean "half" (the result is the same if we take half of two, or half of 100). If it was more than half, Rosenhan (1973) probably would have stated so. Two psychiatrists by 193 patients is 386 judgments. 21 (judged fakers)/386 = 6%. 6% errors is the same as 94% accuracy.

Given the possibility that 6% of those admitted were, in fact, not suffering from psychopathology, even 6% may overstate the actual error rate. Any error is, well, an error – but these results are not exactly a testament to the extraordinary biasing power of psychiatric diagnoses and expectations. Indeed, the entire study – its results demonstrating high accuracy and small but real bias, *and* the manner in which its evidence of bias was so greatly overstated – is consistent with the tripartite pattern I first used to describe Hastorf and Cantril (1954): (1) Bias is real but small; (2) accuracy is very high; and (3) the conclusions greatly overstated the power and pervasiveness of bias.

5.3. The replication failures

Many classic studies in the expectancy-confirmation literature have proven difficult to replicate. Attempts to replicate Snyder et al.'s (1977) self-fulfilling physical attractiveness stereotype study, Darley and Gross's (1983) social class stereotype bias study, and Snyder and Uranowitz's (1978) stereotype-based reconstructive memory studies all failed (Andersen & Bem 1981; Baron et al. 1995; Belezza & Bower 1981). In contrast to Rist's (1970) conclusions, social class biases found in large-scale, quantitative studies of teacher expectations have consistently been nonexistent (Jussim et al. 1996; Madon et al. 1998; Williams 1976).

Several lines of research followed up on the Snyder and Swann (1978b) study finding that people seek to confirm their social expectations by asking people leading questions that essentially remove from targets the opportunity to do anything except provide confirmatory answers. These have generally focused, not on attempts at exact replication, but on the validity of Snyder and Swann's (1978b) conclusion that people are heavily biased towards confirming their social expectations. Snyder and Swann (1978b) *only* gave people the opportunity to ask *leading* questions. Numerous follow-up studies, however, recognized this limitation and addressed it either by allowing people to make up their own questions or to select from both leading and diagnostic questions (e.g., Devine et al. 1990; Trope & Bassok 1982; 1983). When left to their own devices, or given adequate choice, people overwhelmingly ask diagnostic questions, and they almost never ask the type of leading questions found in Snyder and Swann (1978b). There does appear to be a slight tendency to ask questions to which a "yes" answer will confirm perceivers' expectations, and combined with a slight tendency on the part of targets to acquiesce, social hypothesis-testing may indeed be slightly biased in favor of confirming perceivers' hypotheses (Zuckerman et al. 1996).

Nonetheless, Snyder and Swann (1978b) is cited more than *all these other studies put together*, and the most common pattern is to cite it as demonstrating biased social hypothesis testing, *without citing any of the research showing that people generally ask diagnostic questions* (e.g. Deaux & Major 1987; Miller & Turnbull 1986). Similar citation patterns characterize much of the expectancy literature. Dramatic demonstrations of bias or self-fulfilling prophecy typically receive abundant attention whereas the failures to replicate that finding, and demonstrations of accuracy and rationality are largely overlooked.

This, then, is another route demonstrating the tripartite conclusion – bias is real but generally small; people are mostly accurate and rational; results demonstrating bias are overstated. In these cases, however, it is not necessarily the original researchers who overstate the result. Rather, the overstatement occurs because attention (citations) primarily focus on, and conclusions primarily emphasize, results of one dramatic (though flawed) demonstration of bias, and the more abundant and generally higher quality research demonstrating small (or irreplicable) bias and high accuracy/rationality is typically overlooked or ignored.

5.4. Quest for the powerful self-fulfilling prophecy

Having discovered this tripartite pattern repeated over and over, it seemed important to try to discover if there were *any* conditions under which truly powerful self-fulfilling prophecies in the classroom occurred. Thus, we embarked on a quest to systematically search for conditions under which large expectancy effects occurred (Jussim et al. 1996; Madon et al. 1997). Using a data set including over 100 teachers and over 1,000 students, we found a slew of powerful self-fulfilling prophecies, with effect sizes (standardized regression coefficients) ranging from about .40 to about .60. Powerful self-fulfilling prophecies occurred among:

1. African-American students
2. Students from lower SES backgrounds (regardless of ethnicity)
3. Students with histories of low prior achievement who were from lower SES backgrounds (these .6 effects are among the most powerful ever found in social psychology)
4. Students with histories of low achievement who were the target of *high* expectations. High expectations uplifted such students more than they uplifted high achievers, and more than low expectations harmed achievement.

Although powerful self-fulfilling prophecies are the exception rather than the rule, they systematically occurred among students from stigmatized social backgrounds. Interestingly, in our data, they seemed to *ameliorate more than cause* social inequalities (uplifting students with histories of low achievement).

5.5. Do self-fulfilling prophecies accumulate or dissipate?

In light of findings that expectancy-based biases and self-fulfilling prophecies are occasionally large but generally quite modest, researchers seeking to maintain a view of self-fulfilling prophecies as powerful and pervasive contributors to social problems needed to generate new arguments for doing so. The seemingly most compelling of these was that self-fulfilling prophecies may accumulate over time

and/or over multiple perceivers (e.g., Claire & Fiske 1998; Fiske 1998). The logic of accumulation is straightforward:

1. Small effects are typically obtained in both short-term laboratory studies of self-fulfilling prophecies and teacher expectation studies conducted over a school year.

2. Although small in such contexts, many targets may be subjected to the same or similar erroneous expectations over and over again. Social stereotypes, widely assumed to be widely shared and erroneous, are often presented as an obvious reason to predict that targets from stigmatized groups will be subjected to repeated self-fulfilling prophecies from multiple perceivers over long periods of time. Thus, effects of expectancies on any particular target are likely to be much higher than demonstrated in any particular study.

There are, however, also compelling reasons to predict that, rather than accumulating, self-fulfilling prophecies will dissipate, including regression to the mean, self-verification (Swann & Ely 1984), and accuracy (see the book for a full discussion of each). Thus, regardless of how "compelling" the accumulation argument may seem at first glance, the issue is an empirical one. Do self-fulfilling prophecies accumulate?

Every teacher expectation study that has assessed whether self-fulfilling effects that occurred in one year accumulate over time has found the exact opposite: They dissipate over time. Self-fulfilling prophecies dissipated in the original Rosenthal and Jacobson (1968) study, where the IQ difference between bloomers and controls was about four points in the first year, and under three points in the second year. Rist (1970) is often cited as evidence of accumulation, but he found neither accumulation across years nor self-fulfilling prophecy. West and Anderson (1976) followed 3,000 students through high school, and found that teacher expectation effects declined from .12 the first year to .06 in the final year (standardized regression coefficients). We also tested accumulation over five to six years in math (from sixth or seventh grade through twelfth grade), and, instead, found dissipation (Smith et al. 1999). The typically modest self-fulfilling prophecies found in sixth and seventh grade (.10, .16, respectively) declined to 0 and .09, respectively, by twelfth grade. Dissipation has also been found when research has followed students from first through fifth grade, in both reading and math (Hinnant et al. 2009).

Compelling stories can and have been told about how the accumulation of self-fulfilling prophecy upon self-fulfilling prophecy constitutes a major mechanism by which social stereotypes confirm themselves and maintain unjustified systems of oppression and status (e.g., Claire & Fiske 1998; Darley & Fazio 1980; Snyder 1984; Weinstein et al. 2004) – typically without consideration or review of the considerable evidence indicating that self-fulfilling prophecies dissipate. Nonetheless, there is currently no clear evidence supporting such an analysis, and a great deal of evidence disconfirming it.

5.6. Conclusion: The less than awesome power of expectations to create self-fulfilling prophecies, and bias perception, judgment, and memory

Do expectations lead to self-fulfilling prophecies and biases in judgment, perception, and memory? Yes, at least sometimes. But even the early blush of research on expectancy effects – the era filled with "classics" in the study of self-fulfilling prophecies and bias – never showed that such effects are, on average, inevitable, powerful, or as pervasive as often claimed. Such effects are not only relatively small, on average, but they tend to be quite fragile, in the sense that seemingly small changes in experimental procedure, geography, type of dependent variable, or researcher often seem to lead such biases to mostly or completely evaporate, and sometimes, to completely reverse.

Just because bias tends to be small, however, does not necessarily mean that accuracy tends to be high. Evaluating the accuracy question is simultaneously very simple and dauntingly complex. Therefore, the complexities of studying accuracy are summarized next.

6. Accuracy controversies

What could be a more basic or obvious purpose of social perception research than assessment of the accuracy of people's perceptions of one another? And what could be simpler? Although both questions are phrased rhetorically, it turned out that, not only was the study of accuracy less simple than it seemed, it is, in fact, a theoretical, methodological and political minefield. This section reviews, critically evaluates, and contests many of the reasons why social scientists have claimed that social perceptual accuracy is an unimportant, dangerous, or intractable topic.

6.1. Political objections

Some have criticized accuracy research because it can be used to justify inequality. For example, Stangor (1995) explains why stereotype accuracy is not worthwhile to study, in part this way: "As scientists concerned with improving the social condition, we must be wary of arguments that can be used to justify the use of stereotypes." And then later in the same paragraph: "[…] we cannot allow a bigot to use his or her stereotypes, even if those beliefs seem to them to be accurate" (Stangor 1995, pp. 288–89). This is an explicitly *political* criticism of accuracy research. It refers quite bluntly to political power rather than science ("cannot allow a bigot"). People in power make decisions about what is allowable, whereas, presumably, scientific research does not.

Opposition to accuracy research on political grounds has a kernel of truth. Accuracy cannot explain social problems. Demonstrating that people's sex stereotypes are accurate (Swim 1994) or that people's racial stereotypes are accurate (McCauley & Stitt 1978) does nothing to alleviate or explain injustices associated with sexism or racism. Worse, demonstrating social perceptual accuracy can be viewed as not merely documenting high acumen in perceiving individual and group differences, but as implicitly reifying and justifying those differences. To characterize a belief that some kid is not too bright, or is a klutz on the basketball court, or is socially inept as "accurate" has a feel of "blaming the victim." Blaming the victim is a bad thing to do – it means we have callously joined the perpetrators of injustice.

Nonetheless, this argument fails to threaten accuracy research. First, scientific conclusions should be based on empirical evidence, and not be subject to political litmus tests. Second, it cannot be logically possible to reach conclusions about inaccuracy – and the four-decades–long emphasis

on error and bias in social cognition provides ample evidence that social psychologists do indeed often wish to reach conclusions about inaccuracy – unless we can also reach conclusions about accuracy. Third, if we think we are curing a social problem (e.g., inequality) by treating the wrong disease (the supposedly inaccurate expectations whose accuracy social psychologists rarely assess and which, therefore, may be far more accurate than many seem to assume) we may not get very far.

Furthermore, there will be no way to assess our success at leading people to adopt more accurate beliefs, unless we have techniques for assessing accuracy. By understanding what leads people astray, and what leads them to accurate judgments, we will be much more capable of harnessing those factors that lead to accurate judgments, and therefore, reduce social problems resulting from inaccurate beliefs. Thus, even on the political grounds of aspiring to reduce inequality, political objections fail to provide a serious scientific threat to the study of accuracy.

6.2. Theoretical objections

Not all objections to accuracy research are political. Next, therefore, I consider some of the most common substantive and theoretical objections to accuracy research.

6.2.1. Cognitive processes. *"Cognitive processes are important, error and bias is important, but accuracy is not."* This strong argument has been explicitly articulated by various social psychologists (Jones 1986; 1990; Schneider et al. 1979; Stangor 1995). Furthermore, it is implicit in the topics studied by most social psychologists – with vastly more research on process, error, and bias than on accuracy.

Psychological research articles are filled with excellent experimental studies of cognitive processes that researchers interpret as suggesting that bias, error, and self-fulfilling prophecy is likely to be common in daily life. But such generalizations are only justifiable by research that examines the accuracy of people's judgments in real-world contexts, not in artificial or even realistic laboratory contexts. No matter how much researchers *think* the processes discovered in the lab should lead to bias and error, the only way to find out for sure would be by assessing the accuracy of real social perceptions. A social perceiver whose beliefs closely correspond to social reality is accurate, regardless of the processes by which that perceiver arrived at those beliefs. Thus, although there are many good arguments *to* study process, none constitute good arguments *not* to study accuracy.

6.2.2. Accuracy of explanations. *"Just because it can be shown that some belief about some person or group is correct does not tell us why or how the person or group got that way."* The dismissal of accuracy as something uninteresting or unimportant is often implicit in perspectives arguing that social processes and phenomena (e.g., discrimination, poverty) create the differences that are perceived (e.g., Fiske 1998; Jost & Banaji 1994). Social processes undoubtedly create many group and individual differences. Nonetheless, this sort of analysis, which emphasizes the *explanations* for the origins of group and individual differences fails to threaten or undermine the viability of

accuracy research. Both points are next illustrated with a hypothetical example.

Let's say that Ben believes Joe is hostile. This "objection" focusing on the accuracy of explanations leads to at least *four* different questions: (1) Is Ben right? (2) What is Ben's explanation for Joe's hostility? (3) If Joe is hostile, how did he get that way? and (4) Why does Ben believe Joe is hostile?

Providing an answer to one question provides no information about the others. For example, establishing that Ben is correct (Joe really is hostile) tells us nothing about how Ben explains Joe's hostility. Nor does it provide any information on how Joe actually became hostile. Ben's belief in Joe's hostility can be accurate and his explanation inaccurate. Of course the lack of information about answers to *other* questions constitutes no *fatal flaw*, indeed, no limitation at all, to the assessment of the accuracy of Ben's belief in Joe's hostility. Indeed the latter two questions (how did Joe get that way, and how did Ben come to believe Joe is hostile) are not even accuracy questions; they are process questions. Thus, failure to explain how a person or group develops some characteristic constitutes no threat to accuracy research.

6.2.3. Accuracy versus self-fulfilling prophecy. *"Prior self-fulfilling prophecies may influence that which is 'accurately' perceived."* The logic underlying this objection seems to be the following: (1) Self-fulfilling prophecies occur. (2) Sometimes differences between targets reflect self-fulfilling prophecies. (3) If so, attributing "accuracy" to those perceptions is, at best, meaningless, and, at worst, reifies differences produced through social processes (Claire & Fiske 1998; Fiske 1998).

The first two premises are true. Self-fulfilling prophecies do indeed occur sometimes; and, at any point in time, the differences between targets may indeed reflect self-fulfilling prophecies to some extent. Thus, differences that are accurately perceived at some point in time may reflect effects of prior self-fulfilling prophecies.

Nonetheless, the conclusion that this renders accuracy research meaningless is unjustified for several reasons. First, if a perceiver cannot have caused differences among targets, self-fulfilling effects of *that perceiver's expectations* cannot account for those differences. If, by the time Johnny gets to fourth grade, his performance in school is stellar, should his teachers reduce his grades from A's to B's because part of his performance resulted from self-fulfilling prophecies in prior years? That would be silly. When a perceiver's judgments closely correspond to targets' attributes, and when that same perceiver's expectations cannot have caused those attributes, how shall we refer to this correspondence? There is only one viable answer: accuracy.

But the argument that accuracy is meaningless because self-fulfilling prophecies may cause that which is "accurately" perceived fails *even if, through self-fulfilling prophecies, the same perceiver did cause the target's behavior or accomplishment*. The key issue here is time. If a perceiver's expectations trigger a social interaction sequence that *causes* the target to become a very pleasant person, those expectations (which came *prior* to the interaction) are self-fulfilling. But, once the interaction is over, how should the target be perceived? Would it be most accurate to perceive the target as nasty, neither nasty nor pleasant,

or as pleasant? Again, the answer is obvious. A "problem" arises only when we fail to account for the difference between predictions (which may be either self-fulfilling or accurate) and impressions of past behavior (which can only be accurate or inaccurate, and, by virtue of referring to behavior that has already occurred, cannot be self-fulfilling). Of course, today's impressions can become tomorrow's (self-fulfilling) predictions.

It is completely true that prior self-fulfilling prophecies may influence that which is subsequently accurately perceived. This is interesting and important, but fails to constitute a threat or obstacle of any kind to assessing the accuracy of those perceptions.

6.2.4. The criterion "problem." The criterion "problem" has been one of the most common objections appearing in the literature criticizing accuracy research (e.g., Fiske 1998; Jones 1990; Schneider et al. 1979; Stangor 1995). Many prominent researchers have declared or strongly implied that it is difficult or impossible to identify criteria to assess the accuracy of social beliefs:

> The naiveté of this early assessment research was ultimately exposed by Cronbach's elegant critique in 1955. Cronbach showed that accuracy criteria are elusive and that the determinants of rating responses are psychometrically complex. (Jones 1985, p. 87)

> Even if I thought it were desirable or important to catalog the accuracy of social stereotypes, I would be pessimistic about our ability to make definitive statements in this regard. This is because I believe the prognosis for developing unambiguous criteria on which to make such statements is small. (Stangor 1995, p. 282)

> In any event, what does it mean to say that, "actually," women are dependent, men are aggressive, Jews are stingy, the elderly are conservative, blacks are criminal, or whites are conceited? The problem of the actual criterion is complex, especially for traits (Judd & Park 1993). The target group's self-report is a common criteria, but this is plagued by various self-report biases and sample selection biases. Also, the validity of self-reports is affected by group identity issues (Judd et al. 1995). Another plausible criterion would be "objective" measures, but their validity, too, is unclear. What measure would objectively indicate whether a group is ambitious, lazy, or efficient? And how ambitious is ambitious? And for what proportion of the group, compared to what other group, does the trait have to hold? Expert judgments are possible, but they themselves are not immune to stereotypes. (Extract from Fiske 1998, p. 382)

I address criteria later in this Précis. For now, however, several aspects of these perspectives are worth noting. Jones's (1985) citation of Cronbach (1955) in support of the argument that "accuracy criteria are elusive" is particularly odd, because Cronbach (1955) did not address the issue of criteria. The passage from Fiske (1998) is also revealing. Why are both "actually" and "objective" in quotes? The implication seems to be that there is little or no "actually" or "objectivity" out there. The quote is largely a series of rhetorical questions that are plausibly interpreted as implying, without quite stating, that "it is impossible to answer these questions because there are no good criteria."

Furthermore, none of these articles identify a single criterion that the authors *do* consider appropriate to use to study accuracy. This leaves the reader with either blanket dismissals of criteria (Jones 1985; Stangor 1995), or a long list of unacceptable criteria, and no identified acceptable criteria (Fiske 1998). Indeed, it is not clear how to

avoid the interpretation that this scholarship means that there are *no good criteria* for assessing accuracy. If this is not what these and other authors mean when they provide blanket dismissals of accuracy criteria, it would be invaluable for them to describe what criteria they *do* consider to be appropriate. Next, therefore, I consider the scientific justifiability for such blanket dismissals of criteria for accuracy.

Psychologists – including all three quoted here – routinely engage in the scientific study of one or more of the following attributes: aggression, political attitudes, generosity, intelligence, achievement, morality, motivation, and even conceit (aka "self-serving bias"). Who would study political attitudes or achievement (etc.) without believing such constructs "really exist"? I have not found any scholarship from these same authors generally arguing that motivation, generosity, attitudes, and so forth, cannot be assessed *in other, non-accuracy-related,* contexts. It is hard to avoid the implication from this line of argument dismissing accuracy criteria that these constructs cannot be assessed when studying accuracy, but they can be assessed in other types of psychological research. At minimum, the logical bases for such an argument have never previously been articulated. Furthermore, if psychological constructs such as motivation, attitudes, generosity, etcetera, can be studied in other contexts, then it would seem there are good criteria for establishing the accuracy of social beliefs, because they would be *the very same criteria* that psychological scientists use to establish the reality of the constructs they study. Attempts to dismiss the appropriateness of criteria for studying the accuracy, say, of lay beliefs about individuals' or groups' motivation (laziness), attitudes (conservatism), charitable giving (stinginess), and so on, would appear to be logically compelled to similarly dismiss the appropriateness of using the same criteria to study, say, the accuracy of psychologists' hypothesis about motivation, attitudes, charitable giving, etcetera.

Logical issues with the dismissal of criteria for assessing accuracy are highlighted even more starkly when raised by psychologists who emphasize the power and importance of self-fulfilling prophecies, including some by the very same authors raising the criteria issue for accuracy (e.g., Fiske 1998; Jones 1986). Although the processes by which perceivers' beliefs become valid are different for self-fulfilling prophecies and accuracy, the *criteria* for establishing their validity must be identical. When assessing both self-fulfilling prophecies and accuracy, the question is: "To what extent does the expectation correspond to the outcome?" How it can be impossible to identify criteria for establishing accuracy and unproblematic to identify criteria for establishing self-fulfilling prophecy, when both require establishing correspondence between social perceptions and social realities, has never been articulated.

6.3. Criteria and construct validity

6.3.1. Accuracy's inherent kinship with construct validity. Understanding what criteria exist to assess accuracy requires first defining accuracy. The approach taken here is *probabilistic realism*. Probabilistic realism assumes that there is an objective reality, and that, flawed and imperfect though we may be, we can eventually come to know or understand it, at least much of the time (in the

book, this perspective is contrasted with *functional* and *social constructivist* perspectives on accuracy).

Social perceptual accuracy is correspondence between perceivers' beliefs (expectations, perceptions, judgments, etc.) about one or more target people and what those target people are actually like, independent of perceivers' influence on them. More correspondence without influence, more accuracy.

Identifying criteria for accuracy can be approached much as establishing construct validity, which then addresses many of the doubts and criticisms (Fiske 1998; Jones 1985; Stangor 1995). Finding criteria for assessing the accuracy of social beliefs is virtually identical to finding criteria for assessing the accuracy of social psychological hypotheses. Indeed, as shall be shown next, the construct validity of the criteria used in accuracy research has often been far more strongly established than that used in much social psychological research, which often involves measures made up on the fly for particular studies.

6.3.2. Criteria. Types of criteria that have been productively used in accuracy research are, therefore, essentially the same as used in other research to test psychological hypotheses (objective criteria, behavior, agreement with experts, agreement with other perceivers, agreement with targets' self-reports and self-perceptions). Criteria are objective when that which is being judged is assessed in a standardized manner that is independent of the perceiver's judgment. Examples of objective criteria that have been used in accuracy research are Census data, most sports outcomes, cognitive ability tests, and meta-analyses of group differences. Objective criteria may indeed have imperfections, but they are evidence assessed in standardized manners independent of perceivers' judgments. For example, consider Ali, who predicts that Derek Jeter will hit a home run in his last at bat at Yankee stadium. He will be either right or wrong about this. There is nothing the least bit difficult or "problematic" about this. Although the rules of baseball can only be established through agreement, once established, the criteria for hits, home runs, and so on, are mostly independent of human judgment. The role of umpires is primarily to exercise subjective judgment for (the relatively few) close calls, to prevent unruly or aggressive behavior, and to enforce the more esoteric rules of the game.

Similarly, objective criteria – such as Census data about the proportions of people with high-school degrees or on welfare, and meta-analyses of group differences – are also useful as criteria precisely because, whatever their imperfections, they are standardized and independent of the judgments of perceivers in any particular study. Not all people may agree that certain objective criteria are good ones. Such agreement might be irrelevant regarding, say, guessing targets' number of children, but they become much more relevant when estimating, say, extraversion or intelligence via a personality questionnaire or standardized IQ test. Is the personality questionnaire a good one? Is it reliable? Valid? IQ tests, in particular, have a long and controversial history (e.g., Gould 1981; Herrnstein & Murray 1994; Neisser et al. 1996).

To the extent that some people do not find such tests credible, they are likely to discredit or dismiss research on accuracy using such criteria. Thus, use of objective but controversial criteria can be viewed as boiling down to

agreement (if you agree with the criteria, the study assesses accuracy; if you do not agree with the criteria, it does not – see Kruglanski 1989). And socially and politically, this is probably how things work. People who do not accept one's criteria most likely will not accept one's conclusions (whether on accuracy or any other social science topic).

Often, however, what may happen is the reverse: People who do not like scientific conclusions will come up with arguments against the appropriateness of using criteria involved in those conclusions. This may help explain why social psychologists were much more critical of the criteria used in accuracy research than in self-fulfilling prophecy research, even when the criteria were identical. A similar analysis could be presented for cognitive ability tests. Indeed, cognitive ability tests are among the most highly validated measures in all of psychology, predicting important life outcomes such as educational attainment, income, and criminality (e.g., Neisser et al. 1996; Schmidt & Hunter 1998). The grounds for arguing that such tests are somehow invalid on the part of any psychologists who have used measures developed on the fly (i.e., subject to little or no validity assessment) for a particular research purpose, but at the same time, believes the on-the-fly measures constitute appropriate criteria for assessing the validity of scientific hypotheses, has never been articulated.

7. The accuracy of teacher expectations

Having established the scientific appropriateness and viability of studying social perceptual accuracy, it was then possible to revisit some of the clearest evidence that bore on the accuracy question – which, ironically (given that it kicked off social psychology's infatuation with expectancy effects), was teacher expectation research. First, teachers' expectations are generally heavily based on students' prior grades and standardized test scores, with multiple correlations often in the .6 to .8 range (Jussim et al. 1996). In contrast, demographic variables, such as race, gender, and social class often have no predictive value (after controlling for prior achievement), and rarely have effects exceeding standardized coefficients of .15 (Jussim et al. 1996; Madon et al. 1998; Williams 1976).

Furthermore, the main reason teacher expectations predict student achievement is because they are accurate, not because they are self-fulfilling or biasing. Correlations of teacher expectations with student achievement typically range from about .4 to .8, whereas bias and self-fulfilling prophecy effects are typically no larger than .10 to .20 each. The difference between the correlation and the teacher expectation effect can be used as an estimate of accuracy because it constitutes predictive validity without (self-fulfilling) influence. This means that accuracy consistently accounts for about 60–70% of the relationship between teacher expectations and student achievement with the remaining 30–40% divided among bias and self-fulfilling prophecy (see Jussim & Eccles 1995; Jussim et al. 1996; Jussim & Harber 2005, for reviews).

8. The unbearable accuracy of stereotypes

Are stereotypes inaccurate? The assumption or definition of stereotypes as inaccurate has long and deep roots in

psychology (see reviews by G. W. Allport 1954/1979; Ashmore & Del Boca 1981; Brigham 1971; and see my book: Jussim 2012). Because some have argued that assessing stereotype accuracy may be impossible or undesirable (Fiske 1998; Stangor 1995), the first order of business is to address when assessment of stereotype accuracy is scientifically possible.

First, only descriptive or predictive beliefs can be evaluated for accuracy. "Jews are richer than other Americans" can be evaluated for accuracy; the accuracy of "I like (dislike) Jews," however psychologically important, cannot be evaluated for accuracy. Stereotypes as prescriptive beliefs, too, cannot be evaluated for their accuracy. Accuracy is irrelevant to notions such as "children should be seen and not heard" or "men should not wear dresses." Therefore, to the extent that stereotypes are defined as something *other* than descriptive or predictive beliefs, one is precluded from making *any* claim about inaccuracy.

The assumption that stereotypes are inaccurate is only relevant to descriptive or predictive beliefs and, therefore, can mean only one of two things:

1. All such beliefs about groups are stereotypes and all are inaccurate.

Or,

2. Not all beliefs about groups are inaccurate, but stereotypes are inaccurate beliefs about groups.

Why each is logically incoherent is discussed next.

8.1. The logical incoherence of defining stereotypes as inaccurate

A claim that all beliefs about all groups are inaccurate is logically incoherent. It would mean that:

(1) Believing that two groups differ is inaccurate; and (2) believing two groups do not differ is inaccurate. Both (1) and (2) are not simultaneously possible, so we can reject any claim that all beliefs about groups are inaccurate.

If stereotypes are the subset of beliefs about groups that are inaccurate, then only inaccurate beliefs about groups can be considered stereotypes. *Accurate* beliefs about groups have been defined away as *not stereotypes.* This has the (probably unintended) effect of defining away nearly all existing research on stereotypes. Why? Because vanishingly few studies of stereotypes have actually first demonstrated that the beliefs about groups under study are inaccurate. Holding social psychology to this interpretation of "stereotypes are inaccurate" means concluding that decades of research framed as addressing stereotypes really has not done so. There would be no studies of the role of stereotypes in expectancy effects, self-fulfilling prophecies, person perception, subtyping, memory, and the like.

There are additional logical problems with defining stereotypes as inaccurate. No scholarship that has done so has also identified the point at which a belief crosses over from being an "accurate" belief about a group, to being a "stereotype." Absent a standard for (in)accuracy, this means that we cannot know whether any belief is a (defined as inaccurate) stereotype. Similarly, if one claims that accuracy cannot or should not be assessed, or that existing research fails to validly assess accuracy (Fiske 1998; 2004; Stangor 1995), one has dismissed all evidence that bears on accuracy and therefore precluded one's self from making any statements about stereotypes' (in)accuracy. In summary, *defining stereotypes as inaccurate* is severely problematic *no matter what*

the definer means. Any scientist who wishes to maintain such a definition needs to precisely articulate how each of these forms of logical incoherence have been overcome.

8.2. A viable, logically coherent definition

I concur with the minority of scientists who have left inaccuracy out of the definition of stereotype (e.g., Ashmore & Del Boca 1981; Judd & Park 1993; Ryan 2002), and who have generally defined stereotypes as beliefs about the attributes of social groups. This allows for many possibilities not explicitly stated. Stereotypes may or may not:

- be accurate and rational
- be widely shared
- be conscious be rigid
- exaggerate group differences
- assume group differences are essential or biological
- cause or reflect prejudice and discrimination
- cause biases and self-fulfilling prophecies
- play a major role in some social problems.

This definition retrieves accuracy from premature foreclosure by definition and turns it into a scientific empirical question. How well do people's beliefs about groups correspond to what those groups are actually like?

8.3. The rigorous assessments of stereotype (in)accuracy

To be included here, empirical studies assessing the accuracy of stereotypes needed to meet two major criteria. First, they had to relate perceivers' beliefs about a target group with some measure of what that group was actually like. This may seem obvious, but the social psychological discourse on stereotypes has often drawn conclusions about the inaccurate or unjustified nature of stereotypes based entirely on evidence addressing social cognitive processes – illusory correlations, priming, expectancy effects, attributional patterns, and so forth. Such research, although important on its merits, does not directly address accuracy, which can only be done by comparing beliefs about groups to criteria regarding those group's characteristics.

Second, studies needed to use an appropriate target group. If the stereotype is of "American women," the target group should be a representative sample of American women; it cannot be a convenience sample (Judd & Park 1993). Studies that met both of these criteria were included; those that did not were excluded.

8.4. Four types of stereotype (in)accuracy

Accuracy is often a multidimensional construct (e.g., Judd & Park 1993; Kenny 1994), as can be readily illustrated with a simple example. Consider Fred, judging the average height of male Americans, Columbians, and Dutch. Fred estimates the average heights, respectively, as 5′8″, 5′5″, and 5′10″. Let's say the real average heights are, respectively, 5′10″, 5′7″, and 6′0″. In absolute terms, Fred is inaccurate – he consistently underestimates height by two inches. However, in relative terms, Fred is perfectly accurate – his estimates correlate 1.0 with the actual heights. Although Fred has a downward bias in perceiving the absolute heights among men in the different countries, he is superb at perceiving the relative height differences.

Discrepancy from perfection refers to how close people's beliefs about groups are to those groups' actual mean characteristics on criteria. These are assessed with discrepancy scores. *Correspondence with differences* refers to how well people detect either variations between or within groups on some set of attributes. These are assessed with correlations between beliefs and criteria. *Personal stereotypes* are the beliefs about groups held by a particular individual. *Consensual stereotypes* are the overall, or average, beliefs about a group held by some group of perceivers. This creates four types of stereotype (in)accuracy: *Personal discrepancies* (how discrepant a single person's stereotypes are from a criterion); *consensual discrepancies* (how discrepant a sample's or group's mean stereotypes are from a criterion); *personal correspondence* (the correlation of a single person's stereotypes with criteria); and *consensual correspondence* (the correlation of a sample's or group's stereotypes with criteria).

8.5. What is a reasonable standard for characterizing a stereotypic belief as "accurate"?

Discrepancies from perfection (discrepancy scores) and correspondence with real differences (correlations) capture different but important aspects of accuracy. Because both can and have been used to assess accuracy, there needs to be two separate standards for characterizing a belief as accurate – one for discrepancy scores, and another for correlations.

8.5.1. Discrepancies. In this review of the empirical evidence assessing the accuracy of stereotypes, beliefs that are within 10% of the criterion are characterized as *accurate*; beliefs that are more than 10% off, but 20% or less off, as "near misses," and beliefs that are more than 20% off as *inaccurate*. For studies that do not report their results as percentages, effect sizes of $d = .25$ are used as the cutoff for accuracy because it corresponds to an approximately 10% difference. These cutoffs are appropriate, perhaps even stringent, because for most practical and even scientific purposes, predictions no more than 10% off correspond to many pre-existing high standards (e.g., 90% or more on a test is usually an A; a researcher who predicts an effect of .30, but obtains one of .27, will generally see this result as supporting the hypothesis). Nonetheless, 10% is somewhat arbitrary and, for certain purposes, different criteria for accuracy might be appropriate.

8.5.2. Correspondence. Effect sizes of $d = .8$ have, by longstanding convention (J. Cohen 1988), been characterized as "large." This corresponds approximately to a correlation of .40 between belief and criteria. I therefore use $r = .40$ as the cutoff for considering a stereotype to be accurate. Similarly, d's of .5 are considered "moderate" so that $r = .25$ as the cutoff for "moderate accuracy."

8.6. Pervasive stereotype accuracy

I use the term "pervasive stereotype accuracy" here to refer to the widespread evidence of at least some accuracy, and sometimes quite high accuracy, found in nearly every study that has assessed stereotype accuracy. Nonetheless, there is no evidence that stereotypes are *perfectly* accurate. Furthermore, even within a single study, accuracy levels

may vary, not just across judgments or perceivers, but, because accuracy is a multi-faceted construct, across the four types of accuracy described previously. The few studies of highly inaccurate stereotypes are also reviewed. Nonetheless, the evidence of pervasive stereotype accuracy is inconsistent with virtually all perspectives defining stereotypes as inaccurate, or emphasizing their inaccuracy.

8.6.1. Ethnic and racial stereotypes. Table 2 summarizes the results of all studies assessing the accuracy of racial/ethnic stereotypes that met the criteria for inclusion. Consensual discrepancies are mostly accurate or near misses. For example, in McCauley and Stitt (1978), out of 70 judgments about Americans (in general) and African-Americans, 34 were accurate, and another 30 were near-misses. Ashton and Esses (1999) found a similar pattern in the consensual ethnic stereotypes held by Canadian college students' – judgments about the academic achievement of eight of nine ethnic groups were accurate. Ryan (1996) found evidence of both accuracy and inaccuracy in African-American and White college students' consensual racial stereotypes over all six perceiver group-target group combinations (African-American and White perceivers making judgments about African-Americans, Whites, and their differences): 34 judgments were accurate, 20 were near misses, and 48 were inaccurate.

Furthermore, the results from these studies provide little consistent support for the idea that stereotypes exaggerate real differences. Exaggeration of real differences occurred more often than underestimations in some studies (Ashton & Esses 1999; Ryan 1996), but underestimation occurred more often in others ((McCauley & Stitt 1978; Wolsko et al. 2000). Even the evidence of exaggeration, however, was more mixed than this summary suggests. For example, the only study to assess the accuracy of personal discrepancies (Ashton & Esses 1999) found that a plurality of people were generally accurate ($n = 36$), and that more exaggerated ($n = 34$) than underestimated ($n = 25$). If stereotypes are defined as exaggerations of group differences, a definition I reject but which has deep roots in social psychology (e.g., G. W. Allport 1954/1979; Campbell 1967), then in the Ashton and Esses (1999) study, 61 of 95 people *did not hold stereotypes*.

Stereotype accuracy as correspondence between belief and criteria was generally very strong. Consensual stereotype accuracy correlations ranged from .53 to .93. Personal stereotype accuracy correlations ranged from .36 to .69. Although the participants in these studies were only fairly good at identifying the precise level of some characteristic of racial and ethnic groups, their perceptions of differences both within and between groups across the different attributes were quite high.

8.6.2. Gender stereotypes. Table 3 summarizes the results of studies of gender stereotypes accuracy. In most cases, at least a plurality, and often a majority, of consensual stereotype judgments were accurate, and accurate plus near miss judgments predominate in every study. For example, in the Swim (1994) study, of 33 judgments, 18 were accurate and 7 were near misses. There was no support for the hypothesis that stereotypes generally lead people to exaggerate real differences. As with race, underestimations counterbalanced exaggerations.

Table 2. *The Accuracy of Racial and Ethnic Stereotypes*

Study & Stereotype	Perceivers	Criterion	Predominant Pattern of Discrepancies[1]	Individual Correlations (Personal Stereotype Accuracy)	Aggregate Correlations (Consensual Stereotype Accuracy)
McCauley & Stitt (1978); beliefs about demographic differences between African-Americans and other Americans	Five haphazard samples (church choir, union members, students, etc.), total N = 62	U.S. Census data	Accuracy	Not Available	Beliefs about:[2,3] African-Americans: .60 Americans: .93 Differences between African-Americans and other Americans: .88
Ryan (1996); beliefs about differences in the personal characteristics of African-American and White U. of Colorado students	Random samples of 50 African-American and 50 White U. of Colorado students	Self-reports of the random samples of perceivers	Among Whites, accuracy; among African-Americans, accuracy and exaggeration (tied)	African-American Perceivers: .42[2] White Perceivers: .36[2]	African-American Perceivers: .73, .53, 77[3,4] White Perceivers: .77, .68, .72[3,4]
Ashton & Esses (1999); beliefs about the achievement of nine Canadian ethnic groups	94 Univ. of Western Ontario students	Board of Education achievement data	Accuracy: 36 of 94 Exaggeration: 33 of 94 Underestimation: 25 of 94[5]	.69	Not Available
Wolsko et al (2000); beliefs about differences between African-Americans and White Americans	83 White Univ. of Colorado undergraduates	Objective data from govt. (e.g., Census) and other (e.g., National Basketball Association) sources	Underestimation	Not Available	Not Available

Ryan's (1996) results refer to her stereotypicality results, not her dispersion results. Exaggeration means the perceived differences between groups exceeded the group differences on the criteria. Underestimation means the perceived differences between groups was smaller than the group differences on the criteria. Individual correlations involve computing, for each individual perceiver, the correlation between their judgments (stereotypes) and the criterion. Studies performing this analysis typically report the average of those correlations. Aggregate correlations refer to the correlation between the overall average perceived difference between the groups (for the whole sample) and the group difference on the criteria.

Table 2 Notes:

1. Except where otherwise stated, all discrepancy results occur at the consensual level. Accuracy means within 10% of the real percentage or within .25 of a standard deviation. Exaggeration means the perceived differences between groups exceeded the group differences on the criteria. Underestimation means the perceived differences between groups was smaller than the group differences on the criteria. Except where otherwise noted, only one word is entered in this column when one pattern (e.g., "accuracy") occurred for a majority of results reported. When there was no majority, the top two results (most frequent first) are reported here except where otherwise noted.

2. If the study reported more than one individual level (average) correlation, their correlations were averaged to give an overall sense of the degree of accuracy.

3. These correlations do not appear in the original article, but are computable from data that was reported.

4. For each group of perceivers, the first correlation is the correspondence between their judgments and the self-reports of their own groups; the second correlation is the correspondence between their judgments and the self-reports of the other group; and the third correlation is the correspondence between the perceived difference between the groups and the difference in the self-reports of the two groups.

5. These are personal discrepancies. Ashton & Esses (1999) computed a personal discrepancy score for each perceiver, and then reported the number of perceivers who were within .2 standard deviations (sd) of the criteria, the number that exaggerated real differences (saw a difference greater than .2 sd larger than the real difference) or underestimated real differences (saw a difference more than .2 sd smaller than the real difference).

Jussim: Précis of *Social Perception and Social Reality*

Table 3. *The Accuracy of Gender Stereotypes*

Study & Stereotype	Perceivers	Criterion	Predominant Pattern of Discrepancies[1]	Individual Correlations (Personal Stereotype Accuracy)	Aggregate Correlations (Consensual Stereotype Accuracy)
McCauley et al. (1988); McCauley & Thangavelu (1991); beliefs about the sex distribution into different occupations	College students, high school students, rail commuters (N = 521 over the 5 studies)	Census data on proportion of women employed in various occupations	Accuracy	Not Available	.94–.98[2] across 5 studies
Swim (1994)[3]; beliefs about sex differences on 17 characteristics	Introductory psychology students (N = 293 over two studies)	Meta-analyses of sex differences on 17 characteristics	Accuracy	Not Available	Study One: .78 Study Two: .79
Briton & Hall (1995); beliefs about sex differences in nonverbal behavior	441 introductory psychology students	Meta-analysis of nonverbal sex differences	Accuracy	Not Available	Female perceivers: .74 Male perceivers: .68
Cejka & Eagly (1999); beliefs about the sex distribution into different occupations	189 introductory psychology students	Census data on proportion of women employed in 80 occupations	Accuracy and Underestimation	Not Available	.91
Beyer (1999)[4]; beliefs about the sex distribution into different majors and mean gpa of men and women in those majors	265 college students	College data on proportion of men and women in different majors, and their GPAs	Accuracy and underestimation	Proportion: Male perceivers: .48 Female perceivers: .52 GPA Male targets: .22 Female targets: −.04	Proportion: Male perceivers: .80 Female perceivers: .79 GPA Male perceivers: .35 Female perceivers: .34
Hall & Carter (1999); beliefs about sex differences on 77 characteristics	708 introductory psychology students	Meta-analyses of sex differences on 77 characteristics	Not Available	.43	.79
Diekman et al. (2002); beliefs about the attitudes of men and women	617 college students over three studies	Attitude positions endorsed by men and women on the General Social Survey (random sample of American adults)	Accuracy for consensual discrepancies; near miss for personal discrepancies	Male targets: .45[5] Female targets: .54[5] When judging sex differences: .60	Male targets: .66[5] Female targets: .77[5] When judging sex differences: .80

Individual correlations involve computing, for each individual perceiver, the correlation between their judgments (stereotypes) and the criterion. Studies performing this analysis typically report the average of those correlations. Aggregate correlations refer to the correlation between the overall average perceived difference between the groups (for the whole sample) and the group difference on the criteria. Only one word is entered in this column when one pattern (e.g., "accuracy") occurred for a majority of results reported. When there was no majority (or the majority could not be determined from their data), the top two results, in order of frequency (most frequent first) are reported here.

Table 3 Notes:

1. Except where otherwise stated, all discrepancy results occur at the consensual level. Accuracy means within 10% of the real percentage or within .25 of a standard deviation. Exaggeration means the perceived differences between groups exceeded the group differences on the criteria. Underestimation means the perceived differences between groups was smaller than the group differences on the criteria. "Near miss" means perceivers were more than 10% wrong, but no more than 20% wrong. Except where otherwise noted, only one word is entered in this column when one pattern (e.g., "accuracy") occurred for a majority of results reported. When there was no majority, the top two results (most frequent first) are reported here, except where otherwise noted.

2. These correlations do not appear in the original article, but are computable from data that was reported.

3. Swim (1994) sometimes reported more than one meta-analysis as a criterion for a perceived difference. In that case, I simply averaged together the real differences indicated by the meta-analyses in order to have a single criterion against which to evaluate the accuracy of the perceived difference.

4. For Beyer (1999), all results are reported separately for men and women perceivers, except the individual correlations for GPA. Because there was no significant sex of perceiver difference in these correlations, Beyer reported the results separately for male and female targets.

5. For simplicity, if the study reported more than two correlations, I have simply averaged all their correlations together to give an overall sense of the degree of accuracy.

Across the studies summarized in Table 3, consensual stereotype accuracy correlations were quite high, ranging from .34 to .98, with most falling between .66 and .80. The results for personal stereotypes were more variable. Once they were inaccurate, with a near zero correlation with criteria (Beyer 1999, perceptions of female targets). In general, though, they were at least moderately, and sometimes highly accurate (most correlations ranged from .40 to .60 – see Table 3). A recent multi-national study found a fundamentally similar pattern, with consensual gender stereotype accuracy correlations ranging from .36 to.70, and showing no evidence of exaggeration (Löckenhoff et al. 2014).

8.6.3. Other stereotypes. Empirical research on stereotype accuracy has also addressed a wide variety of other stereotypes (e.g., occupations, college majors, etc.; see Table 4), and found essentially the same broad and general patterns as obtained for race, ethnicity, and gender: high levels of accuracy, and little or no general tendency to exaggerate real differences.

8.7. Inaccurate stereotypes

Despite the impressive and surprising evidence of the accuracy of stereotypes, there is some evidence of inaccurate stereotypes. In the United States, an early study found little accuracy in political stereotypes (Judd & Park 1993). More recent research on the stereotypes of the moral beliefs held by liberals and conservatives, found a more mixed picture, of both accuracy and exaggeration (Graham et al. 2013).

A large scale study conducted in scores of countries found that there is also little evidence of accuracy in national stereotypes regarding personality (Terracciano et al. 2005). However, Heine et al. (2008) found that, when behavioral rather than self-report data were used as the criteria, far more evidence of stereotype accuracy emerged for the conscientiousness factor (correlations between consensual stereotypes and behavior averaged about .60). A recent replication (McCrae et al. 2013) addressing many of the issues raised by Heine et al. (2008), but still using self-reports as criteria, again showed almost no accuracy in national character stereotypes. The fairest conclusion, therefore, seems that the (in)accuracy of national character stereotype remains contested and unresolved.

8.8. Strengths and weaknesses of research on the accuracy of racial, ethnic, and gender stereotypes

Stereotype accuracy correlations are among the largest and most replicable effects in all of social psychology (see Table 5), and are typically far larger than the effect sizes routinely interpreted as support for more famous social psychological hypotheses. Several methodological aspects of these studies are worth noting because they bear on the generalizability of these results. Only one (Judd & Park 1993) was based on a nationally representative sample, so that, although evidence of stereotype accuracy is common in the data, the generalizability of those findings is currently unknown. Although most studies assessed the accuracy of undergraduates' stereotypes, several assessed the accuracy of samples of adults (see Tables 2 and 3). Some of the highest levels of accuracy occurred with these adult samples, suggesting that the levels of accuracy

obtained do not represent some artifact resulting from the study of undergraduate samples.

Second, the studies used a wide variety of criteria: U.S. Census data, self-reports, Board of Education data, nationally representative surveys, locally representative surveys, U.S. government reports, and so forth. The consistency of the results across studies, therefore, does not reflect some artifact resulting from use of any particular criteria.

Third, the studies examined a wide range of stereotype content: beliefs about demographic characteristics, academic achievement, personality and behavior. The consistency of the results across studies, therefore, does not reflect some artifact resulting from a particular type of stereotype content.

Fourth, personal discrepancies were the least studied of the four types of accuracy. Thus, the studies do not provide much information about the extent to which individual people's stereotypes deviate from perfection. Because of *wisdom of crowd* effects (Surowiecki 2004), it is likely that consensual discrepancies are more accurate than individual discrepancies, though identifying and understanding sources of individual discrepancies remains an important area for future research.

9. Stereotypes and person perception

People *should* primarily use relevant individuating information, when it is available, rather than stereotypes when judging others, because *usually*, relevant individuating information will be more diagnostic than stereotypes (though not always, see Crawford et al. 2011). This area of research has been highly controversial, with many researchers emphasizing the power of stereotypes to bias judgments (Devine 1995; Fiske & Neuberg 1990; Fiske & Taylor 1991; Jones 1986; Jost & Kruglanski 2002) and others emphasizing the relatively modest influence of stereotypes and the relatively large role of individuating information (Jussim et al. 1996; Kunda & Thagard 1996).

Fortunately, multiple meta-analyses have been performed addressing these issues (see Table 1). The effects of stereotypes on person judgments, averaged over hundreds of experiments, range from 0 to 25. The simple arithmetic mean of the effect sizes in Table 1 is .10.

Furthermore, people do generally rely heavily on individuating information. The one meta-analysis that has addressed this issue found that the effect of individuating information on person perception was among the largest effects found in social psychology, $r = .71$ (Kunda & Thagard 1996). People seem to be generally doing what most social psychologists say they *should* do – they rely on individuating information far more than stereotypes.

But what about the .10 effect of stereotypes? Doesn't that demonstrate inaccuracy? It generally does, at least when the stereotype itself is clearly inaccurate.

But as has just been shown, the empirical research demonstrates considerable accuracy in many stereotypes that have been studied. Therefore, one cannot assume that stereotypes are inaccurate, absent data demonstrating inaccuracy. This means that the .10 bias effect does not necessarily demonstrate inaccuracy for two reasons:

1. Most of the studies examining these issues have examined experimentally created fictitious targets who had no "real" attributes, so that there was no criteria with which to assess accuracy; and

Table 4. *The Accuracy of Other Stereotypes*

Study & Stereotype	Perceivers	Criterion	Predominant Pattern of Discrepancies[1]	Individual Correlations (Personal Stereotype Accuracy)	Aggregate Correlations (Consensual Stereotype Accuracy)
Judd et al. (1991); Beliefs about engineering and business majors at U. of Colorado	116 U. of Colorado business and engineering majors (58 each) randomly selected	Self-reports of those randomly selected 116 business and engineering majors	Accuracy and exaggeration	.63[2]	Not Available
Judd & Park (1993); Democrats' and Republicans' beliefs about one another's political attitudes	An unspecified number of people randomly surveyed as part of the 1976 National Election Study	Self-reported attitudes of self-identified Democrats and Republicans	Accuracy[3] and "liberalism bias": overestimating the liberalism of both parties	.25[2]	Not Available
Cejka & Eagly (1999); Wages in different occupations	189 introductory psychology students	Census data on 80 occupations	"Contraction bias" – overestimating wages in low wage jobs and underestimating wages in high wage jobs	Not Available	.94
Ryan & Bogart (2001); beliefs that sorority members hold about their own and other sororities	136–181 sorority members (attrition over time due to graduation and dropping out of school or sorority)	Self-reports of 85%–100% of the full members (not including pledges and new initiates) of each sorority	Accuracy perceiving their own sorority; exaggeration of stereotypicality when perceiving other sororities	When perceiving their own sorority: .52[2] When perceiving other sororities: .39[2]	Not Available
Clabaugh & Morling (2004) beliefs about the psychological characteristics of ballet dancers and modern dancers	175 ballet dancers, modern dancers, and psychology students	Self-reports of the ballet dancers and modern dancers	Accuracy	Perceiving differences between groups: Ballet perceivers: .67 Modern dance perceivers: .71 Psych student perceivers: .62 Perceiving differences across traits within target groups Ballet perceivers: .59[2] Modern dance perceivers: .67[2] Psych student perceivers: .45[2]	Perceiving differences between groups:[4] Ballet perceivers: .83 Modern dance perceivers: .90 Psych student perceivers: .79

Table 4 Notes:
1. Except where otherwise stated, all discrepancy results occur at the consensual level. Except where otherwise noted: (1) Accuracy means within 10% of the real percentage or within .25 of a standard deviation; (2) exaggeration means the perceived differences between groups exceeded the group differences on the criteria; and (3) underestimation means the perceived differences between groups was smaller than the group differences on the criteria. Only one word is entered in this column when one pattern (e.g., "accuracy") occurred for a majority of results reported. When there was no majority (or the majority could not be determined from their data), the top two results, in order of frequency (most frequent first) are reported here.
2. If the study reported more than one individual level (average) correlation, their correlations were averaged to give an overall sense of the degree of accuracy.
3. Neither percentages nor standard deviations were reported. I characterize the main results of their discrepancy analyses as "accurate" because seven of eight mean discrepancies are all less than 1 scale point (on a seven point scale).
4. These correlations do not appear in the original article, but are computable from data that was reported.

Table 5. *Social Stereotypes are more valid than most social psychological hypotheses*

	Proportion of Social Psychological Effects (%)[1]	Proportion of Consensual Stereotype Accuracy Correlations[2]	Proportion of Personal Stereotype Accuracy Correlations[2]
Exceeding .30	24%	100% (31/31)	86% (18/21)
Exceeding .50	5%	94% (29/31)	52% (11/21)

Table 5 Notes:

1. Date obtained from Richard et al.'s (2003) review of meta-analyses of all of social psychology, including thousands of studies. Effects are in terms of the correlation coefficient, *r*.

2. From Tables 2 through 4: Within parentheses, the numerator is the number of stereotype accuracy correlations meeting the criteria for that row (exceeding .30 or .50) and the denominator is the total number of stereotype accuracy correlations. Because Table 2 summarizes the results for five studies for McCauley et al. (1988), the .94–.98 figure is counted five times. These numbers probably underestimate the degree of stereotype accuracy, because all single entries in Tables 2 through 4 only count once, even though they often constitute averages of several correlations found in the original articles, and because I did not use the *r*-to-*z* transformation (this table *describes* the data, it does not report tests of statistical significance). Furthermore, the simple average of correlations is *conservative,* tending to underestimate the true correlation (Silver & Dunlap 1987).

2. None first demonstrated that the stereotype under study was inaccurate.

All of which raises the question: Can the "biasing" effects of stereotypes *increase* the accuracy of person perception?

9.1. Stereotype "biases" that increase accuracy

When individuating information is unavailable or ambiguous, reliance on an accurate stereotype to make a guess or inference about a target will lead one to be as accurate as possible (e.g., Jussim 1991) and more accurate than will ignoring the stereotype. Whether this is morally desirable and whether acting on such judgments is always legal is a complex issue addressed in the book.

When stereotypes have substantial degrees of accuracy, then, in the absence of completely diagnostic individuating information, people will generally arrive at more accurate judgments when using than when ignoring their stereotypes. This is exactly what has been found in studies of occupational stereotypes (C. Cohen 1981), college dorm stereotypes (Brodt & Ross, 1998), role stereotypes (Macrae et al. 1994), and gender stereotypes (Gosling et al. 2002; Jussim et al. 1996; Madon et al. 1998). Research published after *Social Perception and Social Reality* similarly shows that reliance on stereotypes regarding mothers increases empathic accuracy (Lewis et al. 2012), and that reliance on gay stereotypes increased perceiver's ability to identify whether a target was gay from a photograph of the face alone, if the gay target appeared feminine, but not if the gay target appeared masculine (Stern et al. 2013).

Stereotype "biases" sometimes increase rather than decrease the accuracy of person perception. Because only a handful of studies have addressed this issue, psychologists are not yet in a position to reach broad conclusions about the generality or pervasiveness of this pattern. Nonetheless, the data that has actually assessed person perception accuracy contrast sharply with the common interpretation in social psychology that any influence of a stereotype on person perception is an unjustified distortion (Brown 2010; Fiske 1998; Stangor 1995).

9.2. Why is the evidence of stereotype accuracy and rationality important and useful?

1. Claims, such as "stereotypes are inaccurate" and "it is hard to get people to individuate" are unjustified by existing data. Unqualified claims that stereotypes "exaggerate real differences" are not justified. The consensual stereotypes that have been studied demonstrated extraordinarily high levels of accuracy, so that unqualified suggestions that stereotypes are false cultural myths are not justified. Stereotype accuracy has been obtained by multiple independent research teams. It is also one of the largest effects in all of social psychology.

2. Stereotypes are a central component of how people think about other people. This is part of many core definitions of social psychology and social cognition.

3. Allowing for the possibility that some stereotypes may have some degree of accuracy leads to a coherent understanding of past and future research. Absent a recognition that on both logical and empirical grounds stereotypes may be accurate, past research will be haunted by a scientifically incoherent definitional tautology, which is, that people who believe in stereotypes are in error because stereotypes are erroneous beliefs.

Recognizing the existence of stereotype accuracy raises interesting and important theoretical and empirical questions. When do stereotypes flexibly change in response to changes in social reality and when do they remain rigidly resistant to change? When do people's person perception judgments correspond to, or deviate from, Bayesian rationality? Are the deviations predictable from implicit or explicit prejudice? What characteristics of perceivers and targets (both individuals and groups) moderate degree of (in)accuracy?

Acknowledging accuracy and rationality in stereotypes and stereotyping neither contests nor diminishes the importance of scientific research on stereotype biases or sources of oppression or inequality. Accuracy and bias can and often do co-exist (Jussim 1991; 2012). Accuracy, construed here as a question of degree, rather than something absolute, leaves open ample room for inaccuracy and bias. Demonstrating accuracy rarely precludes the possibility of bias, even socially important ones; demonstrating bias does not preclude high levels of accuracy. And, perhaps even more important, if stereotypes are often reasonably accurate, it highlights the question: what *other* phenomena create or maintain inequality?

10. Conclusions

Unfortunately, space considerations precluded addressing important areas of research, such as detailed evaluations

of componental (e.g., Cronbach 1955; Judd & Park 1993; Kenny 1994) versus non-componental (e.g., Brunswik 1952; Dawes 1979; Funder 1995a) approaches to the assessment of accuracy, and a fuller consideration of confirmation, disconfirmation, and diagnosticity in lay hypothesis testing (e.g., Klayman & Ha 1987). Similarly, this Précis has not addressed accumulation of self-fulfilling prophecies across perceivers (Jussim et al. 1996), or the role of parents (e.g., Madon et al. 2004), rejection sensitivity (e.g., Downey et al. (1998), stereotype threat (Steele & Aronson 1995), and unconscious/automatic processes in producing self-fulfilling prophecies (Chen & Bargh 1997). The role of expectations in attributional (e.g., Kulik 1983) and memory biases (e.g., Stangor & McMillan 1992), too, have been largely omitted here, as has been a broader discussion and critical evaluation of the role of labeling in person perception bias (e.g., Harris et al. 1992). These studies, issues and phenomena are all quite important on their merits, and are addressed in *Social Perception and Social Reality*. The empirical evidence generally provides further support for the tripartite conclusion reached here.

10.1. The "story"

Social psychologists have long emphasized expectancy effects – both biases and self-fulfilling prophecies – as playing a major role in social, educational, and economic inequality. Teacher expectations supposedly disadvantage students from already disadvantaged backgrounds and advantage students from advantaged backgrounds. Because stereotypes are, the story goes, so widely shared and so widely inaccurate, their powerfully self-fulfilling effects will accumulate over time and across perceivers. Because self-fulfilling prophecies are so consistently harmful, damaging self-fulfilling prophecy on top of damaging self-fulfilling prophecy will be heaped upon the backs of those already most heavily burdened by disadvantage and oppression.

10.2. The inadequacy of the "story"

The most benevolent interpretation is that this story is woefully incomplete. Cognitive biases do sometimes lead to expectancy confirmation and expectancies do sometimes lead to self-fulfilling prophecies. But the power of expectations to distort social beliefs through biases, and to create actual social reality through self-fulfilling prophecies is, in general, so small, fragile, and fleeting that it is quite difficult to make an empirical case that such effects constitute a major source of inequality. Hundreds of studies show that biasing effects of expectations and stereotypes on person perception hover barely above zero (see Table 1), that self-fulfilling prophecy effects are often modest and fleeting, and that some of the largest self-fulfilling prophecy effects ever obtained increased rather than decreased the performance of low achieving students.

"The story" can be maintained primarily by selectively overlooking this abundant evidence of weak effects, and by speculative arguments about the implications of existing data.

Concern for combating oppression has inspired a great deal of important research that has yielded profound insights into stereotypes, prejudice, and discrimination. This includes the abundant research on biases and self-fulfilling prophecies. Nonetheless, the evidence

overwhelmingly supports the tripartite pattern: (1) Although errors, biases, and self-fulfilling prophecies in person perception, are occasionally powerful, on average, they tend to be weak, fragile and fleeting; (2) Perceptions of individuals and groups tend to be at least moderately, and often highly accurate; and (3) Conclusions based on the research on error, bias, and self-fulfilling prophecies routinely overstate their power and pervasiveness, and consistently ignore evidence of accuracy, agreement, and rationality in social perception.

10.3. Accuracy dominates bias and self-fulfilling prophecy

Social Perception and Social Reality did not focus on many topics that strongly make the case for reasonableness and accuracy in social perception – such as empathic accuracy, accuracy based on thin slices of behavior, and demonstrations that perceptions and judgments are often approximately Bayesian (Ambady et al. 1999; Griffiths & Tenenbaum 2006; Ickes 1997). Instead, it focused on self-fulfilling prophecies, interpersonal expectancies, and stereotypes precisely because *even those areas* – which have long held a central place in emphases on error and bias – typically provide far more evidence of reasonableness, rationality, and accuracy than they do of error, bias, and social constructionism.

Social perceptions can construct social realities. People are indeed subject to all sorts of imperfections, errors, and biases. Occasionally, such effects are quite large. Sometimes, such effects can have important effects on targets' lives. In general, however, the evidence to date shows that they are generally weak, fragile, and fleeting, and that many social perceptions, including social stereotypes, are often more heavily based on social reality than they distort or create such realities.

Open Peer Commentary

More stereotypes, please! The limits of 'theory of mind' and the need for further studies on the complexity of real world social interactions

Kristin Andrews
Department of Philosophy, York University, Toronto, M6H3N8, Canada.
andrewsk@yorku.ca
http://kristin-andrews.weebly.com/

Abstract: I suggest that the Stereotype Rationality Hypothesis (Jussim 2012) is only partially right. I agree it is rational to rely on stereotypes, but in the complexity of real world social interactions, most of our individuating information invokes additional stereotypes. Despite assumptions to the contrary, there is reason to think theory of mind is not accurate, and social psychology's denial of stereotype accuracy led us toward mindreading/theory of mind – a less accurate account of how we understand other people.

If there is a gang of hoodlums hanging out at the ATM, I'm likely going to wait to take out money. If I invite a girl from the hippy dorm out to dinner, I'd probably check to see if she is vegetarian. In Jussim's (2012) book, his Stereotype Rationality Hypothesis implies that it is rational and reasonable for me to make these decisions – to be accurate we should use stereotypes when there is no relevant individuating information. But when there is individuating information that conflicts with the stereotype, relying on the stereotype would be unreasonable. Maybe I overhear the gang of hoodlums discussing the fate of the Baudelaire siblings. Maybe the girl from the hippy dorm is wearing a leather jacket. If this is useful but not definitive information, I should still rely on the stereotypes. But if I have clear, credible, reliable, and abundant evidence that the hippy dorm girl is a carnivore – maybe she told me – then I can jettison the stereotype.

I suggest that the Stereotype Rationality Hypothesis is only, well, partially right. (That makes it partially wrong.) I agree it is rational to rely on stereotypes, but in the complexity of real world social interactions, most of our individuating information is going to be non-definitive, and even when it seems to be definitive, it seems that way because it invokes additional stereotypes. It is hard to get away from stereotype use, which is why it is essential to investigate the relative accuracy of the different kinds of stereotypes we create and rely on. And I agree that this project has been neglected. In its place arose a strange but wildly popular story about how we come to understand others.

In developmental and comparative psychology, and in philosophy of mind, there has been a tendency to emphasize human accuracy in interpretation of people and prediction of behavior. The notion driving almost 40 years of research in theory of mind, mindreading, and folk psychology is that for accuracy, we need to understand the beliefs and desires of others; it is thought we need to be mindreaders.

Jussim's characterization of social psychology as emphasizing inaccuracy in social perception, and bias in stereotype, helps us understand why developmental and comparative psychologists have focused so much attention on theory of mind/mindreading – namely, if humans are really good at interpreting people and predicting their behavior, and stereotypes are inaccurate when it comes to person perception, they can't play a role in our typical, accurate, folk psychological reasoning. The motivated denial of stereotype accuracy not only led us away from investigating how stereotypes work in human cognition, but because we are largely successful when coordinating behavior with members of our community, the denial of stereotype accuracy led us toward a worse theory of how we understand other people – theory of mind.

Stereotypes can be seen as a kind of inductive reasoning, at least for those stereotypes that arise from one's experience with reality. Theory of mind is a kind of theoretical reasoning, in which we construct theories about the invisible mental causes of human behavior based on limited behavioral evidence. I have argued that there is reason to think inductive reasoning is more accurate than theoretical reasoning in this case (Andrews 2012). Why worry about accuracy in theory of mind? First off, any one piece of behavior can be caused by a number of different mental states. The interviewer might offer the candidate the job because she thinks he is the smartest, the most sociable, or the cutest. She might not even know why she hired him! Thinking about someone's reasons for action – their beliefs – can trigger confirmation biases. Since the holism of the propositional attitudes causes an intractability problem, the relationship between observable behavior and the propositional attitudes that presumably cause behavior would be too complex to allow for timely, much less accurate, prediction of behavior (Zawidzki 2013). The unmitigated search space would be too great. We need to limit search space in order to practically use our theory of mind ability. Apperly (2010) thinks we can limit the search space by appealing to scripts of typical behavior, and Zawidzki thinks that our ancestors' practices of mindshaping, which led to cohesion in our community, and differences between different communities, limits the search space for each community. I endorse another option – we use stereotypes to mark the probabilities of particular actions, beliefs, goals, and so forth. Since I think that the role of theory of mind in understanding other people, and predicting behavior, has been wildly over-exaggerated, I'm sympathetic to Jussim's project of showing how stereotype use can be accurate.

But I don't think he goes far enough.

This is because Jussim thinks "people rely on stereotypes only hesitantly and reluctantly. Only when they have no individuating information or when the individuating information they do have is irrelevant or ambiguous do they use stereotypes to any substantial extent. Stereotypes, apparently, generally function not as a first option but, instead, as a best guess of last resort when there is little else to go on" (p. 381). This claim defends the Stereotype Rationality Hypothesis, and in turn Jussim thinks it is defended by studies that show that with more information, people do not default to a stereotype. He refers us to Locksley et al. (1980), which found that when people lack relevant individuating information they judge a man as more assertive than a woman, but after observing a woman interrupting a dominating student, she is judged as assertive as a man. Findings like this do not challenge the view that the stereotypes operate as a baseline, however. We may find that for women, interrupting a dominating student gets her labeled as assertive, but that for a man, the same behavior gets him labeled as a good teacher. Background knowledge matters, and it can shape how we interpret movements.

The fact that stereotypic judgments don't simply assert themselves as the full and final story doesn't mean that they are not still in play. Indeed, I think that stereotypes are an important part of the practice of folk psychology, which involves constructing and manipulating models of individuals and groups. Our individual models consist of a variety of information, including personality traits, stereotypes, personal history, social role, relationships, situational factors, goals, emotions, and so forth (Andrews 2012). When we are engaged in person perception, we manipulate the model we are building of that individual. Knowing someone's gender identity is part of that model, and knowing someone's cultural background is another. So is knowing what they've done in the past, how messy their office is, and so forth.

Not only does the ability to deviate from a single stereotype in the face of additional information not undermine the importance of stereotypes, but, I'd like to suggest, the additional relevant information will often be based in other stereotypes. Much of what is referred to as individuating information is *nothing more than more stereotypes*. Let's go back to the definitions. Jussim endorses the definition of stereotype as "a set of beliefs about the personal attributes of a social group" (p. 302), and by "social groups" he means living human groups. While racial groups and gender groups are the ones that usually come to mind when talking about stereotypes, this definition reflects a much wider approach to stereotypes, and reflects the diversity of groups that one can form stereotypes about. Indeed, while discussing studies demonstrating evidence of (and against) stereotype accuracy Jussim includes the following social groups: business majors, ballet dancers, sorority members, dorm residents, day/night people (and members of political parties).

We have a definition of stereotypes, and a number of examples of social groups that are stereotyped. We also have a definition of individuating information as "information particular to a target person, rather than his or her group membership … it includes features such as a person's personality, preferences, tastes, attitudes, accomplishments, experiences, competencies, and behaviors" (p. 362). Examples of individuating information of different sorts include: physical appearance, dress, height, facial expressions, test results, student performance, assertive outburst, and tidiness of room or office. I want to challenge the distinction between information particular to a target person and group membership, since we can make social groups out of anything; we can also – and almost certainly do –form stereotypes about

the kinds of people who share these "individuating" properties. We have stereotypes about good-looking people, hipsters, short people, smiley people, good students, and so forth. Stereotypes can also enjoy Venn diagram relationships (or fail to in interesting ways); we may have a consensual stereotype for male and female, and a different unique stereotype for Asian male that does not merely overlap the male and Asian stereotypes. In other cases, we might lack a stereotype for the various salient group memberships, so an Asian male hipster might be seen as more Asian male, or more hipster, depending on the context. Or he might be seen as some overlapping combination of the two stereotypes. What this suggests is that Jussim's Stereotype Rationality Hypothesis underestimates our need for stereotypes in social cognition. It is rational and reasonable for me to use reliable stereotypes in person perception, but I don't need to jettison the stereotype when I gain additional relevant or even "definitive" information about the person, especially since that may just invoke another stereotype. Instead, our deliciously complex cognitive capacities use all the relevant information, allowing us to construct rich models of other people. The hippy girl might love steak, but only when the cow was grass fed.

That brings me to my final issue. Social cognition is a triangle between two individuals and a particular context. The context, which includes the goals of the perceiver, is an important variable when it comes to person perception. The same black youth may appear to be a good student sitting in a college classroom, and a worrying threat on the street – even to the same perceiver. The studies of racial stereotypes that ask teachers to make predictions of their students are limited to the triangle of teacher–student–classroom. The teacher's stereotype of black youth may be accurate when it comes to her students, not only because she is familiar with them, but because she is likely motivated to see them in a particular way (part of the context). So it would be an overgeneralization to say that the teachers have accurate stereotypes of black youth. Rather, teachers may have accurate stereotypes of black youth *in the classroom*. When Republicans and Democrats use wildly inaccurate stereotypes about one another, their motivation to see one another in a certain way is also part of the context. If we care to examine the range of accuracy and inaccuracy in stereotypes (and I hope we do), we need to create a taxonomy of the varieties of stereotype types, one that reflects the order and breadth of the stereotypes themselves and the relationships between them, as well as the contexts in which they are created and used. We need a discipline of stereotype studies.

Are stereotypes accurate? A perspective from the cognitive science of concepts

Lin Bian[a] and Andrei Cimpian[b]

[a]Department of Psychology, University of Illinois, Champaign, IL 61820. [b]Department of Psychology, New York University, New York, NY 10003.
linbian2@illinois.edu   andrei.cimpian@nyu.edu
http://www.psychology.illinois.edu/people/linbian2
http://cimpianlab.com

Abstract: In his 2012 book, Jussim suggests that people's beliefs about various groups (i.e., their stereotypes) are largely accurate. We unpack this claim using the distinction between *generic* and *statistical* beliefs – a distinction supported by extensive evidence in cognitive psychology, linguistics, and philosophy. Regardless of whether one understands stereotypes as generic or statistical beliefs about groups, skepticism remains about the rationality of social judgments.

Jussim is doing psychology a service by prompting careful thinking about a number of topics in his book *Social Perception and Social Reality* (Jussim 2012). We will focus our comments on his

arguments about stereotypes, which he defines as "beliefs about the attributes of social groups" (Précis target article, sect 8.2, para. 1). Going against the seeming consensus in social psychology, Jussim suggests that stereotypes are largely accurate. Here, we unpack this claim using a conceptual distinction from the cognitive psychology of concepts (used widely in linguistics and philosophy as well): namely, the distinction between *generic* and *statistical* beliefs about a category (e.g., Carlson & Pelletier 1995; Cimpian et al. 2010; Leslie et al. 2011; Prasada 2000). Attending to this distinction allows a more precise analysis of the claim that stereotypes are accurate – an analysis that ultimately undermines this claim. As we explain below, if one defines stereotypes as *generic* beliefs about groups, then the evidence Jussim presents (all of which pertains to people's statistical estimates about various group attributes) is largely irrelevant to their accuracy. By virtue of their very structure, generic beliefs have only a weak relation to the statistical criteria that Jussim uses to define accuracy. On the other hand, if one defines stereotypes as *statistical* beliefs about groups, then one may no longer be speaking to the bulk of social judgments. The literature on concepts suggests it is generic – not statistical – beliefs that people use most readily when reasoning about categories and their members. Thus, regardless of how one unpacks Jussim's claims on this topic, the accuracy of people's judgments about groups is still in doubt. In what follows, we first outline the distinction between generic and statistical beliefs and then proceed to discuss its implications for Jussim's arguments.

1. The distinction between generic and statistical beliefs about categories. To begin, consider the statements below:
1. Fewer than 1% of mosquitoes carry the West Nile virus.
2. Mosquitoes carry the West Nile virus.
3. The majority of books are paperbacks.
4. Books are paperbacks.

Statements (1a) and (2a) are statistical: They express a belief about a certain number or proportion of the members of a category. Statements (1b) and (2b) are generic: They express a belief about the category as a whole rather than a specific number, quantity, or proportion. (An easy way to check the latter claim is to try out each of these statements as an answer to a "How many?" question. Only the statistical statements will sound appropriate.)

The fact that generic claims – and the beliefs they express – are not about numbers or quantities has a crucial consequence: It severs their truth conditions from the sort of statistical data that one could objectively measure in the world. In other words, whether people judge a generic belief about a category to be true does not straightforwardly depend on how many members of that category display the relevant attribute. This point is illustrated by the examples above. Both (1a) and (1b) are considered true: Although very few mosquitoes actually carry the West Nile virus, participants judge the generic claim (that MOSQUITOES,[1] as a category, carry the West Nile virus) to be true as well (e.g., Prasada et al. 2013). In contrast, even though (2a) is true – paperbacks are indeed very common – few believe that BOOKS, as a category, are paperbacks (i.e., [2b] is false). Notably, these are not isolated examples. The literature is replete with instances of generic claims that either are judged true despite unimpressive statistical evidence or judged false despite overwhelming numbers (e.g., Carlson & Pelletier 1995; Leslie 2007; 2008). In fact, the rules that govern which generic beliefs are deemed true and which are deemed false are so baroque and so divorced from the statistical facts that many linguists and philosophers have spent the better part of 40 years debating them (e.g., Carlson & Pelletier 1995; Lawler 1973; Leslie 2008).

Importantly, all of the foregoing applies to beliefs about social groups as well (e.g., Cimpian & Markman 2011; Cimpian et al. 2012; Gelman et al. 2004; Leslie 2008; in press; Prasada & Dillingham 2006; 2009; Rhodes et al. 2012). The distinction between statistical and generic beliefs is operative regardless whether

these beliefs concern mosquitoes, books, and other categories of non-human entities, or women, African Americans, Muslims, and other categories of humans. This means that generic beliefs about social groups, just like other generic beliefs, are typically removed from the underlying statistics. For example, more people hold the generic belief that MUSLIMS are terrorists than hold the generic belief that MUSLIMS are female (see Leslie, in press; Leslie et al. 2011). However, there are vastly more Muslims who are female than there are Muslims who are terrorists. Most of us would even be able to report these statistics, as Jussim's own data suggest; yet, awareness of the statistics has little bearing on endorsement of the respective generic beliefs. Again, this is not an isolated example. Compare, for instance, "ASIANS are really good at math" and "ASIANS are right-handed." Many more people would agree with the former generic claim than with the latter, while simultaneously being aware that the statistics go the opposite way.

In summary, people's beliefs about categories are of two types: generic and statistical. Although the accuracy of statistical beliefs depends solely on the data available in the world (e.g., how many Muslims are terrorists vs. women), the judged truth of generic beliefs does not. Rather, generic beliefs can be – and often are – largely discrepant with the reality on the ground.

2. Implications for the argument that stereotypes are accurate. We now go on to spell out the implications of this body of work for Jussim's argument. Regardless of which sort of belief (generic or statistical) he had in mind when claiming that stereotypes are largely accurate – and we will discuss each possibility in turn – the force of his argument is considerably weakened by attending to the evidence presented above.

2.1. Stereotypes as generic beliefs. Let's first assume that stereotypes are generic beliefs about groups. Based on our reading of the literature, this is how many social psychologists conceive of stereotypes, even though they understandably don't use the term *generic*. (Actually, at least one social psychologist we know of *did* use the term: Bob Abelson, whose research team published some fascinating work on "generic assertions" about social groups in the 1960s [e.g., Abelson & Kanouse 1966; Gilson & Abelson 1965].)

If stereotypes are generic beliefs, the evidence Jussim presents – all of which is about people's statistical estimates concerning group attributes – does not legitimize the claim that stereotypes are accurate. As explained above, generic beliefs depend only in a loose sense on the statistics available in the world. As a result, one cannot justifiably claim that generic beliefs are accurate, at least using the commonsense notion of accuracy that Jussim himself operates with. Is it accurate to believe – as most people do – that MOSQUITOES carry the West Nile virus but not that BOOKS are paperbacks? Is it accurate to believe that ASIANS are good at math but not right-handed? Sure, these beliefs may be "accurate" in the sense of being endorsed by many people, but agreement is a poor substitute for accuracy. The accuracy of a belief about a group is more legitimately assessed, as Jussim does, in terms of whether it matches the world statistically.

Based on these considerations, it seems reasonable to claim that, if stereotypes are generic beliefs, then they are often *inaccurate* – out of touch with the statistical reality. This is, of course, what many social psychologists have been claiming all along, and their claims appear justified under this definition of stereotypes. To further drive home this point, we briefly lay out four types of evidence suggesting considerable inaccuracy in people's (generic) stereotypes.

2.1.1. GENERIC BELIEFS ARE OFTEN ENDORSED ON THE BASIS OF SCANT STATISTICAL EVIDENCE As already illustrated, many common generic beliefs are about attributes that are infrequent (e.g., MUSLIMS are terrorists). Notably, generic beliefs based on limited statistical evidence have also been observed in more controlled settings – for example, in laboratory studies where participants were given information about the prevalence of various traits in unfamiliar

categories and then tested for their endorsement of the corresponding generic beliefs (e.g., Brandone et al. 2015; Cimpian et al. 2010). Thus, several types of evidence (obtained with participants spanning the range from 4-year-olds to adults) suggest a disconnect between endorsement of generic beliefs and the underlying statistical facts.

2.1.2. GENERIC BELIEFS ARE RESISTANT TO COUNTEREVIDENCE Related to the point about weak dependence on statistical evidence, once a generic belief is adopted, it is not easily falsified by exposure to evidence that contradicts it. The generic belief that MOSQUITOES carry the West Nile virus is not discarded as soon as a mosquito bite – or tens, or hundreds – fails to infect us. (The same goes for law-abiding Muslims and Asian people who aren't good at math.) Experimental work supports this conclusion as well. For example, 4-year-olds who first heard that PAGONS (an unfamiliar category) are friendly and were then shown a counterexample ended up generalizing this trait to novel pagons as frequently as children who did not see the counterexample (Chambers et al. 2008), which suggests that the counterexample had no effect on their endorsement of the generic belief.

2.1.3. GENERIC BELIEFS GIVE THE IMPRESSION OF STRONG STATISTICAL SUPPORT Even though generic beliefs are often adopted on the basis of little statistical evidence, they nevertheless suggest – for example, when expressed in conversation – that the relevant attributes are almost always present (Brandone et al. 2015; Cimpian et al. 2010). For example, imagine a person who wasn't familiar with how the West Nile virus is transmitted. What would this person infer if they heard that MOSQUITOES carry it? Would they assume that fewer than 1% of mosquitoes in the affected areas are carriers, or perhaps that many more – even a majority – are? The evidence supports the latter possibility. In fact, most participants assume prevalence levels of greater than 90% when exposed to unfamiliar generic facts (Cimpian et al. 2010). There is thus a stark asymmetry at the core of generic beliefs: Although they are largely independent of the underlying statistics at the stage when they are initially formulated, they immediately take on the appearance of being rooted in strong statistical uniformities. For anyone who has little firsthand familiarity with the actual facts, this asymmetry can lead to largely mistaken impressions about the state of the world.

2.1.4. GENERIC BELIEFS ARE ACCOMPANIED BY MISLEADING EXPLANATORY INTUITIONS Generic beliefs have strong explanatory overtones. Specifically, generic claims are consistently interpreted as conveying deep, inherent properties of the relevant categories (e.g., Cimpian & Cadena 2010; Cimpian & Erickson 2012; Cimpian & Markman, 2009, 2011; Gelman et al. 2010; Rhodes et al. 2012; see also Cimpian & Salomon 2014). Thus, when we are exposed to generic beliefs about, say, WOMEN being bad at math or AFRICAN AMERICANS being violent, we are seldom neutral as to the source of the attributes described. Rather, we implicitly adopt an explanatory perspective on these attributes, viewing them as core, non-accidental aspects of what the relevant groups are like deep down. To the extent that many group characteristics are not actually due to their members' biological makeup, this explanatory component of generic beliefs provides additional reasons to be suspicious of their match with the world.

In summary, if stereotypes are conceived as generic beliefs, then the evidence suggests they display a considerable amount of inaccuracy.

2.2. Stereotypes as statistical beliefs. What if we defined stereotypes as statistical beliefs instead? In this case, the evidence Jussim presents seems consistent with the idea that stereotypes are largely accurate. While that may be so, committing to a definition of stereotypes as statistical beliefs about groups may be problematic

for another reason: A recent (yet already widely replicated) finding in the literature on concepts suggests that people often have difficulty reasoning with – manipulating, basing inferences on, etc. – statistical knowledge about categories (e.g., Gelman et al. 2016; Hampton 2012; Hollander et al. 2002; Jönsson & Hampton 2006; Khemlani et al. 2012; Leslie et al. 2011; Leslie & Gelman 2012; Meyer et al. 2011). In many circumstances, people tend to fall back on using *generic* representations, consistent with theoretical arguments that such representations are an easy "default" when reasoning about categories (e.g., Cimpian & Erickson 2012; Gelman 2003; Leslie 2008). Thus, even if people are at some level attuned to the statistical distributions of various attributes across various groups, such statistical knowledge may ultimately be less influential than people's generic beliefs about the same attributes.

We illustrate this point with data from Khemlani et al. (2012), who measured people's expectations about the traits of unfamiliar category members – a ubiquitous type of social judgment (e.g., how strongly do you expect the next Asian person you'll meet to be good at math?). Khemlani et al.'s goal was to compare the extent to which these expectations are rooted in participants' statistical estimates (e.g., what percentage of Asian people do you think are good at math?) versus their generic beliefs (e.g., do you believe that ASIANS are good at math?).[2] The results highlighted the powerful influence of generic beliefs. Although participants' statistical estimates did explain unique variance in their expectations about unfamiliar individuals, their endorsement of the relevant generic beliefs was considerably more predictive of these judgments (with an effect size that was 53% larger). Based on this and other similar evidence, we suggest that people's awareness of the statistical distributions of various traits may be less important to their social judgments than their generic beliefs are. Further research testing this (admittedly bold) claim would be in order, however.

In summary, if stereotypes are conceived as statistical beliefs, they may not provide as much insight into people's actual social judgments as one might expect.

3. Conclusion. Stereotypes are generic or statistical beliefs about the attributes of groups. If they are generic, they are likely not very accurate. If they are statistical, they may not be as influential as our (often inaccurate) generic beliefs about groups. Either way, one remains skeptical about the rationality of everyday social judgment.

NOTES
1. For added clarity, we will occasionally use small caps to indicate when we intend to refer to categories.
2. Khemlani et al. (2012) didn't include this specific item, but we use it here for consistency.

Trustworthiness perception at zero acquaintance: Consensus, accuracy, and prejudice

Jean-François Bonnefon,[a] Astrid Hopfensitz,[b, c] and Wim De Neys[d]

[a]*Toulouse School of Economics, Center for Research in Management, 31015 Toulouse, France;* [b]*Toulouse School of Economics, GREMAQ, 31015 Toulouse, France;* [c]*Institute for Advanced Study, 31015 Toulouse, France;* [d]*LaPsyDE (CNRS Unit 8240), Sorbonne – Paris Descartes University, 75005 Paris, France.*
jfbonnefon@gmail.com hopfensitz@gmail.com wim.de-neys@parisdescartes.fr
https://sites.google.com/site/jfbonnefon
http://hopfensitz.weebly.com
http://www.wdeneys.org

Abstract: Research on trustworthiness perception from faces has unfolded in a way that is strikingly reminiscent of Jussim's narrative in his 2012 book. Jussim's analysis warns us against overemphasizing evidence about prejudice over evidence about accuracy, when both are scant; and reminds us to hold all accounts to the same standards, whether they call on societal biases or true signals.

In the conclusion of his book (Jussim 2012), Jussim mentions recent lines of research on accuracy, and in particular the accuracy of judgments at zero acquaintance, formed from photos of strangers. This comment continues the discussion engaged in these final pages, extending Jussim's argument to recent research on trustworthiness perception. Trustworthiness perceptions are especially interesting because they play a critical role in cooperation, which is itself at the very crossroad of current research in biology, economics, and psychology.

We highlight in this commentary that research on the perception of trustworthiness has unfolded in a way that is strikingly reminiscent of Jussim's overall narrative. First, the bulk of this research has focused on consensus – that is, whether people agree about who looks trustworthy, regardless of whether they are correct or incorrect in this assessment. Second, research on trustworthiness perceptions has emphasized their potential for social injustice over their potential accuracy. Third, it has been speculated that the potential accuracy of trustworthiness perception may be due to self-fulfilling prophecies. Before we unpack each of these three points, we want to stress that our goal is not to argue that trustworthiness perceptions are fully accurate. We actually believe that the accuracy of trustworthiness perceptions is quite limited, and that they can have untoward social consequences. We also believe, though, that there is a kernel of accuracy in trustworthiness perceptions that is of broad and substantial theoretical interest. Accordingly, we wish for the field to give it full attention. As we will illustrate, this will require researchers to avoid several pitfalls vividly described by Jussim.

A large body of research has shown that people robustly agree on who looks trustworthy and who does not (Todorov et al. 2015b). However, studies that established this agreement were typically silent on its accuracy. For example, one paper showed that children as young as 3 or 4 rated the trustworthiness of unknown faces in a way that was consistent with adult ratings of the same faces (Cogsdill et al. 2014). However, because these faces were artificially constructed by a computer model, there was no objective measure of trustworthiness against which these judgments could be compared. This is also true of another striking study which showed that ultrafast trustworthiness ratings after 100 msec exposure to a face were highly correlated with judgments delivered after unrestricted time (Willis & Todorov 2006). Another paper showed that Americans and Japanese gave broadly consistent ratings of the trustworthiness of political candidates, based on their pictures (Rule et al. 2010). In this case the candidates were real persons, but the study did not attempt to correlate their actual behavior to the trust they inspired.

Obviously, the main difficulty in assessing the accuracy of trustworthiness perceptions is to obtain information about the individuals in the pictures, which can serve as a benchmark of trustworthiness. Recent research on trustworthiness perceptions started to offer at least two solutions to this challenge, one based on economic games conducted in the laboratory, and another based on naturalistic decision-making in the courtroom. The first line of research utilizes well-known behavioral economics

protocols such as Public Good games, Prisoners' Dilemmas, and Trust games. The Trust game in particular is well suited to capture the accuracy of trustworthiness perceptions. One variant of this game involves two players, the Investor and the Trustee. The Investor is endowed with an initial sum of $10, and can choose whether to keep that money or transfer it to the Trustee. The only information available to the Investor is a photo of the Trustee. If the Investor transfers the money, the Trustee receives the $10 plus an additional $20. The Trustee then decides whether to keep the whole $30 or to split it equally with the Investor. The players cannot communicate, will not play a second round, and are completely informed about these rules and procedures. In sum, the Investor needs to decide whether to trust the other player to split the money, and the Trustee can decide whether to honor or to abuse this trust. Accordingly, the accuracy of trustworthiness perception can be measured by comparing the decisions of the Investor to the strategies of the Trustees: an Investor would demonstrate perfect accuracy by transferring money to all Trustees whose strategy is to split the money, and not transferring any money to Trustees whose strategy is to keep the money.

Several articles using this protocol showed that Investors did better than chance when deciding who to trust (e.g., Bonnefon et al. 2013; De Neys et al. 2013; 2015; Stirrat & Perrett 2010). However, it should be stressed that accuracy in economics games is quite limited, since Investors rarely make more than 55% correct decisions, where random decisions would be accurate 50% of the time. More importantly, this level of accuracy is only observed with cropped pictures that eliminate all but inner facial features, and disappears with full pictures showing hairstyle and clothing (Bonnefon et al. 2013). Furthermore, while Investors can show limited levels of accuracy when making their decisions about money transfers, they show no such accuracy when explicitly asked to rate the trustworthiness of the Trustees in the pictures (Bonnefon et al. 2013). In sum, this line of research has offered some evidence for the accuracy of trustworthiness detection, but also showed that it was limited in size and subject to strong contextual restrictions.

A second line of research has emphasized legal decision-making contexts, in which pictures depict individuals who stood accused, or were convicted of a crime. This line of research is promising because it can address both the accuracy of trustworthiness perceptions (do people who engage in criminal activities look untrustworthy?) and their potential for social injustice (do people who look untrustworthy receive harsher sentences?). The available evidence is scant on both fronts, though, because very few studies actually measured perceptions of trustworthiness, as opposed to, for example, perceptions of dangerousness. We know of two studies of accuracy, which showed that faces of criminals were judged as less trustworthy than faces of exemplary citizens, but once more to a small degree and subject to contextual restrictions (Porter et al. 2008; Rule et al. 2013). At the same time, we know of two articles documenting prejudiced legal decisions stemming from trustworthiness perceptions. First, Porter et al. (2010) showed that mock juries required less evidence to arrive at a guilty verdict when a defendant looked untrustworthy. Second and most recently, Wilson and Rule (2015) showed that convicted criminals who looked untrustworthy were more likely to have received a death sentence rather than a life sentence. In sum, there are few demonstrations yet that trustworthiness perceptions in legal decision-making contexts are either accurate or noxious. In such a situation, caution is required when characterizing our state of knowledge. We should be careful, for example, not to claim yet that this line of research has robustly established the unreliable and nefarious nature of trustworthiness perceptions (Bonnefon et al. 2015; Olivola et al. 2014, Todorov et al. 2015a). Jussim's analyses, though, warn us of the forceful pull to interpret scant evidence as definitive when it supports bias or prejudice, but weak when it supports accuracy.

In addition to warning us against such asymmetrical interpretations of the data, Jussim highlights problematic double standards

that can crop up in discussions of accuracy, and more specifically when explaining accuracy as the result of self-fulfilling prophecies. In a recent review of inferences from faces, Todorov et al. (2015b) suggested that accurate trustworthiness perceptions may not imply any biological link between morphology and behavior, but could instead reflect a self-fulfilling prophecy stemming from a societal bias. According to this account, people who have the sort of looks that societal biases associate with untrustworthiness would experience discrimination, and become less cooperative as a result, even though they were just as trustworthy to begin with. This is a promising line of thought, but one that Jussim reminds us to examine just as critically as its alternative. Consider for example these four propositions:

Strong Consensus – Because of societal biases, people show strong agreement about who looks untrustworthy.

Strong Prejudice – Because of societal biases, individuals who look untrustworthy suffer from discrimination.

Self-fulfilling prophecy – Individuals who suffer from discrimination become less trustworthy as a result.

No Accuracy – People who look untrustworthy are not actually untrustworthy.

Clearly, this set of propositions is inconsistent, so one proposition must be incorrect. If we adopt the societal bias narrative, that is, [Strong Consensus]+[Strong Prejudice]+[No Accuracy], we must conclude that [Self-fulfilling prophecy] is false. We are not arguing that this is the case: rather, we call attention to Jussim's warning to scrutinize claims about self-fulfilling prophecies to the same extent that we scrutinize claims about accuracy.

In sum, recent advances in the field of trustworthiness perception at zero acquaintance show striking similarities with the research reviewed by Jussim, even though the accuracy of trustworthiness perceptions is not nearly as high as (and much more fragile than) the accuracy of the judgments considered by Jussim. Nonetheless, Jussim's warnings apply well to this developing field of research: We must remain careful not to overemphasize evidence about prejudice over evidence about accuracy, when both are scant; and we must be careful to hold all accounts to the same standards of evidence, whether they call on societal biases or true morphological signals.

Perceptions versus interpretations, and domains for self-fulfilling prophesies

Jennifer Church

Department of Philosophy, Vassar College, Poughkeepsie, NY 12604.
church@vassar.edu   http://faculty.vassar.edu/church/

Abstract: I suggest two ways in which Jussim's extensive discussion (in his 2012 book) could be enriched: first, by exploring the distinction between perceptual judgments and interpretive judgments; second, by considering the power of expectations to be self-fulfilling in the case of young children and the case of fragile egos.

Lee Jussim's book (Jussim 2012) argues – against current orthodoxy – that the judgments we make about the people we actually encounter are largely unaffected by faulty expectations we have regarding those people. Furthermore, he argues, cultural stereotypes are mostly correct; so even in cases where cultural expectations do affect the judgments we make about a particular individual, those expectations are more likely to increase rather than decrease our knowledge of that person.

Jussim's use of the term "perception" is very broad. Any judgment we make about someone that we observe is considered a "person perception." Such judgments can be more or less specific,

more or less confident, more or less evaluative, more or less explanatory, and more or less lasting. Jussim distinguishes perceptions from mere *associations* – suggesting that students may associate a lecturer with warmth versus coldness rather than perceive that lecturer as warm versus cold. But the format of many of the studies he reviews – insofar as they force subjects to choose between competing attributions – tends to obliterate this distinction. The distinction between *interpretations* and perceptions is also lost here. Many might wonder whether certain subjects interpreted rather than perceived an African-American's shove as more violent than a white person's shove, interpreted rather than perceived an essay attributed to John as better than (the same) essay attributed to Joan, interpreted rather than perceived one patient's behavior as introverted and another patient's similar behavior as extroverted. (Jussim usefully highlights some flaws in these influential studies, but neither he nor they distinguish between interpretations and perceptions.) To the extent that interpretations are automatic and unreflective, the resulting judgments may have the experiential immediacy of perceptions; but many interpretations are more tentative and more indirect than perceptions. It would be interesting, then, to distinguish between cases in which expectations affect the very look of some behavior (e.g., the physical force of a shove) and cases in which expectations merely affect the interpretation of that behavior (e.g., the degree of threat posed by the shove, its contextual significance). Insofar as a correction is called for, changing our interpretations is probably easier than changing our perceptions.

Jussim maintains that if an individual is presented to us in enough detail, our antecedent expectations and associations actually do not have much effect on our judgments about that individual. He defends this claim through an extensive review of the literature on teachers' judgments regarding the intelligence of their students, for example – a review that shows teachers' judgments to be largely correct as long as they are given sufficient time to get to know their students. If we are presented with very little information about an individual, however, our judgments about that individual will be affected by our antecedent expectations and associations – *but* that is as it should be, according to Jussim, since (with some notable exceptions) our antecedent expectations and associations tend to be more accurate than not. After all, the information that teachers receive about their entering students is usually correct.

Jussim is fully aware of the charge that our social expectations, rather than simply *tracking* the truth, tend to *create* the truth; they become self-fulfilling prophesies. Although there is some variation across domains (the influence of teacher expectations being greater for African-Americans, for low-income students, and for previously low-achievers), his review of the data suggests that expectations actually alter the behavior of only ten percent of the targets of those expectations. Even ten percent is not insignificant, especially when it affects opportunities in education and in jobs; and, of course, the costs of self-fulfilling prophesies are likely to be compounded over time. Jussim notes that our self-conceptions tend to limit our susceptibility to others' expectations, but surely our self-conceptions are themselves heavily influenced by parental expectations (none of the studies discussed in this book cover very early childhood or parental expectations). Furthermore, the self-conceptions of many people are quite fragile (none of the studies cover people known to have a personality disorder, for example).

Jussim makes a good case for thinking that self-fulfilling prophesies are not nearly as powerful or pervasive as the literature suggests. In my opinion, however, the value of his book lies less in its reining in of exaggerated claims about the power of expectations than in its contribution to sorting out, more precisely, where and when expectations do distort our judgments and what forms of intervention (e.g., longer and more detailed exposure) are best suited to counter these distortions.

The expressive rationality of inaccurate perceptions

Dan M. Kahan

Yale Law School, P.O. Box 208215, New Haven, CT 06510.
dan.kahan@yale.edu
www.culturalcognition.net/kahan

Abstract: This commentary uses the dynamic of identity-protective cognition to pose a friendly challenge to Jussim (2012). Like other forms of information processing, this one is too readily characterized as a bias. It is no mistake, however, to view identity-protective cognition as generating inaccurate perceptions. The "bounded rationality" paradigm incorrectly equates rationality with forming accurate beliefs. But so does Jussim's critique.

Introduction. My aims in this commentary are two-fold. One is to remark my gratitude to Jussim by attempting to add some value to the enriching scholarly discussion he has initiated in his book (Jussim 2012). The other is to entice him, if possible, into addressing a body of research that seems quite relevant to his topic but that he unfortunately neglects.

That research examines *identity-protective cognition* (Sherman & Cohen 2006). Jussim disclaims interest in "political beliefs and ideologies," because those, in his view, reflect "moral and philosophical issues," not matters of "objective social reality" on which "issues of accuracy" in perception arise (p. 9). But what the study of identity-protective cognition shows is that "political beliefs," "ideologies," "cultural worldviews," and so forth, are themselves *sources* of inaccurate perceptions of "objective" facts. Group attachments, according to this work, distort all manner of information processing – from logical inferences to assessments of expertise; from recollection of events to brute sense impressions. These dynamics inform myriad factual conflicts – over the contribution of human activity to global warming, the deterrent efficacy of the death penalty, and the impact of the HPV vaccine on teenage promiscuity, among others (Kahan 2010).

I'll elaborate on why I think this research supplies such fertile ground for engaging Jussim's concerns. Indeed, the prevailing characterization – I'd say mischaracterization – of identity-protective cognition can be used to buttress the charges Jussim makes against the "bounded rationality" paradigm (my words for his target) that animates contemporary decision science. The denigration of reason the field is guilty of here, however, doesn't reflect a mistake about the antagonism between identity-protective cognition and "accuracy." Instead, it derives from the assumption that forming "accurate perceptions" is the only thing people use their reason for – an offense for which Jussim himself might justly be indicted as a co-conspirator. (Remember, I'm trying to lure him in!)

Identity-protective cognition and accuracy. Identity-protective cognition is a form of motivated reasoning – an unconscious tendency to conform information processing to some goal collateral to accuracy (Kunda 1990). In the case of identity-protective cognition, that goal is protection of one's status within an affinity group whose members share defining cultural commitments. Sometimes (for reasons more likely to originate in misadventure than conscious design) positions on a disputed societal risk become conspicuously identified with membership in competing groups of this sort. In those circumstances, individuals can be expected to attend to information in a manner that promotes beliefs that signal their commitment to the position associated with their group (Kahan 2015b; Sherman & Cohen 2006).

We can sharpen understanding of identity-protective reasoning by relating this style of information processing to a nuts-and-bolts Bayesian one. Bayes's Theorem instructs individuals to revise the strength of their current beliefs ("priors") by a factor that reflects *how much more consistent* the new evidence is with that belief
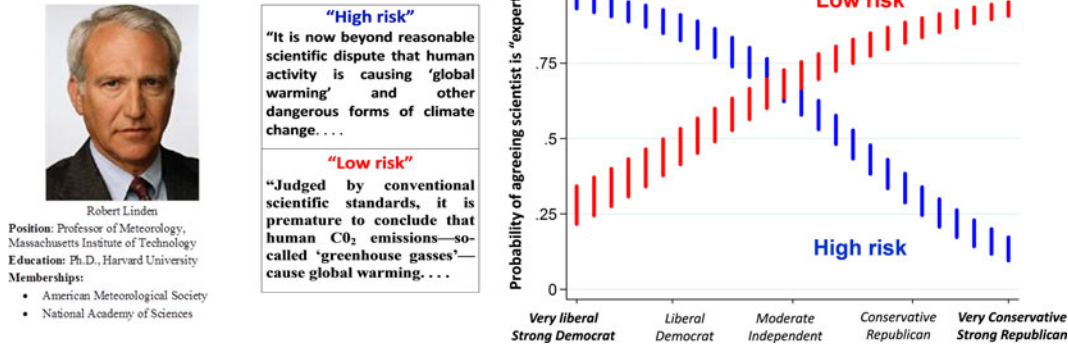
Figure 1 (Kahan). Identity-protective cognition of scientific expertise. Perceptions of highly credentialed scientists' expertise across various disputed issues was highly conditional on fit between congruence of position attributed to the scientists and the subjects' political outlooks. Colored bars reflect 0.95 confidence intervals ($N = 1336$). Adapted from Kahan et al. (2011).

being true than with it being false. Conceptually, that factor – the likelihood ratio – is the *weight* the new information is due. Many cognitive biases (e.g., base rate neglect, which involves ignoring the information in one's "priors") can be understood to reflect some recurring failure in people's capacity to assess information in this way.

That's not quite what's going on, though, with identity-protective cognition. The signature of this dynamic isn't so much the failure of people to "update" their priors based on new information, but rather, the role that protecting their identities plays in fixing the *likelihood ratio* they assign to new information. In effect, when they display identity-protective reasoning, individuals unconsciously adjust the weight they assign to evidence based on its congruency with their group's position (Kahan 2015a). If, for example, they encounter a highly credentialed scientist, they will deem him an "expert" worthy of deference on a particular issue – but *only* if he is depicted as endorsing the factual claims on which their group's position rests (Fig. 1) (Kahan et al. 2011). Likewise, when shown a video of a political protest, people will report observing violence warranting the demonstrators' arrest *if* the demonstrators' cause was one their group opposes (restricting abortion rights; permitting gays and lesbians to join the military) – but not otherwise (Kahan et al. 2012a).

In fact, Bayes's Theorem doesn't say how to determine the likelihood ratio – only what to do with the resulting factor: multiply one's prior odds by it. But in order for Bayesian information processing to promote accurate beliefs, the criteria used to determine the weight of new information must themselves be calibrated to truth-seeking. What those criteria are might be open to dispute in some instances. But clearly, *whose position* the evidence supports – ours or theirs? – is never one of them.

The most persuasive demonstrations of identity-protective cognition show that individuals opportunistically alter the weight they assign one and the same piece of evidence based on experimental manipulation of the congruence of it with their identities. This design is meant to rule out the possibility that disparate priors or pre-treatment exposure to evidence is what's blocking convergence when opposing groups evaluate the same information (Druckman 2012).

But if this is how people assess information outside the lab, then opposing groups will *never* converge, much less converge on the *truth*, no matter how much or how compelling the evidence they receive. Or at least they won't so *long as* the conventional association of positions with loyalty to opposing identify-defining groups remains part of their "objective social reality."

Bounded rationality? Frustration of truth-convergent Bayesian information processing is the thread that binds together the diverse collection of cognitive biases of the bounded-rationality

paradigm. Identity-protective cognition, we have seen, frustrates truth-convergent Bayesian information processing. Thus, assimilation of identity-protective reasoning into the paradigm – as has occurred within both behavioral economics (e.g., Sunstein 2006; 2007) and political science (e.g., Lodge & Taber 2013) – seems perfectly understandable.

Understandable, but wrong!

The bounded-rationality paradigm rests on a particular conception of dual-process reasoning. This account distinguishes between an affect-driven, "heuristic" form of information processing, and a conscious, "analytical" one. Both styles – typically referred to as System 1 and System 2, respectively – contribute to successful decision making. But it is the limited capacity of human beings to summon System 2 to override errant System 1 intuitions that generates the grotesque assortment of mental miscues – the "availability effect," "hindsight bias," the "conjunction fallacy," "denominator neglect," "confirmation bias" – on display in decision science's benighted picture of human reason (Kahneman & Frederick 2005).

It stands to reason, then, that *if* identity-protective cognition is properly viewed as a member of bounded-rationality menagerie of biases, it, too, should be most pronounced among people (the great mass of the population) disposed to rely on System 1 information processing. This assumption is commonplace in the work reflecting the bounded-rationality paradigm (e.g., Lilienfeld et al. 2009; Westen et al. 2006).

But actual *data* are to the contrary. Observational studies consistently find that individuals who score highest on the Cognitive Reflection Test (CRT) and other reliable measures of System 2 reasoning are not less polarized but *more* so on *facts* relating to divisive political issues (e.g., Kahan et al. 2012b). Experimental data support the inference that these individuals *use* their distinctive analytic proficiencies to form identity-congruent assessments of evidence. When assessing quantitative data that predictably trips up those who rely on System 1 processing, individuals disposed to use System 2 are much less likely to miss information that supports their groups' position. When the evidence contravenes their group's position, these same individuals are better able to explain it away (Kahan et al. 2013).

Indeed, one study that fits this account addresses a matter that Jussim does touch on in passing: the tendency of partisans to form negative impressions of their opposing number (Fig. 2). In the study, subjects selectively credited or dismissed evidence of the validity of the CRT as an "open-mindedness" test depending on whether the subjects were told that individuals who held their political group's position on climate change had scored higher or lower than those who held the opposing view. Already large among individuals of low to modest cognitive reflection, this
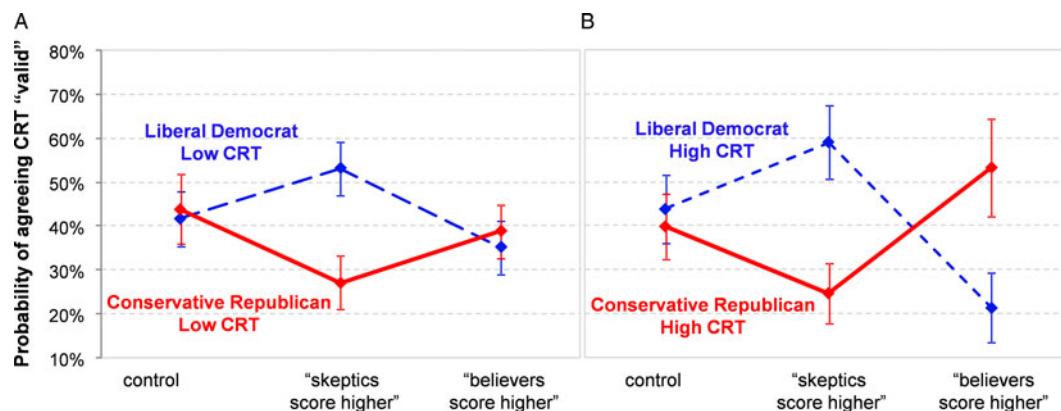
Figure 2 (Kahan). "System 2" identity-protective cognition. Subjects' assessment of the evidence of the validity of the Cognitive Reflection Test (CRT) as an "open-mindedness" test was conditional on congruence of experimentally manipulated information on who scored higher – "climate-change skeptics" or "believers" – and subjects' political identities. This effect was most pronounced among subjects scoring higher on the CRT itself. Derived from multivariate regression. Predictors for "low" and "high" CRT set at 0 and 2, respectively. CIs reflect 0.95 level of confidence (N=1750). From Kahan (2013).

effect was substantially more pronounced among those who scored the highest on the CRT (Kahan 2013).

The tragic conflict of expressive rationality. As indicated, identity-protective reasoning is routinely included in the roster of cognitive mechanisms that evince bounded rationality. But where an information-processing dynamic is consistently shown to be magnified, not constrained, by exactly the types of reasoning proficiencies that counteract the mental pratfalls associated with heuristic information processing, then one should presumably update one's classification of that dynamic as a "cognitive bias."

In fact, the antagonism between identity-protective cognition and perceptual accuracy is not a consequence of too little rationality but too much. Nothing an ordinary member of the public does as consumer, as voter, or participant in public discourse will have *any* effect on the risk that climate change poses to her or anyone else. Same for gun control, fracking, and nuclear waste disposal: her actions just don't matter enough to influence collective behavior or policymaking. But given what positions on these issues signify about the sort of *person* she is, adopting a mistaken *stance* on one of these in her everyday interactions with other ordinary people could expose her to *devastating* consequences, both material and psychic. It is *perfectly* rational under these circumstances to process information in a manner that promotes formation of the *beliefs* on these issues that express her group allegiances, and to bring all her cognitive resources to bear in doing so.

This account roots identity-protective cognition in the theory of "expressive rationality," a rival to *both* the rational actor model in conventional economics *and* the bounded-rationality paradigm (Anderson 1993). The basic tenet of this account is that individuals derive "expressive utility," intrinsic and instrumental, from actions that, against the background of social norms, convey their defining group commitments (Akerlof & Kranton 2000). Actions of this sort – like pretty much any other (Peirce 1877) – are reliably enabled by appropriate beliefs. Identity-protective cognition is the style of reasoning for rationally engaging information that is relevant to identity-expressive beliefs, particularly when that information has no other real relevance to an individual's life.

Of course, when everyone uses their reason this way at once, *collective* welfare suffers. In that case, culturally diverse democratic citizens won't converge, or converge as quickly, on the significance of valid evidence on how to manage societal risks. But that doesn't change the social incentives that make it rational for any individual – and hence every individual – to engage information in this way. Only some collective intervention – one that effectively dispels the conflict between the individual's interest in forming identity-expressive risk perceptions and society's

interest in the formation of accurate ones – could (Kahan et al. 2012b; Lessig 1995).

Rationality≠accuracy (necessarily). Like the scholarship Jussim criticizes, the standard view of identity-protective cognition force fits a species of human perception into the bounded-rationality template. But unlike the larger intellectual project that Jussim attacks, the mistake that doing so involves here does not reflect the field's commitment to denigrating perceptual "accuracy."

Obviously, it isn't possible to assess the "rationality" of any pattern of information processing unless one gets what the agent processing the information is trying to accomplish. Because forming accurate "factual perceptions" is not the *only* thing people use information for, a paradigm that motivates empirical researchers to appraise cognition exclusively in relation to that objective will indeed end up painting a distorted picture of human thinking.

But worse, the picture will simply be wrong. The body of science this paradigm generates will fail, in particular, to supply us with the information a pluralistic democratic society needs to manage the forces that pit citizens' stake in using their reason to know what's known and using it to *be* who they are as members of diverse cultural groups against one another (Kahan 2015b).

The dominance of the bounded-rationality paradigm creates this risk. But a counterprogram that seeks to vindicate human rationality by relentlessly defending the "accuracy" of "perceptions" without addressing how individuals use reason to protect their group identities won't remedy the former's defects.

Realism and constructivism in social perception

John F. Kihlstrom

Department of Psychology, University of California, Berkeley, Berkeley, CA 94720-1650.

jfkihlstrom@berkeley.edu   http://socrates.berkeley.edu/~kihlstrm

Abstract: Jussim's critique of social psychology's embrace of error and bias is needed and often persuasive. In opting for perceptual realism over social constructivism, however, he seems to ignore a third choice – a cognitive constructivism which has a long and distinguished history in the study of nonsocial perception, and which enables us to understand both accuracy and error.

The purpose of perception is action (to paraphrase Bruner 1957b), and so it is important that our percepts be reasonably accurate. And evidently they are, or else we would not have survived so long as a species and as individuals (or maybe the Universe is just very forgiving). Nevertheless, over the last few decades many social psychologists have come to embrace the view that social perception is riddled with error and bias – a framework that I have dubbed the "People Are Stupid School of Psychology" (Kihlstrom 2004b; see also Kihlstrom 2004a; 2004c; 2008). The tenets of "stupidism" may be summarized as follows:

1. *People are fundamentally irrational*: In the ordinary course of everyday living, we do not think very hard about anything, preferring heuristic shortcuts that lead us astray; and we let our feelings and desires get in the way of our thought processes.

2. *We are on automatic pilot*: We do not pay much attention to what is going on around us, and to what we are doing; as a result, our thoughts and actions are inordinately swayed by first impressions and immediate responses; free will is an illusion.

3. *We don't know what we are doing*: When all is said and done, our behavior is mostly unconscious; the reasons we give are little more than post-hoc rationalizations, and our forecasts are invalid; to make things worse, consciousness actually gets in the way of adaptive behavior.

4. *We don't know what we want:* We are extremely poor at predicting how we will feel about various eventualities, and we are so poor at making choices that we might just as well let others choose for us – largely because, again, we don't have accurate introspective access to our beliefs, feelings, and desires. One is reminded of the joke about the two behaviorists who had sex: one said to the other: "It was good for you, but was it good for me?"

5. *We don't even know how stupid we are:* Because of the limitations on our cognitive abilities, we fail to appreciate when our judgments and behaviors are less than optimal.

Stupidism – to the extent that it is not just a figment of my imagination – was in some respects an unanticipated consequence of a very reasonable program of research which employed evidence of errors to produce a more realistic description of how people actually make judgments and decisions. But there are even deeper roots of social psychology's preference for the thoughtless, unconscious, automatic, biased, and error-prone. Somehow, fairly early on, social psychology got defined as the study of the effect of the social situation on the individual's experience, thought, and action (G. W. Allport 1954a; see also Kihlstrom 2013). And, perhaps in a quest for institutional approval, it got tied to the functional behaviorism of Watson and Skinner (Zimbardo 1999). Think, for example, of the classic work on the "Four A's" of social psychology: attitudes, attraction, aggression, and altruism; think, too, of the history of research on conformity and compliance, from Asch and before, to Milgram and beyond. In each case, the experimenter manipulates some aspect of the environment, and observes its effect on subjects' behavior. Sometimes there were inferences about intervening mental states, but not very often – otherwise, the cognitive revolution in social psychology wouldn't have been a revolution.

Occasionally there have been attempts at correction (e.g., Gigerenzer et al. 1999; Hastie & Dawes 2001; Krueger & Funder 2004; Malle 2006). For example, the self-other difference in causal attribution appears not to occur, at least in the form that is usually claimed for it; and, by extension, the "Fundamental Attribution Error" turns out to be problematic, too (someone, not me, once quipped that the Fundamental Attribution Error isn't an error, but it *is* fundamental). Still, errors and biases are so much a part of the current social-psychological *Zeitgeist* that these critiques have not, seemingly, had much impact on how psychologists think about social interaction. Now comes Jussim (2012; and present *BBS* target article) with the heavy artillery, systematically dismantling most of the canonical claims for the power of error and bias. And pretty convincingly, too.

But it is one thing to argue for the fundamental accuracy of social perception, and quite another thing to argue for a particular view of perceptual realism, and against a particular view of constructivism. Social constructivism shouldn't be abandoned entirely – not least because, despite the exaggerations of so much constructivist theory (Hacking 1999), so much of the social world *is* a social construction (Searle 1995; 2011). But Jussim seems to opt for some version of perceptual realism, which is not the only alternative.

Historically, the study of perception has been framed by two competing paradigms (Epstein 1979; Epstein & Park 1964; for a complete review, see Palmer 1999).The most influential approach, beginning in the 19th century with Helmholtz and continuing in the 20th with Hochberg, Gregory, and Rock, is, indeed, constructivist in nature. Helmholtz and the others argued that stimulus information is vague, fragmentary, and ambiguous, and that the perceiver must, in Bruner's (1957a) phrase, "go beyond the information given" by the stimulus by drawing on knowledge, memory, expectations, and inferences (even unconscious inferences) to form a mental representation of that is the most likely interpretation of stimulus information – an interpretation that may be inaccurate in important respects. Perceptual constructivism has been challenged by Gibson's theory of direct perception, or ecological optics, which holds that all the information needed for perception is provided by the stimulus environment, and that our perceptual apparatus evolved to pick up just that information which allows us to perceive the world the way it really is. Some former constructivists were persuaded by this point of view (Neisser 1976a; 1976b), and some advocates have gone so far as to argue that there are no "top-down" cognitive influences on perception at all (Firestone & Scholl 2016).

Jussim, by emphasizing realistic accuracy over constructivist error and bias, seems to incline toward the Gibsonian view. A Gibsonian approach has also been embraced by some other social psychologists, (e.g., McArthur & Baron 1983), and indeed there is a great deal about social perception that can be studied from the ecological point of view. There is a lot of information in the stimulus field, and its background context, and it seems particularly appropriate when analyzing facial emotion, lie detection, and other aspects of person perception which may be largely based on physical appearance and gesture. At the same time, there is a lot of evidence favoring the (Helmholtzian) constructivist view, and some of it even comes from errors on these very tasks. It seems that person perception *is* prone to inaccuracy, after all.

For example, people do not seem to be particularly accurate at detecting deception, largely because their naive theories of deception lead them to pick up on the wrong cues (e.g., Bond & DePaulo 2006; 2008; Hartwig & Bond 2011; 2014). Our "gaydar" does not appear to be that good, either, once we take account of base-rates (e.g., Bruno et al. 2014; Lyons et al. 2014; Poderl 2014) – a problem that bedevils the detection of deception as well. Even our accuracy at reading emotion from facial expressions – which seems the likeliest candidate, in the social domain, for an evolved, hard-wired, perceptual module of the Gibsonian sort – seems to be inflated by such method factors as the use of a forced-choice response format (e.g., Hassin et al. 2013; Nelson & Russell 2013).

Although Jussim is right to be skeptical of a radical *social* constructivist approach which denies the existence of an independent reality, it would seem that the nature of social reality invites a *perceptual*-constructivist approach. Bruner and Tagiuri (1954), in an early analysis of person perception, listed a number of factors that influence perceptual organization, including the stimulus array itself (a prescient nod toward Gibson), but also selective attention, linguistic categories, and especially the internal state of the perceiver – his mental set, or expectations, and his own emotional and motivational state. Much as the stimulus array for nonsocial perception consists of the energy (light waves, sound waves, etc.) that radiates from the distal stimulus, falls on the sensory surfaces, and is transduced by receptor organs into neural impulses, the stimulus array for person perception also consists of the

person's appearance and behavior, as well as the language that others use to describe the person. Much more so than the nonsocial case, the interpersonal stimulus is almost inherently vague, fragmentary, and ambiguous, affording a great deal of room for divergent interpretations. Often, the environment provides conflicting cues as to the nature and activity of the stimulus person, increasing the difficulty of forming an accurate perceptual representation of reality. Moreover, the social situation provides plenty of leeway for emotion and motivation to bias perceptual-cognitive processes (Abelson1963; Bruner 1992; Bruner & Goodman 1947; Bruner & Klein 1960). While all theories of perception, including Gibson's, assume that the context makes a great deal of difference to perception, context effects are arguably even more salient in the social world, so that the same person, or behavior, may be perceived differently, depending on the situation – which is itself inherently vague, fragmentary, and ambiguous. For all these reasons, the social perceiver must fill in the gaps, and resolve the ambiguities, by making inferences about the stimulus given his knowledge, expectations, and beliefs. This is the expressly cognitive contribution of the perceiver to perception; and in this constructive activity lies the possibility for error and bias to occur.

Brunswik's (1955a; 1955b) lens model offers one framework for conceptualizing these constructive processes. The stimulus may provide ecologically valid cues as to its nature, but the perceiver has to utilize those cues in order to form an accurate mental representation of the stimulus; if the perceiver utilizes the wrong cues, or weights valid cues incorrectly, the representation will be inaccurate or biased. Neisser's (1976a) idea of the perceptual cycle offers a similar framework. The stimulus provides information to the perceiver, but the perceiver's exploration of the stimulus is guided by internal cognitive schemata; eventually, the cycle of assimilation and accommodation should result in an accurate mental representation of reality – provided, of course, that the stimulus is richly informative in the first place, and the cycle is allowed to run to completion. Neither is always the case, especially in the social domain – hence, the intrusion of error and bias.

Jussim is right to offer a corrective to the current emphasis on error and bias in social perception – though, as my examples indicate, there remain plenty of opportunities for error and bias as well. This is the price we pay for living in a world in which perception and cognition occur under conditions of uncertainty. As with the literature on bounded rationality exemplified by the program of research on judgment heuristics, anomalies of perception and cognition can tell us a great deal about how social perception actually works. More important, though, the choice Jussim offers between perceptual realism and social constructivism is a false one, because these are not the only choices available. There is at least a third way of *cognitive* constructivism, which allows us to understand both accuracies and inaccuracies in perception, where and when they occur.

An evolutionary approach to accuracy in social perception

Anthony C. Little

Department of Psychology, University of Bath, Bath FK9 4LA, United Kingdom.
a.little@bath.ac.uk
www.alittlelab.com

Abstract: An evolutionary approach highlights that accuracy should be expected over error because selection pressures will have shaped social perception to be functional. Behaviour is extremely complex and so it is unlikely that observers will be perfectly accurate, but an evolutionary view strongly predicts that people will behave as rational observers and in many cases social perception should favour adaptive responses.

Jussim's main thesis is that much research in social psychology has overemphasised error while ignoring accuracy in social perception (Jussim 2012). Jussim's eloquent argument is squarely aimed at social psychologists, and he clearly articulates methodological and interpretation issues with often cited studies in favour of error and self-fulfilling prophecies. He also highlights general research issues that are relevant across science, such as careful research design, the importance of replications (or lack thereof), and the need to focus on effect sizes rather than statistical significance. Indeed, it is the small effect sizes found across studies and meta-analyses (Chapters 6–9) that should make it difficult for any reasonable scientist to persist with the notion that error dominates accuracy and that self-fulfilling prophecies have, on average, powerful effects on other's behaviour. Likewise, the accuracy found across studies (Chs. 17 and 18) makes it clear that accuracy is real and worth studying.

What Jussim is arguing against largely stems from deep rooted ideology in social psychology (as he discusses in Chs. 2 and 10). In other areas of science, however, the argument that social perception should be accurate would not be considered controversial and, in fact, may be taken as an assumption. Specifically, evolutionary or biological approaches examine behaviour in many different species addressing how these behaviours are adaptive and functional. Of course, while it is naive to assume that all behaviour is adaptive, it would be surprising to expect error to dominate accuracy from this view point.

For any organism, the fundamental problems are survival and reproduction, and these often encompass navigating a social world in which individuals, for example, compete, cooperate, and find a mate in a pool of other individuals. Consequently, non-human animals demonstrate a variety of adaptations to assess the behaviour of others and there is a large literature concerning the evolution of animal signals used to communicate, among other things, behaviour (Krebs & Dawkins 1984). For example, in antagonistic encounters with other individuals of the same species, the primary decision to be made is to fight or not. Given the potential costs, injury or even death, we might expect that animals will possess perceptual/cognitive adaptations to assess the risks by assessing fighting ability in their opponents (Enquist & Leimar 1983; Parker 1974). Indeed, there is evidence that animals such as mice and crabs make adaptive decisions about fighting based on the assessment of the relative fighting abilities of their opponents (L. M. Gosling et al. 1996; Hazlett 1996). Accuracy could arise because specific traits of some species can be related to fighting success. For example, variable black facial patterns in paper wasps are related to body size and social dominance (Tibbetts & Dale 2004), and in gelada baboons high status males have the reddest chests (Bergman et al. 2009). Individuals could base their decisions to fight on appearance linked cues to fighting ability allowing them to compete when likely to win and to avoid costly agonistic interactions when likely to lose.

An evolutionary view then has a prediction concerning accuracy and inaccuracy in social perception because this view tends to assume that perception serves an adaptive function: The external world is full of information that can be used to guide adaptive and functional behaviours (Zebrowitz-McArthur & Baron 1983). If, in our evolutionary past, information were presented about a person's behaviour (e.g., likelihood of cooperation or aggression) in any way, then an advantage would accrue to those who utilised these cues and those individuals would leave more genes behind in the next generation. An individual may not last long if they make too many errors in important social domains and that individual may not leave many offspring compared to an individual who is able to more accurately predict the behaviour of others. Of course, this does not mean stimulus-perception links should be innate, selection pressures could favour accuracy or adaptive behaviour via learning or calibration mechanisms.

Other researchers have emphasised that social perception is functional rather than error prone. The evolutionary view has much in common with an ecological approach (Gibson 1979),

which has an emphasis that perception is for doing. In fact, Gibson's approach highlights the utility of perception, including in the social domain, and he noted that some human behaviour is of critical importance to survival and reproduction and people should pay special attention to them – factors such as sex, fighting, and cooperation. Indeed, one aspect of an evolutionary approach is that we might predict highest accuracy in judgements that are most relevant in evolutionary terms. For example, alongside accuracy in terms of personality attribution, an evolutionary approach also highlights accuracy for judgements of traits such as cooperation, aggression, current health, and sexual behaviour.

In terms of accuracy, clearly, some stereotypes are accurate. Like the questions at the start of Ch. 15, I ask my class each year to imagine a bank robber and overwhelmingly they imagine men, not women, and are accurate because bank robberies are mainly committed by men. Jussim presents a convincing case for the accuracy of stereotypes about groups and also notes the accuracy of judgements of individuals. In support of his argument for accuracy there is an increasingly large literature demonstrating such accurate judgements from minimal information. Early research using a "zero acquaintance" paradigm (Ch. 20) in which unacquainted individuals without interaction rated each other on personality traits demonstrated self-other correspondence for various personality traits (Albright et al. 1988; Kenny et al. 1994; Passini & Norman 1966). Using minimal information, self-other correspondence has also been found when observers rate static face photographs for personality (Little & Perrett 2007) and when guessing political inclinations (Rule & Ambady 2010). Accuracy is not limited to judging the person themselves either: judges can accurately infer some personality traits from brief viewing of targets' bedrooms and offices (S. D. Gosling et al. 2002).

There is mounting evidence that people are somewhat accurate in judging the behaviour of others from minimal information. These studies include accuracy in assessing traits that are especially important in terms of evolutionary pressures. Studies have shown accurate social perception relevant to: (1) Mate choice, such as accuracy in judging inclination for short-term mating (Boothroyd et al. 2008) and health and stress judgements (Little et al. 2011); (2) Choosing who to ally with, such as accuracy in judging cooperation (Little et al. 2013) and deception (Bond et al. 1994); and (3) Fighting ability, such as accuracy in judging who would win in physical fights (Little et al. 2015; Trebicky et al. 2013). Of course, individual accuracy for these traits is not perfect, and in fact is often only just greater than chance. Given the minimal information, and the often noisy measures involved (e.g., using questionnaire measures), this accuracy still seems impressive.

Evolutionary inspired work on accuracy has also examined how facial features may relate to real behaviour through links to hormones that regulate facial growth. For example, facial masculinity positively relates to testosterone level (Penton-Voak & Chen 2004) and also relates to perceived dominance (Perrett et al. 1998) and physical strength (Fink et al. 2007). This hormone-appearance link may then provide a link between appearance and actual dominant behaviour (Mazur & Booth 1998). Indeed, facial masculinity also predicts risk-taking in financial decision tasks (Apicella et al. 2008) and chess games (Dreber et al. 2013), which is consistent with some aspects of the effects of testosterone on behaviour (Mazur & Booth 1998).

Another example comes from facial width to height ratio (fWHR), a ratio which is also associated with testosterone in men (Lefevre et al. 2013). fWHR predicts self-reported and other rated dominance (Mileva et al. 2014) and is associated with perceived aggression (Carre et al. 2010), trait dominance using questionnaires, and real aggression in a naturalistic setting (Carre & McCormick 2008; Carre et al. 2009). These hormone–appearance–behaviour links provide an interesting and biologically informed source of accuracy in social perception.

Alongside accuracy, an evolutionary approach also provides a framework for understanding low accuracy in social perception

in the form of theories concerning animal signals (Krebs & Dawkins 1984). In this framework, receivers are under selection to predict the behaviour of signallers while signallers are also under selection to manipulate receivers and so their signals may be honest or dishonest (see e.g., Krebs & Dawkins 1984). An honest signal contains accurate information about the signaller and a dishonest or deceptive signal contains inaccurate information. Under these pressures, we can expect honest signals to evolve where accuracy leads to a benefit for both signallers and receivers, and dishonest signals to evolve where inaccuracy benefits signallers but not receivers. Such reasoning may help explain why low accuracy is seen for some social perception. For example, in situations of detecting lying, the liar does not want to be caught and so we would expect lower accuracy. On the other hand, people often want to display, for example, their social skills to others, and so, such judgements may be more accurate. While people may want to exaggerate aspects such as social skill, honesty in the signal may come about because deviations from reality are hard to fake, making such signals honest.

Evolutionary theory may even help explain some biases in social perception. Error management theory (Haselton & Buss 2000) is an evolutionary perspective in which bias can arise when there are differential costs and benefits to overestimation or underestimation of traits in others. One example has been termed the sexual over-perception bias (Haselton 2003), in which men and women face different costs and benefits to casual sexual encounters. The chance of pregnancy places more potential cost for women in casual sexual encounters than men, while men gain the opportunity to increase the number of genes they pass on at relatively low cost. Given this difference in cost/benefit, we can expect men and women to differ in their perception of sexual intent of the opposite sex. Specifically, selection would favour men who did not miss out on sexual opportunities, and so we expect men to be more likely to interpret women's behaviour as interested in sex, even when they are not. The cost of the "miss" is low while the benefit of the "hit" is high for men, whereas these costs are different for women. This bias does appear to be apparent with men's estimates of women's sexual intent being higher than women's (see Haselton [2003] for brief review). This is then an error, but an error that could serve an adaptive function. Adaptive function in social perception can then also encompass the achievement of goals, not just accuracy (Zebrowitz-McArthur & Baron 1983).

To conclude, the idea of judging an individual's behaviour accurately may be seen as inherently undesirable, but this in no way implies that it is not important to attempt to understand this area and Jussim makes a pervasive argument that accuracy is important. In fact, the evidence that people appear to make such judgements based on minimal information despite society's discouragement implies that this is an area of fundamental importance in social perception. An evolutionary approach can provide important insights into social perception, such as:

1. Accuracy should be expected because selection pressures will have shaped social perception to be functional.
2. We should expect greatest accuracy in social domains that are important for survival and reproduction.
3. We should expect lowest accuracy when it is adaptive for the observed to hide their behaviour from observers.
4. Bias and inaccuracy are not always irrational if they serve the interest of the perceiver.

Overall, it is clear that there is much accuracy in social perception, even when observers have minimal information. Given the complexity of behaviour, it is unlikely that observers will be perfectly accurate but an evolutionary view strongly predicts that people will behave as rational observers and so in many cases social perception should favour adaptive responses.

Intelligence, competitive altruism, and "clever silliness" may underlie bias in academe

Guy Madison,[a] Edward Dutton,[b] and Charlotta Stern[c]

[a]*Department of Psychology, Umeå University, SE-901 87 Umeå, Sweden;*
[b]*Ulster institute for social research, London, UK;* [c]*Department of Sociology, Stockholm University, SE-114 18 Stockholm, Sweden.*

guy.madison@psy.umu.se   ecdutton@hotmail.com
lotta.stern@sociology.su.se
http://www.psy.umu.se/english/about-the-department/staff/?uid=guma0006
https://su.avedas.com/converis/person/4221

Abstract: Why is social bias and its depressing effects on low-status or low-performing groups exaggerated? We show that the higher intelligence of academics has at best a very weak effect on reducing their bias, facilitates superficially justifying their biases, and may make them better at understanding the benefits of social conformity in general and competitive altruism specifically. We foresee a surge in research examining these mechanisms and recommend, meanwhile, reviving and better observing scientific ideals.

In the present target article (Précis) and in his book (Jussim 2012), Lee Jussim carefully unveils a pattern of bias and self-fulfilling prophecy in academe regarding the research on social bias and self-fulfilling prophecy in the last 50 years. The pattern is characterized by inflating and overrating the mutability of people's self-perception and performance, and the influence over these variables exerted by social factors. The ill-founded and ineffective reforms that have and will be instated on the basis of biased research are bad enough. The erroneous knowledge generated is worse, but worst of all is the dilapidation of scientific quality, and the ensuing decline in public trust in academe as a whole.

Jussim graciously evades the conclusion that many of these scholars have proved themselves to be poor scientists. It is a modest yet fundamental requirement to interpret results in relation to the claims. Yet, the social bias literature makes profound claims regarding very important aspects of everyday life for people in general but neglects assessing effects of other factors, known and unknown. For example, it is not that useful to learn that A affects B to a certain extent if we do not also know what other factors affect B, and to what extent. To illustrate this point, we might consider the influence of other general and ubiquitous, but socially irrelevant phenomena. Light, temperature, hunger, or fatigue would likely produce comparable effects upon ratings and test-taking performance as those found in much of the social bias and self-fulfilling prophecy literature. Real as they may be, the relative importance of these effects is likely dwarfed by intelligence, health, and personality traits, just like those in the social bias literature. The seminal studies may be excused for their initial enthusiasm and lack of controls, but the conclusions in later, more seasoned reports are embarrassingly unchecked by scientific thinking.

Why is there a bias in this literature at all? Why is the bias such that scholars prefer to find fault and bias rather than accuracy? Why would we be inclined to exaggerate arbitrary sources of individual differences in performance rather than systematic ones such as genes and hard work? Why have these conclusions been even further overrated in review and other second-source articles? To come to grips with these questions, it is essential to understand causes of such bias.

It is only recently that error and bias in academe has begun to be systematically addressed from within academe itself (e.g., Alvesson 2013; Charlton 2011; 2012; Jussim et al. 2015a; Maranto et al. 2009), its motivating forces being sought amongst social conformism (Woodley 2010), political ideology (e.g., Berggren et al. 2009; Dutton & van der Linden 2015; Klein & Stern 2009), and personality traits and cognitive ability (e.g., Charlton 2009; E. Dutton 2013). The literature still lacks solid empirical evaluation, but shows that academics are unrepresentative of the general population in their intelligence, personality traits, and political preferences, and that these patterns furthermore vary systematically across disciplines (D. G. Dutton 2012; E. Dutton 2013; Dutton & Lynn 2014; Dutton & van der Linden 2015; Klein & Stern 2005; 2009).

One suggested cause has been that scholars feel most comfortable to conform to "societal values" (Woodley 2010; Woodley & Dunkel 2015) in as much as they, for example, espouse environmentalism and reject genetic determinism. This leaves open why these values were formed in the first place, regardless of whether they are equally represented amongst academics and the general population. However, such conformity goes against the gist of scientific training, where norms of truth seeking and critical thinking would inoculate against avoidance of studying topics that will receive the "wrong" answers, not speaking about them, or omitting or downplaying some aspects and exaggerating other aspects to produce a more palatable story.

Charlton notes that academics have higher than average intelligence, and suggests that intelligence is also a cognitive disposition, which leads to "over-use general intelligence in problem-solving, and to over-ride those instinctive and spontaneous forms of evolved behaviour which could be termed common sense" (Charlton 2009, p. 867). He also touches on social status as a driving force: "[…] this random silliness of the most intelligent people may be amplified to generate systematic wrongness when intellectuals are in addition 'advertising' their own high intelligence in the evolutionarily novel context of a modern IQ meritocracy" (p. 867).

Dutton and van der Linden (2015) draw upon and develop Charlton's "clever silly" concept, arguing that,

> An idea is "clever silly" if it is founded on the acceptance of a dogma which either has strong empirical evidence against it or otherwise by its very nature cannot be disproven but which, nevertheless, allows the advocate to advertise their intelligence by virtue of the idea being highly complex and/or original. The clever silly concept has three critical components. First, clear evidence is present that the idea is incorrect or otherwise cannot be disproven. Second, there is a dogmatic defending of the idea. Third, the idea allows the individual to display his or her intelligence. (Dutton & van der Linden, p. 58)

The clever silly originator espouses a high original dogma, risking ostracism, while the "follower" merely tweaks an already widely accepted dogma. Dutton and van der Linden suggest that striking an optimum balance between conformism and unusual, provocative, or critical ideas would "permit [academics] to successfully compete by exploiting their intelligence, creative ability and even altruism in the case of advancing left wing values, which would make them be seen as more capable and attractive by others" (Dutton & van der Linden 2015, p. 64).

Equally self-interested is the notion that "middle-class leftists [engage] in seemingly socially altruistic behaviors only to improve their social status relative to others of the same background with whom they primarily compete" (Woodley 2010, p. 476). Woodley cites a number of studies that support the idea "that the tendency for individuals to be 'blatantly benevolent' (i.e., to prove to others that they can 'afford' to be altruistic) facilitates the building and maintenance of costly pro-social reputations" (ibid.), as predicted by costly signaling theory (Miller 2011; Zahavi 1975). An additional twist on these motives is that "Political Correctness and Post-Modernism allow advocates to compete in terms of altruism […] because they focus on the needs of the supposedly marginalized, such as ethnic minorities" (Dutton & van der Linden 2015, p. 64).

The above discussion demonstrates that although more intelligent people should be better at avoiding and revealing bias, because evaluating logical relations in general and causal ones in particular requires effortful thinking (Kahneman 2011), this does not happen automatically. There is only a weak correlation between intelligence and avoiding illusive and superficial thinking. There seems, therefore, to be little reason to expect more

intelligent people to be less prone to bias. In fact, they are also more able to come up with alternative explanations for data that contradict their beliefs. To this attests also the negative but small correlation between religiosity and intelligence (Dutton 2014). One would expect that religious ideologies would be particularly attractive and fulfilling for people with lower IQ, inasmuch as they offer preset explanations for complex existential questions. Hence, higher-IQ people would rebel against religious dogma and claims that are objectively untrue. None of these assumptions receive much support, attesting again to the weak relationship between IQ and rationality (Stanovich 2009; 2011). Rather, the small negative correlation found on a global scale seems to be mainly driven by cultural and historical differences between regions (Dutton 2014). It is notable that many religious leaders demonstrate high IQ, and that many high-IQ individuals in other domains are religious, even in the sciences (Dutton & Lynn 2014). Thus, higher IQ does not predict higher cognitive reasoning; rather, it seems that the higher the IQ, the more apt we are to conciliate different and contradictory perspectives and explanations.

Clearly, intelligence is not the cure of bias. This rather gloomy outlook on one of the most salient characteristics of academics points instead to the importance of scrupulously following the scientific method. By carefully observing scientific ideals, such as CUDOS (Merton 1973), we may steer clear of temptations to achieve social status and to pose as do-gooders and more likeable human beings through conforming and distorting what we know to be true.

In conclusion, we anticipate a quickly growing research program directed at questioning and exposing bias and poor practice in academe (e.g., Crawford et al. 2013; Jussim et al. 2015a; Lewis et al. 2011; Söderlund & Madison 2015). The target article shows just how badly this is needed for one narrow field, but there are other fields that are seen as even more controversial and hence likely to be even more exposed to bias from within the field itself as well as in their evaluation by scholars from other fields. Examples include behavior genetics (e.g., Mosing et al. 2014), criminality (e.g., Frisell et al. 2011), gender studies (e.g., Söderlund & Madison 2015), race (Sesardic 2010), sex differences (e.g., Baron-Cohen 2011; Del Giudice 2013; Del Giudice et al. 2012; Lippa 2010), and sexual orientation (e.g., Långström et al. 2010). Such a program would also address "to which extent the clever silly followers truly believe in their clever silly ideas or to what extent they strategically (and consciously) use it for their benefit" (Dutton & van der Linden 2015; p. 64), and what characterizes academics that question and criticize bias, in opposition to the prevailing zeitgeist within certain fields.

Why would we expect the mind to work that way? The fitness costs to inaccurate beliefs

Jesse Marczyk
Department of Psychology, New Mexico State University, Las Cruces, NM 88003.
jmarczyk@nmsu.edu
http://Popsych.org

Abstract: An adaptationist analysis of beliefs yields the prediction that we ought to expect accuracy in the cognitive systems which generate them – stereotypes or otherwise – for the most part. There are, however, some limited situations in which some inaccuracy in beliefs advertised to others might be adaptive.

It is an unfortunate state of affairs in psychology that adaptationist analyses have been, and still are, so seldom undertaken (Tinbergen 1963), as evolutionary theory can provide a framework for guiding and understanding empirical research (Tooby & Cosmides 1992). Indeed, no such analysis is presented in Jussim's (2012) recent book, suggesting to me that such analyses are also likely missing in the empirical literature on stereotypes more generally. Though such an analysis will inevitably only be cursory, I will evaluate the main premise of the book – that beliefs about groups tend to be more accurate than error-prone – in an adaptive light.

The first point to consider is whether we should expect the mind to contain cognitive mechanisms adapted for the function of conforming to the beliefs about others; mechanisms which use the beliefs of others about you as inputs, transforming them into corresponding behavioral outputs. That is, if you believe I am aggressive, will I become more aggressive in turn? The answer to this question should be expected to be an unequivocal "no." The reason we should not expect the beliefs of others per se to affect our behavior is that the believer and the target do not share the same set of adaptive best interests. If it is not in my interests to behave aggressively, for instance, perhaps owing to an inability to effectively win physical conflicts, allowing the beliefs of others to influence my behavior in such a fashion would be maladaptive for me. Similarly, if others believe I am unintelligent, shy, not trustworthy, emotionally cold, and so on, it might not be in my best interests to conform to their beliefs and adopt the associated behaviors. Indeed, if I were so manipulable, others would likely adopt a host of strategically unflattering beliefs about me so as to remove me from direct competition with them in the social world.

Conversely, if I had the potential to be more intelligent, friendly, outgoing, and so on, *and* it was adaptive to possess such traits, it would be strange indeed were I to wait for someone else's belief to realize my potential in those domains. To get an easy grasp on why these explanations do not work, one could try applying them to any non-human species and quickly find that they sound silly (e.g., "the deer showed evidence of poor long-term recall because the other deer did not believe him to be intelligent"). On that basic level, then, we should not expect the beliefs of others per se to manipulate our own behavior in such a fashion.

Given that we should not predict other people's beliefs about us to have much of an effect on our behavior, this leads naturally to the second point: There are often costs to holding inaccurate beliefs. If you believe me to be aggressive and I am not, you have made an error in perception, likely missing out on potential benefits of cooperation or enduring the costs of needless aggression against me. On the other hand, if you believe me to be a valuable and kind social asset with untapped potential and I am actually unable to live up to your lofty expectations, you will likely end up making poor social investment decisions, opting to spend more effort on a friendship with me than would otherwise be adaptive. As social budgets are limited, cognitive systems which make such mistakes should be selected against over time in the presence of more accurate mechanisms.

We should also expect that our stereotypes about groups should not be applied inflexibly to individual members, just as our beliefs about individuals should not be inflexible over time. If I believe you to be kind when you actually are not, stubbornly refusing to update that belief in the face of your many unkind behaviors towards me would, again, be costly. I would be pursuing less profitable relationships than I otherwise might. Cognitive mechanisms that fail to react in the face of new information would be at a selective disadvantage, relative to ones that did, all else being equal. The exact same logic applies at the level of beliefs about groups. If I believe members of a group to be strong fighters *on average*, I may well back down from fights I could otherwise win with members of that group.

It goes without saying that people will never achieve perfect accuracy in their beliefs about others; accuracy takes time and effort to obtain, and at some point there will likely be diminishing returns on learning more about someone relative to the effort it will take. Nevertheless, while errors in perceptions are expected because of such constraints, the cognitive systems themselves should be predicted to be ones that attempt to deliver accurate estimations of other people's probable behavior (Kurzban 2012). In short, we should expect mechanisms which produce largely accurate stereotypes for the most part. According to the data presented by Jussim (2012), this is indeed precisely what we find.

As a brief aside, it is also worth noting that not all stereotypes which are globally inaccurate need to be locally inaccurate. If, for instance, I believed that members of group X are hostile and they actually are consistently hostile *to me*, I would not necessarily be displaying any kind of adaptively meaningful inaccuracy in my belief *even if group X is typically kind to others.* My belief, while incorrect on the whole, is still as meaningfully accurate as it could be, given the information I possess. As such, not all evidence of stereotype inaccuracy need necessarily reflect error-prone cognitive mechanisms.

While we should expect accuracy in stereotypes (and beliefs more generally) when it comes to guiding one's behavior, there are some limited cases in which we might expect people to hold, or at least voice, incorrect beliefs: the realm of persuasion (Mercier & Sperber 2011). If I am interested in getting you to like me, for example, that goal might be served better if you believe me to be kinder, more intelligent, etcetera, than I actually am. As such, it might serve my interests to strategically misrepresent certain features of myself or my future prospects to others. However, because it is maladaptive for others to believe incorrect things about me, the limits of such persuasion are likely to be relatively meager (for an example of this dynamic, see Perilloux et al. 2015).

A second case in which inaccurate beliefs might be adaptive is when the beliefs serve a signaling function (Zahavi 1975). Indeed, Jussim (2012) makes a similar point in his opening chapter on stereotypes by noting that social benefits can accrue to people who hold certain sets of beliefs. In such contexts, the truth of a belief does not stop mattering, but there are other benefits one might reap on the basis of things other than accuracy, such as sending a social signal concerning one's value as an associate to others.

As a relevant for instance, academic faculty in most universities seem to exist in rather politically liberal and progressive environments, and, in such environments, certain social beliefs are more acceptable to hold than others. Accordingly, while it might be costly *in general* to hold inaccurate beliefs, there are particular scenarios in which holding an accurate belief can be even worse (such as when one is morally condemned for believing in biological differences between men and women, or between ethnic groups). That said, given the modular view of the mind (Tooby & Cosmides 1992), it is perfectly possible for both beliefs to be present in the same brain, with one cognitive mechanism generating as accurate a representation of reality as it can, which is used to guide one's own behavior, while another mechanism generates an inaccurate representation to broadcast to others. Placing this logic in a concrete example, it might behoove academics to believe that gender and racial stereotypes are not true publicly, but guide their own behavior with those beliefs all the same. This is why researchers can find it counterintuitive that academics appear to display the same patterns of discrimination, regardless of their own race or sex (Milkman et al. 2015; Moss-Racusin et al. 2012).

Accuracy in perception – or at least as close as we can approximate it with limited time and energy – should be the expected order of the day in psychology. While there are some scenarios in which *other people* believing inaccurate things can be adaptively useful, perceiving the world accurately yourself is valuable for guiding your own behavior and avoiding the associated costs of inaccuracy.

Stereotypes violate the postmodern construction of personal autonomy

doi:10.1017/S0140525X15002381, e11

Chris C. Martin

Department of Sociology, Emory University, Atlanta, GA 30322.
chris.martin.e@gmail.com
www.chriscmartin.com

Abstract: Individual autonomy, as constructed in the postmodern era, is violated by stereotypes, which makes stereotype accuracy morally unpalatable. Yet people are clustered and homogenized by social forces, entailing some accuracy in stereotypes. This tension can be ameliorated by unveiling the constructed nature of autonomous selfhood, and explaining why social clustering has occurred and been adaptive.

Jussim (2012) aims to explain why stereotype accuracy offends many people. He rightly notes one reason: The study of stereotype accuracy does nothing to address social injustice. But Jussim overlooks another reason, one that pertains not to social justice but rather to the clash between the objective truth about stereotypes and the subjective construction of individual autonomy.

As scholars in several disciplines have noted, people have a fundamental need for autonomy (for a review, see Smith 2015). In the humanities, terms like agency, liberty, and freedom substitute for what psychologists call autonomy, but the differences are minor. In psychological research, empirical support for this need can be found in self-determination theory (SDT). In the SDT framework, autonomy is defined as perceiving oneself as the locus of causality, and deeming that one's actions are the result of one's volition (Ryan & Deci 2000). Research by self-determination theorists has shown that such autonomy universally predicts well-being (Deci & Ryan 2012). Psychologists who study the structure of well-being have similarly argued that autonomy is a component of eudaimonic well-being, which pertains to functioning well rather than feeling good (Ryff 1989; Ryff & Keyes 1995). In this tradition, autonomy is measured with responses to statements like "My decisions are not usually influenced by what everyone else is doing." Their findings indicate that autonomy constitutes one sub-factor in a hierarchical model of eudaimonic well-being. Regardless of whether one treats autonomy as a cause or component of well-being, it is evident that autonomy is connected to flourishing.

If rooted in evolution, the need for autonomy may have been adaptive in resisting predators. Among humans, a common form of social predation is enslavement, a practice found across societies for a major portion of human history (Drescher 2009). As the biblical story of Moses shows, escape from enslavement could form the founding myth of a people. In the case of Moses and other liberators, the desire for autonomy was construed in a negative manner: people needed to *avoid* or *escape* enslavement. During the Enlightenment, autonomy continued to be a negative concern. Paine (1794) advocated for the removal of religious strictures on the citizenry. More famously, Mill (1867) argued for personal liberty, and in his account, liberty was constituted by the absence of censorship. Indeed, liberty became the first part of the tripartite slogan of the French revolution.

In subsequent centuries, however, the concept of autonomy took a positive turn. Particularly in industrialized nations, people began to regard themselves as autonomous when they could define and re-define their individual selves at will (Smith 2003). This post-modernist construction, which surpasses the individualism of the Enlightenment era, comports with the prevailing commercial notion that freedom means having innumerable options (Schwartz 2004; Thaler & Sunstein 2008).

Stereotype accuracy brushes up against this conception of the autonomous self because it suggests that the targets of a stereotype have fewer choices in self-definition than they think. Stereotype research using vignette studies has corroborated that when people are targeted by stereotypes, even positive ones, they feel

depersonalized. The threatening effect of positive stereotypes is mediated by self-construal, such that people with an independent self-construal tend to react negatively, whereas people with an interdependent self-construal tend to have no reaction (Siy & Cheryan 2013).

To construe oneself as the product of individual choices, however, one must neglect the fact that historical, sociological, geographical, and political forces do not impinge on individuals one at a time, but rather on whole clusters of people. As a result, these clusters share common attributes. For instance, people who live in Eastern Europe have different attributes from people who live in Western Europe because of the legacy of communism and the effect of post-Communist transition. No one in Eastern Europe could opt out of these effects; no one from Western Europe could opt in. Because of these phenomena, informed generalizations about a cluster's constituents can be accurate.

If such generalizations were untenable, the entire field of sociology would collapse. Canonical works in sociology such as Durkheim's *Le Suicide* (1897) and Marx's *Das Capital* (1906) compare one cluster of people to another, illustrating how causal forces operate at the super-individual level to differentiate such clusters. Another member of the sociological canon, C. Wright Mills (1959), incited his readers to go beyond the abstract recognition of such forces, and recognize how their apparent choices are quite homogeneous. Stereotype accuracy simply refers to a match between lay generalizations and sociological generalizations about clusters. To push aside stereotype accuracy, one must either dismiss social clustering altogether, or suggest that only professional sociologists have the license to think about people non-individualistically.

Social psychologists must therefore manage this tension. One option is to sidestep it – some people solely deploy the term *stereotypes* for generalizations that target canonically victimized groups. In this logic, the generalization that whites tend to be racist doesn't qualify as a stereotype. Social justice undergirds this selective focus, which is laudable. Nevertheless, accurate generalizations are accurate generalizations. They are indifferent to their targets and our terminology.

What then can accuracy researchers do to address the perceived infringement of autonomy? First, they can explain the social construction of the self to their audience. The perception of autonomy hinges upon a *constructed* self, something that scientists cannot model as an exogenous cause. Thus, scientists cannot objectively address whether selves are autonomous or constrained, or whether your personal sense of autonomous operation corresponds to an objective reality. In fact, the constructed nature of the self entails that people have some latitude in how they evaluate their autonomy. They can construe autonomy differently from their individualistic peers. Making such choices involves a meta-cognitive awareness of how norms of individualism are ironically a collective phenomenon that one can react against.

Second, accuracy researchers can explain *why* stereotypes are accurate. For instance, there is an evolutionary explanation of why women might be more empathetic than men. Women formed communal relationships more frequently throughout much of our species' history because two female needs, mothering and safety, were more easily accomplished through cooperative work (Campbell 2013). And there is a sociological explanation for why some of the richest lawyers in the United States are Jewish. In the middle of the 20th century, anti-Semitic discrimination kept Jewish lawyers out of major law firms, but such firms stayed out of "undignified" areas like mergers and acquisitions, leaving an area where Jewish lawyers could find work (Wald 2008). Later in the century, these "undignified" areas became remarkably profitable.

These explanations show how homogeneity within a social cluster can be the result of adaptation, a pragmatic process. Casting a spotlight on adaptive mechanisms can forestall essentialist explanations, which are circular and suggest that people have

enduring characteristics. Stereotype accuracy addresses correspondence between stereotypes and facts at the time of evaluation, but has nothing to say about how long stereotypic attributes endure.

Drawing attention to the social construction of the self and shedding light on the reasons for stereotypes may not ameliorate all concerns about stereotype accuracy research. But these two tactics may help people understand that stereotype accuracy researchers, unlike invidious bigots, *can* see people as individuals and *want* to help people feel autonomous. However, accuracy researchers cannot sustain the illusion that every individual is entirely self-defined and altogether unique.

Accurate perceptions do not need complete information to reflect reality

Shabnam Mousavi[a,b] and David C. Funder[c]

[a]The Johns Hopkins Carey Business School, Washington, D.C. 20036; [b]Center for Adaptive Behavior and Cognition, Max Planck Institute for Human Development, 14195 Berlin, Germany; [c]Department of Psychology, University of California, Riverside, Riverside, CA 92521.
shabnam@jhu.edu   mousavi@mpib-berlin.mpg.de
david.funder@ucr.edu
http://carey.jhu.edu/faculty-research/directory/shabnam-mousavi-phd/
https://www.mpib-berlin.mpg.de/en/staff/shabnam-mousavi
http://www.psych.ucr.edu/faculty/funder/

Abstract: Social reality of a group emerges from interpersonal perceptions and beliefs put to action under a host of environmental conditions. By extending the study of fast-and-frugal heuristics, we view social perceptions as judgment tools and assert that perceptions are ecologically rational to the degree that they adapt to the social reality. We maintain that the veracity of both stereotypes and base rates, as judgment tools, can be determined solely by accuracy research.

Jussim (2012) argues that social perceptions about individual members of a group often reflect objective social reality (p. 19), and that evaluation of social perceptions requires testing their accuracy against empirical data. From a scientific point of view, his argument is downright anodyne, but in the current research zeitgeist it can and often does come off as radical. The stated goal of much social psychological research is to identify shortcomings in judgment that create misperceptions of members of disadvantaged groups, and even (as in the case of "self-fulfilling prophecies") may exacerbate their objective disadvantages. Jussim's thesis is that scientific research needs to rise above mere advocacy, and objectively examine the degree to which judgments are and are not accurate in realistic settings, and measure rather than assume the consequences of these judgments.

Jussim is hence irritated and puzzled by objections to the usefulness of accuracy research in social and cognitive psychology. He provides three reasons for why most research emphasizes error over accuracy, and even sometimes ignores the very possibility of accurate judgment. First, some researchers surrender to the appeal of seemingly dramatic results from lab studies of errors and biases, without assessing how these results apply to real world contexts. As Jussim puts it: "But, metaphorically, does man really bite dog more often than man walks dog (i.e., do error and bias dominate accuracy)? Maybe so, but the only way we will ever find out is by conducting both error/bias research and accuracy research" (p. 152). Second, the "intellectual imperialism" that demands all research address process models while neglecting the content of what is judged has shifted research focus from assessing accuracy to the why, where, and how of presumed inaccuracy. This shift of focus is attractive to many researchers because it allows politically incorrect views to be targeted as the cause of social maladies – protecting

researchers from any accusations that they are "blaming the victims" (p. 153). Third, unwarranted extensions of Gage and Cronbach's (1955) demonstration of statistical complications associated with methods of assessing accuracy led many to incorrectly conclude that accuracy research had hit a dead end.

We agree with Jussim in that social perceptions are more often accurate than not and that the imperialism of the "error paradigm" has led to a widespread, distorted view of human judgment (Funder 1987; 1995a; Krueger & Funder 2004). We further observe that the stance taken by error/bias studies with respect to accuracy research is rooted in upholding the narrow notion of rational expectations. In contrast, ecological rationality (Gigerenzer 2005; Gigerenzer & Todd 2008; Mousavi & Gigerenzer 2011) provides a fruitful framework for a holistic study of human judgment. In an inconsistent (with respect to rational expectations) but highly efficient manner people seek confirmatory information and ignore some relevant information while simultaneously asking diagnostic questions (p.117), and interestingly end up with functionally accurate perceptions.

This is how the study of ecological rationality of fast-and-frugal heuristics (Neth & Gigerenzer 2015; Todd et al. 2012) offers a framework within which the accuracy of social perceptions can be understood. Fast-and frugal heuristics are efficient rules that produce usually-accurate judgments on the basis of incomplete and uncertain information – and in the real world, information is always incomplete and uncertain to some extent. Ecological rationality appears as a match between the heuristic strategy and the environment where it has been used (Gigerenzer et al. 1999). Superimposing this framework on social perceptions as judgment tools implies this basic operational definition: A perception is ecologically rational to the degree that it adapts to the social reality. An ecologically rational perception generates good judgment most of the time. When beliefs are accurate, efforts to change those beliefs will not resolve any social problems. Most likely such efforts will hinder the diagnosis of true causes for the problems and initiate a cascade of further incorrect judgments. Once this is acknowledged, intervention efforts can be correctly channeled to combat the real rather than putative causes of social problems.

In this spirit, we second Jussim's endorsement of Kelly's (1955) notion of "people as naïve scientists" who use the uncertain and incomplete information available to them to build probabilistic beliefs about the nature of their social world. This notion builds on the Brunswikian account (Brunswik 1952) of accurate perception requiring one to choose, from the wide array of cues available in any setting, the ones that are actually relevant to or diagnostic of the attribute that is being judged (p. 146). In situations where social reality is inherently unspecifiable because of irreducible uncertainty, approximations and heuristics such as stereotypes provide the flexibility needed for making judgments that are good enough for practical purposes.

Although Jussim agrees that everyone is subject to a mild level of naïve realism (assuming that one's judgment, belief, or perception is correct), he forcefully disagrees that this naiveté dominates social perceptions (p.14). We posit that the social reality of a group emerges from interpersonal perceptions and beliefs put to action under a host of environmental conditions. In doing so, we join Jussim in rejecting the unjustified notion of interpersonal expectations that powerfully create their own reality (pp. 76, 83). Even though social reality is a multidimensional phenomenon, specific characteristics of the individuals and their groups can be teased out, studied, and documented to constitute the elements of the corresponding social reality. A typical phenomenon studied widely in this area is stereotypes, which are classically viewed as biased expectations (p. 66). Jussim offers a compelling account of research on stereotypes and points out that their accuracy often goes unassessed and their influence on judgment is often exaggerated. However, he overlooks a key paradox in this area: Social cognition research prominently examines two effects concerning beliefs about groups, and the two effects are antagonistic.

It is important to recognize that a stereotype is a psychological construct; specifically, it is a belief about the properties of a category or group. In this way, it is exactly the same thing as a "base rate," which as a psychological construct is also a belief about the properties of a category or group (Funder 1995b). This is where the paradox arises: A vast body of research, much of which is cited by Jussim, finds (or at least claims) that stereotypes are overused to the point that properties of individuals become unfairly ignored. But another body of research, pioneered by Kahneman and Tversky and almost as large, finds (or at least claims) that base rates are underused to the point where they are completely overwhelmed by salient properties of individual cases or persons (Tversky & Kahneman 1982).

How is this paradox maintained? For one, the two effects are rarely talked about in the same breath: although both are covered in every social cognition textbook, they are described in different terms and safely segregated from each other in different chapters. Another means is the way research is conducted: In research on stereotypes, the categorical belief is typically held to be wrong. As a result, any use of this information whatsoever will tend to make the resulting judgment less accurate. In research on base-rate neglect, the base rate is unquestioningly deemed correct. When Tversky and Kahneman (1982) tell you how many red and green taxicabs are in the city, the information is taken to be dead-certain. As a result, any failure to use this information fully will tend to make the resulting judgment less accurate. The final result, therefore, is that the two seemingly contradictory bodies of research can and do yield findings congruent with Jussim's general theme: beliefs about categories are used in judgment to some degree, but properties of individual exemplars are influential too. It's just that when this belief is called a "stereotype" the conclusion is reached that it is tragically overused, whereas when it's called a "base rate" the conclusion is reached that it is woefully underused. In both cases, of course, the overall conclusion that is reached is that people are inaccurate.

To conclude, we revisit an example from Jussim's book to bring together our two points of discussion: the neglected common ground between separately studied phenomena such as stereotypes and base rates, and the potential of ecological rationality research as a framework for developing a more holistic view and approach to the study of humans' beliefs, perceptions, and judgment.

> Let's say that Ben believes Joe is hostile. This "objection" focusing on the accuracy of explanations [as opposed to accuracy of perceptions] leads to at least four different questions: (1) Is Ben right? (2) What is Ben's explanation for Joe's hostility? (3) If Joe is hostile, how did he get that way? (4) Why does Ben believe Joe is hostile? Providing an answer to one question provides no information about the others. (Jussim 2012, p.159)

The answer to question (2) might be provided by referring to a stereotype, and the answer to question (4) could be viewed as a case of base-rate fallacy. Nonetheless, both fall in the realm of explanations and not of verification such as in question (1). Whereas question (1) requires empirical investigation of accuracy, the other questions have led to other research programs that are not directly concerned with accuracy. The question that the study of the ecological rationality of judgment rules raises is whether separating "ought" from "is" when studying human judgment can be meaningfully maintained. The answer it implies is a resounding "no" (Gigerenzer & Todd 2012).

The fact that the generally accurate judgment of reality does not require gathering complete or certain information allows stereotypes and base rates to be seen as structurally similar phenomena in the study of human judgment, where both are simply beliefs held about a social group: They should be employed to the extent they are accurate, and ignored to the extent they are not. Beliefs held by people about social groups are not necessarily completely wrong, as the dominant definition of stereotype suggests or even assumes. On the other hand, base rates are also

beliefs held about the properties of a group. Lab experiments focused on demonstrating the base-rate fallacy do not necessarily indicate whether using base rates more strongly in real life would improve or harm the accuracy of social judgment. In both cases, the critical question is whether the belief – whether called a stereotype or a base rate – is correct. And that is an empirical question, one largely neglected in social psychology but to which Jussim argues renewed attention should be paid. Such research might not be as attention-getting as claims that biases overwhelm human judgment, or that social realities are manufactured out of nothing by human misperceptions. But it will gather the information needed to help people make better, more accurate judgments in the future and, in the long run, be the surer path to alleviating social ills.

In short, where "Dog bites man!" makes for a sexy headline, scientific attention seems to benefit from a nudge towards focusing on the more humble but important occurrence of "Man walks dog."

Choosing the right level of analysis: Stereotypes shape social reality via collective action

Ben M. Tappin,[a,b] Ryan T. McKay,[a] Dominic Abrams[b]

[a]ARC Centre of Excellence in Cognition and its Disorders, Department of Psychology, Royal Holloway, University of London, Egham, Surrey TW20 0EX, United Kingdom; [b]School of Psychology, University of Kent, Canterbury, Kent CT2 7NP, United Kingdom

Ben.Tappin.2015@live.rhul.ac.uk   Ryan.McKay@rhul.ac.uk
D.Abrams@kent.ac.uk
http://tinyurl.com/ryan-mckay
https://www.kent.ac.uk/psychology/people/abramsd/index.html

Abstract: In his 2012 book Jussim argues that the self-fulfilling prophecy and expectancy effects of descriptive stereotypes are not potent shapers of social reality. However, his conclusion that descriptive stereotypes *per se* do not shape social reality is premature and overly reductionist. We review evidence that suggests descriptive stereotypes do have a substantial influence on social reality, by virtue of their influence on collective action.

Jussim (2012) presents a compelling case against the notion that the self-fulfilling prophecy and expectancy effects of descriptive stereotypes (hereafter "stereotypes") are potent shapers of social reality. We accept Jussim's claims that (a) the evidence for self-fulfilling prophecy and expectancy effects is weak, fragile, and fleeting, and (b) stereotype beliefs are not inherently inaccurate. Nevertheless, it is premature and reductionist to conclude that stereotypes do not shape social reality. Stereotypes have a substantial influence in shaping social reality through their influence on collective action.

Tajfel's (1974) and Moscovici's (1981) critiques of social psychology as overly reductionist emphasised that explanations of social phenomena, *particularly coherent collective behaviour*, must incorporate the psychology of shared social perception. Theory must account not only for the interpersonal level of judgment and perception, but also for the consensual understanding of the macro-level social relations in which different groups are embedded (Abrams 2015; Abrams & Hogg 2004; Tajfel & Turner 1979). Specifically, the common collective behaviour of geographically dispersed, socially diverse, groups of individuals is grounded in their understanding of consensually shared stereotypes (Tajfel 1981). The case that more complete explanations in social psychology require attention to both the micro- and macro-levels of analysis has been reinforced by numerous scholars (e.g., Abrams & Grant 2012; Dixon et al. 2012; Oishi et al. 2009; Pettigrew 2006; Wright & Baray 2012). The self-fulfilling prophecy and

expectancy effects described by Jussim exist at the *interpersonal* level of analysis: they involve a perceiver and a (stereotyped) target interacting directly or indirectly. Though Jussim notes the macro-level influence of stereotypes, this is typically to refute the assumption that stereotypes are inherently inaccurate. However, the effects of stereotypes on behaviour extend beyond the issue of whether they are accurate or not: after all, the accuracy of a belief is not a prerequisite for that belief to affect behaviour. Thus, irrespective of veracity, the role of consensual stereotype beliefs in motivating or justifying the *collective behaviour* of groups of individuals is overlooked in Jussim's argument, thereby missing an important route by which stereotypes shape social reality.

"Collective action against collective disadvantage is one of the major pathways to social change" (van Zomeren et al. 2012, p. 52). History is replete with examples of collective action (CA) stimulating pervasive and profound changes in social reality. Prominent examples include the end of apartheid in South Africa, the abolition of slavery in the New World, and the host of civil rights movements throughout the 20th century (e.g., see Dixon et al. 2012; Hardin 1982; Tilly & Wood 2003). We note that CA can range from violent revolutions and terrorism, to peaceful demonstrations, petition signing, campaigning, and voting (Abrams & Grant 2012; Tausch et al. 2011). Furthermore, CA can be directed at improving the position of one's *own* group, or can be "sympathetic" on behalf of *another* group (Saab et al. 2014; Stewart et al. 2016). We now present evidence to support our contention that stereotypes influence engagement in CA and thus shape social reality indirectly.

Complementary stereotyping may serve to pacify CA engagement by enhancing support for the status quo. Complementary stereotyping involves the assignment of benevolent traits that off-set the presence of negative trait assignments, or vice versa (e.g., see Cuddy et al. 2008; Glick & Fiske 2001). Studies show that people who engaged in more complementary stereotyping of Northerners and Southerners as agentic and communal, respectively (in Italy), or communal and agentic, respectively (in England), viewed the social system as fairer and more legitimate (Jost et al. 2005). Even in countries where general support for the status quo is low, people who endorse complementary stereotypes express greater satisfaction with the current socioeconomic and political reality (Cichocka et al. 2015). Indeed, across 37 different countries, such complementary stereotype beliefs are strongest in societies where income inequality is higher (Durante et al. 2013). The proposition that the consensual complementary stereotyping of various social groups pacifies engagement in CA that might otherwise change prevailing socioeconomic inequality is confirmed by experimental evidence. Jost and colleagues revealed that complementary stereotypes of the "poor" as "happy/honest," or the "rich" as "unhappy/dishonest" (compared to unhappy/dishonest or happy/ honest, respectively) led college students to report increased satisfaction with the socioeconomic and political status quo in the US (Kay & Jost 2003; also see Kay et al. 2009). Furthermore, exposure to similar stereotypes of the poor were found to increase support for government policy, and diminish support for disruptive protest against government pension reform, among demonstrators at a 2008 May Day rally in Greece (Jost et al. 2012).

Effects of complementary stereotyping on CA engagement are also evident in research on benevolent sexism (e.g., stereotyping women as more "caring" than men, see Glick & Fiske 1996). Across 19 countries, women endorsed complementary stereotypes of their own gender (e.g., women as more communal and less agentic) most strongly in countries where average levels of sexism were highest (Glick et al. 2000; Glick & Fiske 2001). Thus, complementary stereotypes may pacify engagement in CA to change a prevailing social reality of substantial gender inequality. Experimental evidence supports this proposition. In four studies Becker and Wright (2011) found that women's engagement in CA to address gender inequality (e.g., petition signing, flyer distribution, self-reported intentions) decreased when they

were exposed to complementary stereotypes of their gender (also see Becker 2012). Moreover, when women are exposed to such complementary stereotypes, they show greater satisfaction with the status quo of gender relations (Jost & Kay 2005), reduced CA engagement (Foster 1999), and a greater resistance to changing the social order (Di Bella and Crisp 2015).

In contrast to complementary stereotyping, which pacifies CA of either kind (own-group-directed or sympathetic), *hostile* stereotype beliefs (overtly negative stereotypes, e.g., "women are less intelligent than men") tend to have divergent effects; promoting *greater* CA engagement among stereotyped targets, whilst attenuating sympathetic CA engagement. For example, when targets of hostile stereotypes see such beliefs expressed publicly, they demonstrate greater engagement in CA (Becker & Wright 2011; Ellemers & Barreto 2009). A number of studies have documented the association between perception of hostile stereotype beliefs and anger amongst the stereotyped (Bosson et al. 2010; Ellemers & Barreto 2009; Swim et al. 2001). Given that group-based anger is a critical driver of engagement in CA (Leach et al. 2006; Tausch et al. 2011; van Zomeren et al. 2008), this provides one mechanism through which hostile stereotype beliefs operate to shape social reality. Indeed, Ellemers and Barreto (2009) found that women who were confronted with the stereotype that women are less intelligent than men reported significantly greater anger, support for CA, and intentions to protest.

Moreover, those who endorse hostile stereotypes are less likely to engage in, or may even oppose, CA on behalf of the stereotyped group (i.e., *sympathetic* CA). Considering the critical role of sympathetic CA in social change movements (e.g., Leach et al. 2002; Simon & Klandermans 2001; Tilly & Wood 2003), this constitutes an equally important avenue through which stereotypes influence social reality. Stewart et al. (2016) combined data from twelve countries to examine sympathetic support for Arab CA in the Arab uprisings that began in 2010. Endorsement of the hostile stereotype "Arabs are not competent enough to govern themselves" predicted reduced intentions to engage in sympathetic CA for the Arab peoples. Similarly, across five studies, participants who more strongly stereotyped the agents of social change (e.g., feminists as "militant") were less likely to engage in sympathetic CA on their behalf (Bashir et al. 2013).

Experimental evidence shows that hostile stereotypes can also directly affect public policy support. Johnson et al. (2009) found that activating the "Black criminal" and "promiscuous Black female" stereotypes significantly diminished support for public policy intended to benefit Black males and Black females, respectively. Similarly, when Hurwitz and Peffley (2005) activated racial stereotypes (e.g., "Blacks are lazy") using minor changes in the language presented to participants, this increased White participants' support for punitive policies, such as the building of extra prisons (over less punitive policies such as anti-poverty programs). Maurer et al. (1996) provided specific evidence that the effects of stereotype beliefs extend beyond the interpersonal level of analysis. Participants' endorsement of stereotypes of two different social groups (gay people and welfare recipients) predicted their public policy positions, independent of any interpersonal judgments made in individual cases involving welfare recipients and gay people. Indeed, Maurer et al. argued that "the nature of public policy judgments requires thought at the superordinate level – what the group-as-a-whole is like" (p.412). Other scholars have supported this, contending that public policy stance is *group-centric*, that is, "shaped in powerful ways by the attitudes citizens possess towards the social groups they see as [affected by] the policy" (Nelson & Kinder 1996, p.1055).

These experimental studies reinforce conclusions from extensive field evidence. Gilens' (2009) comprehensive analysis of survey data, opinion polls, and public policy actions identified hostile stereotypes (e.g., "Blacks are lazy") as one of the primary factors in U.S. citizens' opposition to CA intended to address systemic socioeconomic inequality (also see Kluegel & Smith 1986). Other scholars have identified that the adoption of a "racial frame" in policy discourse (e.g., stereotyping Hispanics as undeserving and lazy) profoundly influenced support for, and engagement with, public policy action in the United States between 1990 and 1997 (Brown 2013). Similar patterns have also been observed in the United Kingdom. Bamfield and Horton (2009) examined large scale opinion surveys conducted in 2008–2009, and found that tacitly stereotyping the poor as irresponsible and lazy (i.e., attributing their socioeconomic status to individual fault) predicted opposition to welfare policy initiatives (also see de Vries 2015). Though we are aware survey results cannot imply causation, we emphasize the diversity of evidence attesting to the influence of stereotypes upon public policy support (both experimental and correlational). We also note evidence that suggests people *spontaneously* generate the prototypical member (stereotypic exemplar) of a relevant social group (as opposed to other policy-relevant principles) when thinking about public policy actions that will affect that social group (Lord et al. 1994; also see Reyna et al. 2006).

In sum, taken together, the weight of evidence supports the contention that stereotypes *do* exert a substantial influence upon social reality – through their impact on CA engagement and people's priorities for public policy. We therefore note the irony of Jussim's assertion that, having been liberated from their false assumptions regarding stereotype inaccuracy, scholars are now free to focus on addressing the "actual" causes of social inequality and oppression (p.425, para. 2). There are multiple roots of inequality (besides stereotypes), such as socioeconomic disparity, deprived socialization, or inadequate healthcare. However, as our review demonstrates, stereotype beliefs are intimately related to motivating the necessary collective action that would address some of these alternative causes of inequality. Finally, we emphasize that our review makes no normative assumptions about the moral or political "rightness" of engaging in CA (whether the means, or ends, are justified or desirable). Rather, we have advanced an empirical case that stereotype beliefs influence CA engagement, and thus, do have a hand in shaping social reality. We concur strongly with Jussim that the economic, political and other roots of group-based inequality need to be addressed by economic, political and other means. There are real differences between groups that have to be understood. However, we also contend that it is people's shared, collective, understanding of these differences that is the vehicle for coordinated and meaningful social change.

As a consequence of distinguishing between the interpersonal-and-collective levels of analysis, we acknowledge the case for some key claims of Jussim's book, namely that (a) the evidence for self-fulfilling prophecy and expectancy effects is weak, fragile, and fleeting, and (b) stereotype beliefs are not inherently inaccurate. However, we reject the conclusion that stereotype beliefs do not influence social reality.

The social neuroscience of biases in in-and-out-group face processing

Sylvia Terbeck
Department of Psychology, University of Plymouth, Drake Circus, Plymouth, PL48AA, United Kingdom.
sylvia.terbeck@plymouth.ac.uk
https://www.plymouth.ac.uk/staff/sylvia-terbeck

Abstract: The validity and reliability of stereotypes in social perception confirms traditional early social psychological research. Already in 1954 Gordon Allport stated that stereotypes might have a "kernel of truth." Recent research in social neuroscience, however, contradicts Lee Jussims' (2012) claim that the application of stereotypes increases accuracy in person perception. Person perception is inaccurate as it is insufficient when it involves only one factor (even if that factor was a reliable predictor).

In his book *Social Perception and Social Reality* Jussim writes:

> Is the glass half full or half empty? As everyone knows the optimist says "half full," the pessimist says "half empty." … The parable is NOT "The glass is half empty but the optimist *sees* it as 90% full. […] the parable is in sharp conflict with many social science and social psychological researchers, who do indeed often claim that our beliefs and expectations powerfully influence and distort our perceptions of objective social reality. (Jussim 2012, p. 3)

While Jussim seems to disagree with social scientists and social psychologists, research in neuroscience on social person perception also supports the claim that indeed, categorization can change how humans *see* an individual. This commentary argues that (a) stereotype activation is mostly automatic and (b), that stereotype activation leads to person perception being inaccurate as (c) it is insufficient. The commentary will refer to Part Six of Jussim's (2012) book, "Stereotypes," and particularly Chapter 18, titled "Stereotypes and Person Perception."

In Part Six, Jussim describes numerous studies and discusses the notion that "all beliefs about groups – all stereotypes – are not necessarily wrong, irrational, and malevolent" (p. 270). Jussim argues that many researchers, lay people, and others believe that stereotypes are inaccurate whilst he does not think they are. He mentions multiple examples for stereotypes, such as the notion that men are more likely to commit murder than women, and "Jews really are, on average, richer" (p. 272). A recent mainstream UK Channel 4 documentary entitled "Things We Won't Say About Race That Are True" discussed similar issues; for example, that one "could not say" that "Romanians in the UK are far more likely to be pickpockets" as this was seen as being a racist remark by many people. It is surprising, that we are recently (again) discussing this issue, as in 1954 the famous social psychologist Gordon Allport had already suggested that stereotypes might have "a kernel of truth" (Allport 1954b, 1954 p. 195). I want to argue that the discussion of whether stereotypes are true (or not true, or partly true) is irrelevant, because even if one were to agree that stereotypes were 100% accurate, the conclusion that this therefore makes person perception accurate, seems problematic. The activation of stereotypes – as recent social neuroscience research supports – is mostly automatic, and subsequently distorts person perception, thus making it inaccurate. In particular, I highlight recent social neuroscience research which contradicts the statement: "*If* the stereotype is approximately accurate *and* one only has a small bit of ambiguous information about an individual, using the stereotype as a basis for judging the person will likely enhance accuracy" (Jussim 2012, p. 365, emphasis in original).

Jussim mentions several behavioural experimental studies to support his claim. For instance, Jussim discussed a study by Cohen (1981), who presented participants with a videotaped conversation and gave the information that the target person was a librarian or waitress either before or after the video. Cohen (1981) found that those participants who received the information before the video remembered more (stereotype-consistent) attributes. Jussim argues that this supports the idea that using the stereotype increased accuracy. However, one should note that in this experimental scenario, the participants had either one single aspect of information or no information *at all*. Indeed, it should be considered that in no real life scenario – compared to a behavioural experimental scenario – would one have only one aspect of information (say race) available, and nothing else. The same criticism applies to the study by Macrae et al. (1994), in which either

the information about the profession of the protagonist was given, or no information was given at all. Thus, using stereotypical information seems to increase accuracy if this one aspect is the only information one has; however, this would ideally need to be compared to non-stereotypical information that one might have, which is difficult to construct in behavioural experiments.

In the 2012 book, Jussim also mentions his own experimental work (e.g., Jussim et al. 1996), in which he found that teachers were rating their pupils performance accurately, and that they were more likely to use past performance and motivation rather than gender stereotypes. In fact, Jussim et al. (1996) found that teachers predicted that girls would outperform boys in that school year, which was an accurate prediction of their real performance. Jussim (2012) argues that this experimental evidence supports the claims that (a) teachers were not relying solely on the stereotype, and (b) that their perceptions lead to accurate prediction. One key problem here is the use of self-report measures, which could have led teachers to give socially desirable answers, in order to indicate that they were not applying stereotypical views. Indeed, self-report data might be weak in assessing whether a stereotype was applied or not. I argue that the activation of stereotypical information is mostly automatic and precedes subsequent information processing. Jussim (2012) himself supports the theory that "people may sometimes receive stereotype information before individuating information" (p. 381).

Research in developmental psychology and primatology has demonstrated that even very young babies, and primates also, show a tendency to categorize individuals into groups (e.g., Kinzler & Spelke 2011). fMRI research supports this theory, by demonstrating that in particular the fusiform face area correlates not only to person perception, but also distinguishes faces on the bases of age, gender, and race (e.g., Contreras et al. 2013). Numerous neuroscience studies found differential activation patterns, for example, in the amygdala, fusiform gyrus, dorso-lateral prefrontal cortex, and insula, elicited by passive viewing of faces of different, races, gender, attractiveness, and body shape (e.g., Cunningham et al. 2004). We recently conducted an fMRI study, in which we used region of interest as well as time-course analyses, confirming that fusiform gyrus activity differs for black versus white faces, as well as showing a different time pattern (e.g., fusiform gyrus activity to white faces over time decreases, but increases for black faces) (Terbeck et al. 2015). The fusiform gyrus – and in particular the fusiform face area – is associated with automatic processing of faces (as compared to objects, for example), suggesting that the categorization of attributes such as age and gender, is closely associated with immediate face perception.

However, further neuroimaging studies also indicated that social cognitive goals reduced amygdala activity differences to faces of different races (Wheeler & Fiske 2005). The authors found that when engaging in a classification task (such as deciding the race of the face), as compared to a control task (such as searching for a dot in the picture) could change the effect, suggesting that automatic stereotype activation was not always inevitable. We also determined how basic emotional arousal, mediated by neurotransmitter activity, such as activity of noradrenaline, could reduce social perception differences. In one study we found, using the Implicit Association Test (IAT), that racial biases were reduced in healthy volunteers after a single dose of beta-adrenoreceptor blocker propranolol (Terbeck et al. 2012). More specifically, we found that the IAT score (a computer response-time–based classification task measuring implicit racial biases) was significantly lower after propranolol intervention, suggesting that noradrenergic-based emotional arousal might contribute to generating implicit racial biases.

Our own neuroscience research (Terbeck et al. 2015) also showed that basic emotions, such as aggression and fear, might impact on application of stereotypes/categories and the processing of faces in the brain. In this study, participants either received propranolol or placebo before viewing unfamiliar black and white

faces during the fMRI scan. We found that differences in fusiform gurus activity were reduced after administration of noradrenergic blockade, which reduced fusiform gyrus as well as thalamic (also involved in attention processing) activity to black but not to white faces (Terbeck et al. 2015). Furthermore, time course analysis revealed that sensitization to black faces was reduced, while the activity pattern to white faces was not affected. This suggests that the arousal level can implement on the extent to which attention is focused on the category level (e.g., racial aspect).

As the above discussion demonstrates, it might be quite difficult to simply instruct in a behavioural experiment "Ignore the stereotype" or to investigate whether participants applied stereotypes in their decisions or not. Our research supports the theory that the processing of categories in faces, and the processing of stereotypes, is mostly automatic and immediate. Furthermore, besides the automatic application of the stereotype (e.g., classification of faces according to age, race, or gender), the focus of attention (i.e., differences in thalamic activity was observed with noradrenergic intervention) might be shifted to stereotypical information (which, as we observed, could be modulated by emotional arousal, such as noradrenaline-mediated fight-or-flight responses). Thus, automatic stereotype activation makes person perception insufficient. Additionally, if it is just focused on *one* aspect (say race, and not also age, gender, facial characteristics etc.) it is not reliable for decision making, either. More specifically, person perception would be more accurate if more information about the person would be processed, which implies that application of a stereotype makes person perception inaccurate as it is insufficient. However, since automatic stereotype activation within the brain leads to differential activation patterns for in- and out-groups, it could be suggested that indeed some additional information was not processed or not *seen*.

To conclude, regardless of whether the stereotype content is accurate or not, the automatic activation biases in face processing makes it insufficient (focused on one aspect) and thus inaccurate. Indeed, 70 years of research after Gordon Allport has demonstrated both the relevance and the limitations of stereotypes in social perception.

A close consideration of effect sizes reviewed by Jussim (2012)

David Trafimow and Yogesh J. Raut

Department of Psychology, New Mexico State University, Las Cruces, NM 88003-8001.
dtrafimo@nmsu.edu   yraut@nmsu.edu
http://psych.nmsu.edu/faculty/trafimow/

Abstract: This commentary on Jussim (2012) makes two points: (1) Effect sizes often reflect artifacts of experimental design rather than real-world relevance, and (2) any argument dependent on effect sizes must correct for attenuation due to instrument reliabilities. A formula for making this correction is presented, and its ramifications on the debate over accuracy in person perception are discussed.

Jussim (2012) argues that researchers strongly overemphasize errors, biases, and self-fulfilling prophecies in person perception and fail to sufficiently emphasize accuracy. In support of this claim, Jussim's literature review found mostly small effect sizes for errors, biases, and self-fulfilling prophecies and mostly larger effect sizes pertaining to the accuracy of people's perceptions. From our perspective, this focus on effect sizes suggests two interesting questions. First, even if the effect sizes are precisely how

Jussim characterizes them, does this constitute a strong argument? Second, does Jussim's characterization hold up after correcting the reviewed effect sizes for attenuation due to unreliability of the construct measures?

To address the first question, let us consider a thought experiment. Suppose that the experimenter manipulates participants' bias so that they expect one target person to be kind and another to be unkind. The experimenter subsequently presents the participants with one kind and one unkind behavior performed by each of the two target persons. Later, participants perform a recognition task where they are given a list of the four behaviors and indicate which target person performed each of them. From the point of view of bias, participants should assign both of the kind behaviors to the kind target person and both of the unkind behaviors to the unkind target person. From the point of view of accuracy, participants should be able to correctly assign the behaviors to the targets that performed them. Doubtless, if this experiment were to be performed, there would be an impressive accuracy effect size and a minuscule bias effect size.

But what if the experiment were modified in any of a variety of easily imaginable ways? For example, suppose that each target person performed 100 behaviors rather than two behaviors, and that there was a delay of a year between the presentation of the behaviors and the recognition task. In that case we would expect to obtain a strong effect size for bias and a small effect size for accuracy. Our specific point is that how one performs the experiment is likely to be a crucial determinant of the obtained effect size for bias or for accuracy. More generally, we note that for many dependent variables in social psychology, it is possible to design experiments to obtain small or large effects depending on what is desired.

Because it is easy to imagine thought experiments that would render small or large bias effects or accuracy effects, it is not clear that the effect sizes in the literature provide a strong reason to draw any conclusions whatsoever about the relative power of bias versus accuracy in people's lives. The most that can be concluded is that the literature contains mostly small bias effect sizes and mostly larger accuracy effect sizes, not that bias plays only a small role and that accuracy plays a larger role in typical human experience.

Our second point concerns correcting effect sizes due to the unreliability of measures, a notion derived from classical true-score theory or classical test theory (CTT). CTT introduces the concept of a true score on a test, which is the expected score for a person across a theoretically infinite set of independent test-taking occasions (see Gulliksen [1987] and Lord & Novick [1968] for highly cited reviews). Each test includes the true score plus an error component, but because the error component is random, the expected value of error scores across infinite test taking occasions is zero. The goal is to represent the correlation between true scores ($r_{T_X T_Y}$) as a function of the observed correlation (r_{XY}) and how reliable the two tests are ($r_{XX'}$ and $r_{YY'}$). Equation 1 provides the way to estimate this (see Allen & Yen 1979 for an accessible proof).

$$r_{T_X T_Y} = \frac{r_{XY}}{\sqrt{r_{XX'} r_{YY'}}} \tag{1}$$

To grasp some implications of Equation 1, imagine that an observed correlation is 0.3 and test reliabilities are both perfect or both 0.6. What is the implication for the true correlation? In the case of perfect reliabilities, Equation 1 implies that the true correlation equals the observed correlation, so the answer is 0.3. In the case where the reliabilities are 0.6 for both tests, we have the following answer:

$$r_{T_X T_Y} = \frac{0.3}{\sqrt{(0.6)(0.6)}} = 0.5 \tag{2}$$

Whereas a correlation of 0.3 might not be considered a particularly large effect in many contexts, a correlation of 0.5 (as
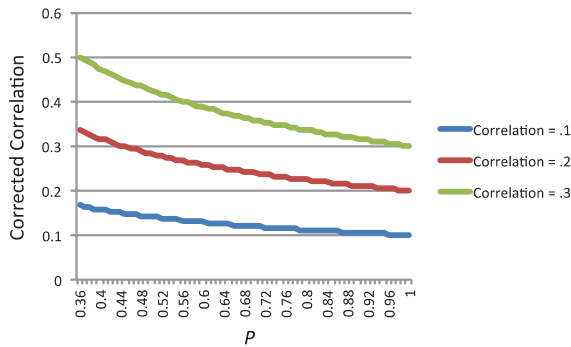
Figure 1 (Trafimow & Raut).   Corrected correlation coefficients for errors, biases, and self-fulfilling prophecies as a function of *P* (ranging from 0.36 to 1.0) and the obtained correlation coefficient (set at 0.1, 0.2, or 0.3).

implied by Equation 2) might be considered substantially more impressive.

It is possible to simplify Equation 1 by speaking about the product of the reliabilities ($P = r_{XX'}r_{YY'}$) so that Equation 1 simplifies to Equation 3 below. If the reliabilities of two tests are each at the borderline value of 0.6, the product is 0.36, which might be considered the lowest product to be "acceptable."

$$r_{T_X T_Y} = \frac{r_{XY}}{\sqrt{P}} \qquad (3)$$

Jussim (2012) mostly uses the correlation coefficient as the effect size measure, and so we will use that here. In the literatures (and particularly the meta-analyses) that Jussim's book reviews, the typical effect size values for errors, biases, and self-fulfilling prophecies tended to be slightly in excess of 0.2. We might consider a range from 0.10 to 0.30 as containing most of the effect sizes that have been reported. So what is implied about the range of corrected effect sizes, given a product (*P*) range of 0.36 to 1 and a reported effect size range of 0.10 to 0.30? Figure 1 explores this issue by allowing *P* to vary between 0.36 and 1 along the horizontal axis. There are three curves representing a "low" effect size of 0.1, a "typical" effect size of 0.2, and a "high" effect size of 0.3. When the low value is used, the corrected correlation ranges from 0.10 to 0.17, so that even assuming quite unreliable tests (where *P* = 0.36), the correction fails to render an impressive corrected effect size. Using a typical value of 0.2 for the effect size, the corrected correlation ranges from 0.20 to 0.33. Even with maximal correcting, the value of 0.33 can hardly be considered a strong advertisement for the power of errors, biases, and self-fulfilling prophecies. However, moving to the high effect size value of 0.3, the corrected correlation ranges from 0.30 to 0.50. Arguably, values near 0.50 contradict the assertion that errors, biases, and self-fulfilling prophecies do not matter very much.

There are many ways to look at these corrected effect sizes. We set a lower bound for *P* at 0.36 but this was arguably too low. There are many researchers who consider 0.7 the lower limit of "acceptable" reliability, in which case *P* would have a lower limit of 0.49 and the corrected correlations are 0.14, 0.29, and 0.42 for observed effect sizes of 0.1, 0.2, and 0.3, respectively. There are even those who advocate that 0.8 is the lower limit of acceptable reliability, in which case *P* would have a lower limit of 0.64, and the corrected correlations would be 0.13, 0.25, and 0.38 when the observed effect sizes are −0.1, 0.2, and 0.3, respectively. Of course, the issue is less what we consider to be acceptable reliability and more what the reliability values actually are in most research on errors, biases, and self-fulfilling prophecies. This is a difficult topic because there are different kinds of reliability (internal consistency, test-retest, and so on), there is much variance in actual reported values, and reliabilities of measures in

these areas have not been subjected to thorough meta-analyses. To the extent it is assumed that researchers have mostly used reasonably reliable measures, Figure 1 supports Jussim's contention, whereas to the extent that one believes that many of the measures have not been reliable, the top curve in Figure 1 may undercut Jussim's claims.

Another complicating factor has to do with the meaning of reliability with regard to true experiments. In a true experiment, the "reliability" of the manipulation is likely to be close to 1, in the sense that everyone in the experimental condition really was in the experimental condition and everyone in the control condition really was in the control condition. Thus, for example, if the dependent variable in a true experiment has a reliability of 0.7, the implication is that *P* = 0.7, in which case the corrected correlation will be only a small improvement over the obtained one. Obviously, this factor pushes in the direction of supporting Jussim's claims about the literature. On the other hand, if one assumes that the manipulations in the experiments did not take for a substantial number of participants, this could potentially weaken Jussim's argument.

Yet another complicating factor is that it also is possible to convert effect sizes in the form of correlations into success rates (see Rosenthal & Rosnow 1991). To illustrate this, imagine a set of cancer patients in which half are treated and half are not treated. Under these binary strictures, Equation 4 gives the proportion of treated people who live, which is the "success rate" (*S*), as a function of the correlation coefficient (*r*).

$$S = .5 + \frac{r}{2} \qquad (4)$$

Suppose that the corrected correlation is 0.4. The implication is that the success rate is 0.7, which can be interpreted as being rather impressive (although it must be compared to a baseline success rate of 0.5 due to chance). From this perspective, Jussim arguably was too harsh in his characterization of the literature, as even somewhat small effect sizes can indicate an impressive success rate. On the other hand, some argue that Equation 4 overestimates the success rate (e.g., Hsu 2004).

Correcting correlations also bears on Jussim's positive claims about powerful effect sizes in the accuracy literature. Based on Jussim's review, we might take a range of 0.3–0.7 to indicate the various accuracy effect sizes that were reported. Figure 2 illustrates the corrected correlation coefficients as a function of the obtained effect size, where the lower curve uses a low value of 0.3, the middle curve uses an intermediate value of 0.5, and the upper curve uses a high value of 0.7. The corrected correlations range from 0.30 to 0.50, from 0.50 to 0.83, and from 0.70 to 1.00, for the lower, middle, and top curves respectively. (Note that the top curve caps at 1.00.)

The issues we discussed above regarding the interpretation of Figure 1 similarly color the interpretation of Figure 2. Despite the complexity of these issues, Figures 1 and 2 clarify an important
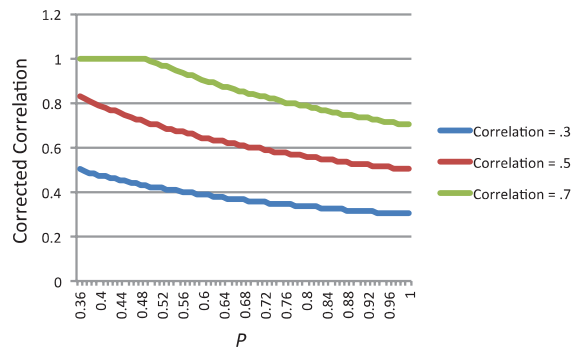

Figure 2 (Trafimow & Raut).   Corrected correlation coefficients for accuracy as a function of *P* (ranging from 0.36 to 1.0) and the obtained correlation coefficient (set at 0.3, 0.5, or 0.7).

point. Given the disparity in corrected correlations concerning errors, biases, and self-fulfilling prophecies versus accuracy, a straightforward interpretation of Figures 1 and 2 implies that Jussim is correct in characterizing accuracy as more powerful. However, researchers who do not wish to accept this conclusion might consider the following possibility: Suppose someone were to go through the literature and show that the reliabilities of measures showing accuracy are substantially greater than those of measures showing errors, biases, and self-fulfilling prophecies. In that case, effect sizes linked to errors, biases, and self-fulfilling prophecies require more correction than effect sizes linked to accuracy; the corrected sets of correlations might be much closer than Figures 1 and 2 suggest; and an extreme disparity in reliabilities might even produce a reversal. Our guess, however, is that this strategy is unlikely to pan out in an impressive way.

Regarding the more abstract issue of the relative power of accuracy versus errors, biases, and self-fulfilling prophecies in everyday life, we emphasize the implications of the thought experiment with which we began this commentary. It is possible for researchers to attach too much value to effect sizes – even corrected ones! – found in the literature, given that it is obviously possible to design experiments in such a way as to artificially obtain dramatically different effect sizes. The seeming implication for those who wish to dispute Jussim's overall message is that they should perform experiments designed to generate small effect sizes for accuracy and large ones for errors, biases, and self-fulfilling prophecies. Until this happens, Figures 1 and 2 show that the weight of the evidence is on Jussim's side, at least for now.

There is more to memory than inaccuracy and distortion

Brady Wagoner

Department of Communication and Psychology, Aalborg University, Aalborg 9000, Denmark.
wagoner@hum.aau.dk
https://aalborg.academia.edu/BradyWagoner

Abstract: Exaggerated claims about inaccuracy and downplaying veracity can also be found in research on memory. This commentary on Jussim's 2012 book analyzes these developments in connection with *schema* and *the misinformation effect's* purported role in memory distortion. It concludes by looking back to the *locus classicus* of memory distortion (viz. Bartlett 1932), which in fact provides a more nuanced account of inaccuracy.

Although one can point to forerunners, it was not until the 1960s and 1970s that psychology became dominated by the study of errors and biases in cognition, and began to believe that our perception and memory of social reality was for the most part inaccurate. As Jussim (2012) points out, at the heart of this approach is the idea that humans are cognitively lazy, lacking alertness and irrational in their relating to the social world – in short "cognitive misers" (p. 4). This development coincided with the metaphor of mind as a computer that processes, encodes, stores, and retrieves information; when compared to the standard of decontextualized and literal processing of information on a computer hard disk, the human mind was a poor performer. This focus on identifying error and distortion obscured important, non-mechanical dimensions of mind and the study of accuracy as more than what a computer does with information. Jussim (2012) analyzes this trend in relation to research on our beliefs and expectations of others, while Gigerenzer et al. (1990) have shown how it played out in the psychology of thinking. In this commentary, I describe a third area of research, memory, that has also shifted towards a one-sided focus on error. Memory is peripherally discussed in Jussim's book in

relation to stereotypes. Here I extend Jussim's treatment to show how memory research began to overemphasis conditions leading to distortion over accuracy.

Like person perception and thinking, memory has become mainly a study of inaccuracy and distortion. Memory errors have been generally described in relation to two processes: expectation-based and post-event misinformation effects. The most well-known concept for analyzing expectation-based errors is that of "schema" and its derivatives "scripts" and "frames" (Wagoner 2013). Although the concept had been used much earlier (e.g., Bartlett 1932; discussed further below), schema took on a new meaning in the 1970s as an abstract knowledge structure for representing and storing information – for example, our generic idea of going to a restaurant shapes how we perceive and remember any specific situation of doing so. Studies using this concept showed that we are more likely to remember schema-consistent than schema-inconsistent information, and tend to add information that was schema-consistent but not actually present in the original.

While early studies tended to look at memory for banal situations – such as going to a restaurant (Shank & Abelson 1977) or a graduate student's room (Brewer & Treyens 1981) – it was not long before schema was applied to describe the use and maintenance of stereotypes; for example, in relation to race, gender and social groups. In this context, schemas were guides to action that become self-fulfilling prophecies (Fiske 1982). There has been much evidence put forward to show that schema-based bias is real, but this research has largely sidelined the issues of how schema are developed and changed on the basis of social reality (McVee et al. 2005). Furthermore, Bransford et al. (1977) pointed out that schema set the stage for making visible expectation inconsistent information, an issue that has been largely ignored.

In addition to schema, memory distortion and inaccuracy has also been heavily investigated in terms of "the misinformation effect," initially demonstrated in a series of pioneering studies by (Loftus 1975; Loftus & Palmer 1974; Loftus et al. 1978). The experimental set up begins by showing participants complex, fast-moving events (such as an automobile accident or theft) through film clips or slide shows. Immediately afterward, participants are questioned about the event. For the experimental group some of the questions asked include misleading information – for example, "How fast was the white sports car going when it passed the *barn* while traveling along the country road?" (There was no barn in the film). These participants were more likely to later remember a barn than the control group in which no barn was mentioned in the post-event questioning. Important to note is that the effect was much stronger when a barn was presupposed in the question rather than when participants were asked directly "Did you see a barn in the film?" (Loftus 1975). It is also worth pointing out that participants were fed entirely plausible suggestions by a trusted authority and were only inaccurate a fraction of the time. More recently, it has been found that the misinformation can be neutralized if participants are given reason to mistrust the authority, and may even be reversed if told afterwards that they were given some misinformation (Blank 1998). This suggests that humans are not the memory dupes they have often been made out to be, but can actively manage suggestions in remembering (Wagoner & Gillespie 2014).

Looking back to Frederic Bartlett's book *Remembering: A Study in Experimental and Social Psychology*, commonly evoked as the *locus classicus* of memory distortion research, we find it tells a rather different story (Wagoner 2017). For Bartlett "constructive" remembering meant that it was flexible and adaptable in meeting new challenges: What is of primary interest is what we can *do* with our memories. In this way, construction was theorized together with conservation and retention of the past. He also believed that it could lead to accuracy in memory, whereas today it has become a synonym for "distortion"

(Wagoner 2015). Bartlett (1932) in fact gave several examples of accuracy in recall, including remembering the "gist" of some material, the retention of dominant as well as unimportant details, "almost word perfect reminiscence" (p. 203) functional in stable environments, and "prodigious retentive capacity" of Swazi herdsman in relation to cattle transactions (see also Ost & Costall 2002). The last example is noteworthy in that it illustrates Bartlett's (1932) belief that memory is not good or bad in itself but rather that accuracy depends on the context and whether it promotes literal recall. As such, we find in Bartlett (1932) a more balanced position towards accuracy and inaccuracy than is typically attributed to him (cf. Allport's warnings about the overemphasis on inaccuracy in perception – Jussim 2012, p. 19ff).

Reflecting on the emerging emphasis on memory inaccuracy in the late 1960s and its relation to his own book, Bartlett commented, "I did not say, I think I did not imply that literal retrieval is impossible, but I did imply that it requires special constricting conditions" (Bartlett 1968, Note 3), such as in the context of learning by heart in school, witnesses in a court of law, or even in a memory experiment. Moreover, when these "constricting conditions" are not present, memory is still accurate enough to provide an appropriate response to a changing environment. His famous concept of schema (mentioned above as a structure in the head) was actually used by him to describe the well-adapted transaction between person and world (Wagoner 2013). He also pointed out that human beings were not merely determined by schema but actively manage and reflect on them in order to master and enjoy the world. Thus, we see what was for Bartlett the best means of knowing and acting on the world, became the source of distortion and inaccuracy in later research on memory from the 1970s onwards. In summary, like the research on person-perception described by Jussim, memory research became a study of errors, bias and inaccuracy, downplaying the evidence for possibilities of reflection, accuracy and its different manifestations.

Two faces of social-psychological realism

Nicholas Hoover Wilson[a] and Julie Y. Huang[b]

[a]Department of Sociology, Stony Brook University, Stony Brook, NY 11794-4356; [b]College of Business, Stony Brook University, Stony Brook, NY 11794-3775.

nicholas.wilson@stonybrook.edu   Julie.huang@stonybrook.edu
http://www.stonybrook.edu/commcms/sociology/people/faculty/wilson.html
http://www.stonybrook.edu/commcms/business/faculty_pages/fulltime/Julie%20Huang.html

Abstract: This commentary places Jussim (2012) in dialogue with sociological perspectives on social reality and the political-academic nature of scientific paradigms. Specifically, we highlight how institutions, observers, and what is being observed intersect, and discuss the implications of this intersection on measurement within the social world. We then identify similarities between Jussim's specific narrative regarding social perception research, with noted patterns of scientific change.

Early in *Social Perception and Social Reality* (Jussim 2012), Jussim declares his work to be a "scholarly and intellectual (rather than political) polemic" (p. vii).What is the ultimate goal of this polemic? On the one hand, the Précis target article and the underlying book can be read as a relatively specific argument against a movement in social psychological research which, Jussim argues, eclipsed older accuracy research in the 1950s and overstated the strength and prevalence of self-fulfilling prophecies and systematic bias in social perception. On the other hand, Jussim also implies that the acceptance of axiomatic assumptions by these

literatures, and overstatement of effects (whether intentional or not) fitted a progressive political climate. Thus, Jussim's argument is more than simply an argument about correspondence to "social reality"; it also represents a turn against social constructivism's "highly politicized . . . [concern] with liberating underprivileged or low-status people from," to use some favorite constructivist terms (in their view), oppressive, patriarchal, or Euro-centric hegemonic discourses and practices" (p. 174).

At each of these two scales – as a technical critique of the conduct and interpretation of specific studies, and as an academic-political call for a return to objective research about the nature of the world – Jussim will no doubt succeed in arousing controversy and debate. Rather than contribute directly to this debate, however, our goal is instead to explore unresolved issues which arise when moving between these two scales of argument. In this commentary, we focus on two specific arenas – Jussim's perspectives regarding the nature of "social reality" and the sociology of science – which we believe provide particularly interesting directions for future discussions into the nature and measurement of the social world.

Jussim's claim that accuracy research is possible and desirable – in other words, that the social world can be more-or-less accurately assessed – is rooted in a specific view of what "social reality" and "the social world" are like. Jussim repeatedly invokes "probabilistic realism" – the assertion, in some form common to all sciences, that there is an observer-independent reality under study mixed with different strands of probabilism, all of which soften the strict need for phenomena to *always* be observed in the same way given the same conditions. Jussim then uses this groundwork to guide subsequent observations when extrapolating from laboratory to field studies, and then to common-sense reasoning about the everyday world (Jussim 2012, Chs. 10–11).

In our view, this extrapolation produces two concerns, both of which are common in experimental social psychology (one of the authors' fields of study). First, the approach ignores the potentially "dappled" nature of the social world (Cartwright 1999) and second, neglects the constitutive and ongoing role of institutions to create, feed and sustain self-fulfilling prophecies, stereotyping, and the classification and categorization of people (Berger & Luckmann1966). In other words, experimental studies tend to carefully "freeze" institutions so they behave *as though* they are unchanging (e.g., Hacking 1983). Greater consideration of how institutions, observers, and what is being observed intersect may help Jussim sustain extrapolating from experimental studies to full-blown "social reality."

For example, Jussim couples a view of people as generally socially astute to a definition of social institutions as arrangements that remain fixed once first negotiated (p. 5; p. 177). Moreover, while acknowledging that many social institutions – from sports games to markets to politics – may be created through social agreement, Jussim thereafter views them as effectively "in place," with "all sorts of outcomes [which] occur independent of individual perceivers' beliefs, predictions, or expectations" now possible (p. 177). Treating institutions as "frozen" sets of stable rules in this way seems to offer its greatest advantage because it resembles the judgment of tangible or materially "indexical" phenomena (Peirce 1991). This approach includes important aspects of social reality, including social judgments which can be explicitly yoked to observable physical behaviors within such "frozen" institutional contexts, such as observing a home-run hit in a single baseball game (p. 176–77).

While the advantages of Jussim's approach are relatively clear in these cases, they become less so when the same approach is applied to less tangible phenomena (e.g., properties of individual persons or groups). To clarify the boundaries of his claims, Jussim may want to engage more carefully with the "constructivist" literature. Some of the points made by these scholars – that labels applied to and theories about objects – whether material things or people – in fact partly constitute and transform what they are and how they behave (Hacking 2004; Putnam 1988; Searle 1995)

can help clarify which aspects of social reality can be accurately perceived, and how much so. For example, Jussim treats economic markets as an aspect of social reality which exists "independent of individual perceivers' beliefs, predictions, or expectations" (p. 177), whereas for other social scientists, the very same intangible entity is a classic example of an institution which can be structured by (expert) expectations of its operation (Healy 2015; MacKenzie 2008). Such examples suggest that within the social world of interest to Jussim and many other social scientists, some phenomena exist along a spectrum of "realize-ability" via accuracy measures – and that exploring this potential ambiguity may help understand when social judgments can be meaningfully described as accurate, and to what degree they are so.

When making arguments about markets and other institutions, Jussim carefully restricts the definition of accuracy to "correspondence between perceivers' beliefs … and what those target people are actually like, independent of perceivers' influence on them" (p. 172). One of the crucial phrases of this definition – "independent of perceivers' influence on [what is being perceived]" – once again is reasonable in the case of "brute facts" of the material world (Searle 1995) and the carefully controlled conditions of the lab. But beyond specific criticisms of field experiments concerning self-fulfilling prophecies in situations of real-world categorization (e.g., *Pygmalion in the Classroom*; Rosenthal & Jacbosen 1968), Jussim seems to assume that this definition holds even if it scales from laboratory to field observation to everyday life. This strikes us as needing more systematic argument at a minimum, since in many meaningful instances of "everyday life" categorization and perception (ranging from Merton's original essays about self-fulfilling prophecies themselves to institutional student tracking in education based upon standardized testing) perceivers – even as individuals – often occupy roles which, insofar as they potentiate perceptions by embedding them in institutions, hardly seem "independent of influence."

The interdependence of perceivers, the perceived, and the institutions in which both exist, is well-illustrated by recent sociological research that explores how perceptions of race, the criminal justice system, and life chances intertwine. One of Jussim's favored criteria for establishing an objective grounding for judgments of accuracy is nationally representative surveys (such as the "objective data" of the U.S. census; p. 178). And yet important recent work (Penner & Saperstein 2008) has shown (a) that even well-known surveys with highly-standardized measures like the National Longitudinal Survey of Youth, 20% of respondents' interviewer-reported race *changed* over the course of the survey, and (b) that these changes – the likelihood of the respondent being coded by the interviewer and self-identifying as black – were significantly correlated with changes in social status (such as incarceration, falling into poverty, and becoming unemployed). Likewise, Jussim also favors "simple, clear, objective criteria" such as the fact of being married, one's education, as a clearcut groundwork for judging the accuracy of perception (p. 177). And yet, another important study in sociology, this time an "experimental audit" (Pager 2003) of hiring practices measuring callbacks for those self-reporting a non-violent drug offense was (a) designed precisely to manipulate the "accuracy" of such "objective" criteria as a criminal record in the real world (in no reported cases was this manipulation discovered by subjects of the field experiment), and (b) found that the strongest effect in the study was of being *both* black and reporting a non-violent criminal conviction. Of course, neither of these studies directly undermines Jussim's criticism regarding the particulars of social psychological studies. Instead, they illustrate how, at the intersection of perceiving and perceived groups and social institutions, "objective" criteria can carry stereotypical assumptions within them, and that those exercising stereotypical judgments (e.g., that black criminals make poor employees) in fact often make such judgments in socially influential and consequential settings.

We note that Jussim contains carefully limited claims (e.g., "Prior self-fulfilling prophecies might explain some difference between targets that are accurately perceived;" p. 168; see also p. 160); however, these qualifications are themselves embedded in a larger narrative regarding the highly politicized conduct of scientific research. Jussim describes how social perception research "banished" attention to accuracy and became "infatuated" with studying bias, an event driven in part by the "manifestly political agenda" of yearning to improve the lives of people who social-psychological researchers viewed as oppressed and downtrodden (p. 154). This position, construed as a technical argument within psychology, bears an interesting resemblance to positions described in Kuhn's (1962/1996) analysis of scientific paradigms. Indeed, at this narrower level, one might construe the process of (potentially) over-reading key "paradigmatic" studies and their progressive extension of a research program based upon them (to the comparative neglect of "anomalous" preceding and contemporary studies; Lakatos 1999) as an established feature of scientific growth and change, as opposed to a particularly political moment within the history of social psychology.

While we agree with Jussim's broader position that scientists should pursue research where it leads, even on disturbing topics (a stance which harkens back to classic statements in the sociology of science; Merton 1996; Weber 1922/1946), we believe that dialogue with literatures on the intersection of science, legitimacy, objectivity, and politics (e.g. Gieryn 1983; Frickel & Gross 2005; Latour 1999) will be vital if Jussim wishes to sustain a position as a disinterested student of the "truth" ("even with a 'small t'"; p. 175; see also p. 154). This recurring issue with scientific paradigms is worthy of systematic discussion, since it constitutes a crucial foundation for productive intellectual debate.

In sum, we find that Jussim represents an opportunity for a broader discussion about the nature of "social reality" as studied by social psychologists, as well as a chance to clarify the intellectual politics of that discussion.

Author's Response

Accuracy, bias, self-fulfilling prophecies, and scientific self-correction

Lee Jussim

Department of Psychology, Rutgers University, Piscataway, NJ 08544.
Jussim@rci.rutgers.edu
http://www.rci.rutgers.edu/~jussim/

Abstract: In my Précis of *Social Perception and Social Reality* (Jussim 2012, henceforth abbreviated as *SPSR*), I argued that the social science scholarship on social perception and interpersonal expectancies was characterized by a *tripartite pattern:* (1) Errors, biases, and self-fulfilling prophecies in person perception were generally weak, fragile, and fleeting; (2) Social perceptions were often quite accurate; and (3) Conclusions appearing throughout the social psychology scientific literature routinely overstated the power and pervasiveness of expectancy effects, and ignored evidence of accuracy. Most commentators concurred with the validity of these conclusions. Two, however, strongly disagreed with the conclusion that the evidence consistently has shown that stereotypes are moderately to highly accurate. Several others, while agreeing with most of the specifics, also suggested that those arguments did not necessarily apply to contexts outside of those covered in *SPSR*. In this response, I consider all these aspects: the limitations to the tripartite pattern, the role of

politics and confirmation biases in distorting scientific conclusions, common obstructions to effective scientific self-correction, and how to limit them.

R1. Introduction

When I began writing *Social Perception and Social Reality* (Jussim 2012; henceforth abbreviated as *SPSR*), my goal was to offer a corrective to a slew of manifestly false claims in common conclusions about social perception. The Précis target article summarized this as the *tripartite pattern*: (1) Errors, biases, and self-fulfilling prophecies in person perception do occur, but are generally weak, fragile, and fleeting; (2) Social perceptions were often quite accurate; and (3) Conclusions appearing throughout the psychological literature (with educational psychology as a notable exception) were often unhinged from these data by virtue of routinely declaring expectancy effects powerful and pervasive, and consistently ignoring evidence of accuracy. I also argued that defining stereotypes as inaccurate is logically incoherent, and that, in sharp contrast to 100 years of claims to the contrary, the evidence is that stereotypes are often (not always) quite accurate. All of this was "news," not because of new dramatic data, but because the old data never justified the strong claims about the power of expectancies to create social reality. To paraphrase Winston Churchill's characterization of the early architects of appeasement, social psychology periodically stumbled on the truth but simply picked itself up and hurried along as if nothing had happened.

The evidence supporting an emphasis on error, bias, and irrationality in social perception was maintained by virtue of overstatements of what research actually found (e.g., by ignoring effect sizes), and selective citation of a small number of dramatic "wow effect" studies (Jussim et al. 2016b), many of which have proven difficult to replicate. The error and bias ("stupidism" as per **Kihlstrom**) perspective was also maintained by reliance on a "toolbox" of double standards, blind spots, and researcher confirmation biases that served to elevate the supposed importance of "bias" results and studies while denigrating or dismissing evidence of accuracy. Indeed, *SPSR* pointed out that even some of the most classic demonstrations of "bias" in social perception (e.g., C. E. Cohen 1981; Hastorf & Cantril 1954; Rosenhan 1973) actually provided more evidence of accuracy than of bias – as did many of the follow-ups to classic studies such as Rosenthal and Jacobson (1968), Snyder & Swann 1978b, and Darley and Gross (1983).

Nearly all of the commentators have accepted the fundamental conclusions of *SPSR*. Of the seventeen commentaries, only two have taken issue with the major conclusions (**Bian & Cimpian**; **Terbeck**), and two have disagreed, not over conclusions, but over definitions (**Andrews**; **Church**). Two others similarly do not take issue with the tripartite conclusion, but also suggest that phenomena outside the scope of *SPSR* might have yielded different conclusions (**Kahan**; **Wilson & Huang**).

There is abundant embracing of the main conclusions. **Trafimow & Raut**'s consideration of statistical effect sizes concludes that the weight of the evidence supports the tripartite conclusions. Two of the commentators (**Little**; **Marczyk**) point out that it would be bizarre if evolution did not lead us to be in touch with reality much of the time. Several commentators point to evidence outside the scope of *SPSR* that also often yields evidence of accuracy and rationality (**Bonnefon, Hopfensitz, & De Neys** [**Bonnefon et al.**]; **Kihlstrom**; **Mousavi & Funder**; **Wagoner**). And one commentary (**Madison, Dutton, & Stern** [**Madison et al.**]) endorses and expands on one of the undercurrents of *SPSR* – that politics and dogmas have probably distorted the scientific conclusions in this and many other areas of social science.

Does this mean psychology has finally turned a corner and is self-correcting towards fully recognizing that social perception is often largely rational and accurate and generally only modestly subject to error and bias? Given the positive nature of most of the commentaries, one might suspect that the answer is "yes indeed." One would, however, be wrong. Before returning to that question, however, I respond to the specific issues raised in the commentaries.

Despite largely supporting the general perspective in the book, even the vast majority who did not contest the general conclusions often did point out gaps in the theorizing and that other phenomena not addressed in the book often yielded greater evidence of error, bias, and constructionist processes. A smaller number did take issue with some of the book's key conclusions. Each of these are discussed next.

R2. Definitional differences

R2.1. Sensory perception versus social perception

Church correctly points out that the research reviewed in *SPSR* does not make a hard distinction between sensory perception and more global cognitive representations, such as interpretations, beliefs, judgments, et cetera. In fact, to social psychologists, *social perception* rarely deals with sensory perception per se, and generally deals with "perception" in this more cognitive and molar sense. When we seek answers to questions like, "How do voters perceive President Obama?" we are almost always interested in beliefs, attitudes, and opinions about Obama, not their sensory perceptions. I am glad to have the opportunity to clarify that *SPSR*'s focus is on molar social perceptions, and not sensory perceptions. However, the idea that beliefs and expectations influence sensory perceptions has even less support than it does with respect to molar social perceptions (Firestone & Scholl 2016).

R2.2. If every concept is really a "stereotype," the term loses all meaning

Andrews' commentary advocates abandoning the distinction between stereotypes and individuating information. I disagree. If anything one person believes about another's behaviors and characteristics is a "stereotype," then the term loses all meaning and usefulness as a theoretical construct.

Social psychologists (and I suspect many other people; see, e.g., the 14th Amendment to the U.S. Constitution, and the Civil Rights acts of the 1960s[1]) usually consider it important to understand where beliefs about groups versus individuals originate – at least, if those beliefs influence behavior. Take, for example, beliefs about a person named Alfonso. Do they result from: (1) his being a male or Latino, or (2) the fact that he acts in his local theater group, earned a law degree from Harvard, likes skinny

jeans, and vacations in the Bahamas? It does not matter much, I suspect, whether we call them stereotypes versus individuating information, or "concepts" about groups and concepts about individuals. What is important is that beliefs about Latinos are not the same thing as beliefs about Alfonso. They may have some superordinate similarities (both are beliefs), in the same way that beliefs about apples (they are usually red and good to eat) have some superficial similarity to *this apple* (which is brown and rotting and not good to eat). Nonetheless, both *apples* and *this apple* are concepts and, in that way, have some similarity. The distinction is also important, however, because it highlights important differences between *apples* and *this apple*, and between Alfonso in particular, and Latinos in general.

R3. Filling in gaps and expanding the scope

R3.1. Evolutionary explanations for (in)accuracy

Two commentators brought up the important theoretical point that evolutionary theories could explain both why there is relatively high levels of accuracy in social perception and also conditions likely to produce low accuracy because adaptations to advance goals other than accuracy might take precedence (**Little**; **Marczyk**). These commentators (1) correctly point out that *SPSR* did not draw on evolutionary perspectives; and (2) point out that doing so is likely to provide important theoretical advances to understanding conditions under which accuracy is likely to be higher or lower. At its most basic level, it is hard to imagine any successful organism that has evolved to have completely invalid reactions to its environment.

On the other hand, evolution emphasizes adaptations that enhance an organism's ability to produce viable offspring. Thus, as both **Marczyk** and **Little** correctly point out, there are many goals that might accomplish this that have little relevance to, or which might even conflict with, accuracy (e.g., identifying and attracting fertile mates, attracting resources to support offspring, etc.). Deception is prominent in the animal world (and even occurs in the plant world; consider carnivorous plants posing as nectar-rich flowers) because there are so many ways that it could have adaptive advantages. Therefore, it also seems implausible that evolution would yield social perceptions that were perfectly accurate (von Hippel & Trivers 2011). In psychology, error management theory (Haselton & Buss 2000) was, as pointed out by Little, an early and constructive attempt to identify when evolutionary pressures were more likely to lead to accuracy versus certain specific types or patterns of errors. Indeed, social psychological theorizing will likely be enhanced and sharpened by further efforts to exploit evolutionary ideas to understand when people are likely to be accurate and when they are likely to be systematically inaccurate.

R3.2. Accuracy in other contexts

Several commentators have pointed out that, in other contexts, there is often: (1) Surprising evidence of accuracy; and (2) a similar pattern of political or theoretical double standards in evaluations of the evidence. Such double standards occur when people hold research that advances their theoretical perspectives or political values to lower standards than research that opposes their theoretical perspectives or political values:

Bonnefon et al., for example, point out these issues in the study of the accuracy of judgments of trust at zero acquaintance. Although the levels of accuracy are much lower than among expectancies, they point out (correctly, in my view) that *any* accuracy on the basis of a mere photograph is quite striking. Furthermore, their analysis strongly suggests that political/advocacy goals have led to a set of logically contradictory conclusions about accuracy in perceptions of trust, in a way quite reminiscent of the double standards and logical incoherence I identified with respect to self-fulfilling prophecies and stereotypes. In short, perceptions of trustworthiness have been declared both inaccurate and self-fulfilling, and these are mutually exclusive conclusions. A belief that a target is untrustworthy can be, at one moment in time, inaccurate, and the next, self-fulfilling, such that the target becomes untrustworthy. After the target becomes untrustworthy, subsequent perceivers are not wrong for believing the target to be untrustworthy. They are accurate. Consequently, Bonnefon et al. correctly point out that perceivers' beliefs about trustworthiness cannot be *generally* inaccurate and self-fulfilling.

Mousavi & Funder similarly point out that judgments are often "ecologically rational," meaning that they are well adapted to their environments. Fast and frugal heuristics, though technically constituting "biases," especially in laboratory studies, often lead to moderately to highly accurate judgments in much of the rest of daily life. These commentators, too, echo the political implications of accuracy, pointing out that an overweening emphasis on error and bias misses a great deal of evidence of accuracy. This is important, they argue (and I agree), in part, because in such situations, efforts to solve social problems by changing supposedly erroneous beliefs are doomed to failure when the beliefs are not particularly erroneous in the first place.

Wagoner points out that distortions of the scientific record similar to those described in *SPSR* have long characterized perspectives on memory. The schema concept, which is hypothetically at least neutral with respect to accuracy (as are interpersonal expectancies) has become virtually synonymous with error and bias (as have interpersonal expectancies). That many modern perspectives have just as blithely ignored Bartlett's (1932) balanced view of accuracy/error in memory as F. H. Allport's (1955) balanced views on perception is a testament to the long reach of the distorting power of theoretical perspectives emphasizing distortion.

R4. Constructivism (both cognitive and social) lives!

R4.1. Cognitive constructivism

Kihlstrom agrees with the general thrust of *SPSR* but also urges not to throw out the baby (cognitive constructivism) with the bathwater (the excessive emphasis on error and bias). And nor did I intend to do so. Kihlstrom's commentary presents a very thoughtful and balanced view of realism and constructivism, and is a great primer on how social psychology can be enriched by not dismissing ideas from any of those broad perspectives writ large.

The cognitive constructionist processes highlighted by **Kihlstrom** undoubtedly can and do influence memory
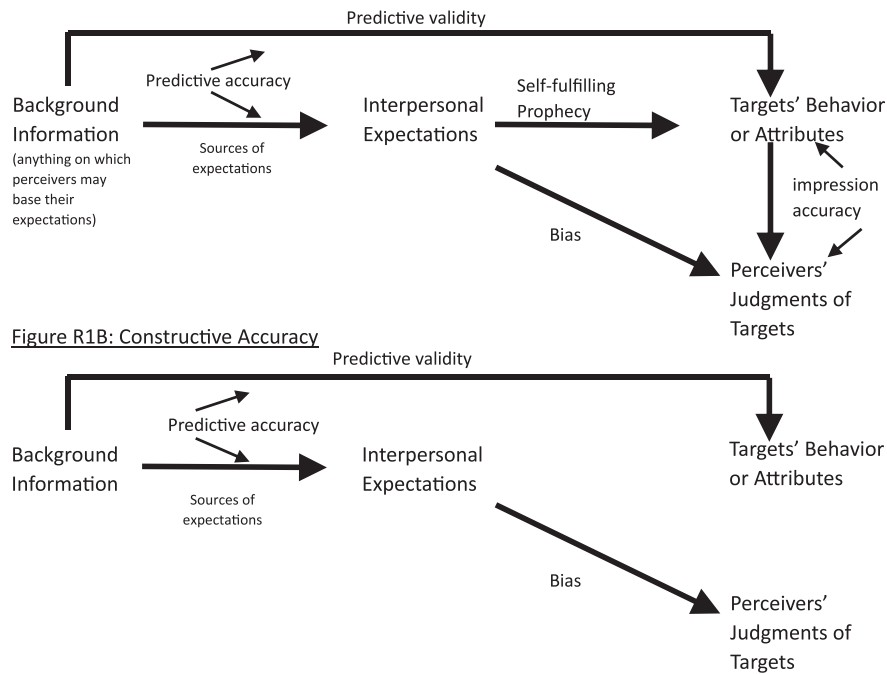
Figure R1.   The Reflection-Construction Model (Jussim, 1991).
<u>Figure R1A: The Full Model; Figure R1B: Constructive Accuracy</u>: Even when perceivers are completely oblivious to targets' behavior or attributes, their judgments of targets will still correspond to (correlate with) targets behavior or attributes *if* (1) expectations are based on background information that (2) predicts targets behavior or attributes; and *if* (3) expectations influence (bias) perceiver judgments.

and the types of social perceptual processes addressed in *SPSR*. And, surely, sometimes those effects do indeed constitute errors and biases. However, constructivism and error/bias are not synonymous. Although Kihlstrom does not argue that they are, because cognitive constructivist is sometimes presumed to mean something like "perceivers making stuff up that supports their pre-existing beliefs, expectations, and values" (Kihlstrom's own emphasis on the over-reach of "stupidism" perspectives; see also commentaries by **Madison et al.**, **Mousavi & Funder**, **Wagoner**), it is, perhaps, worth walking through why bias and constructivism are not synonymous.

"Constructive accuracy" refers to the process by which expectancy-induced "biases" can increase accuracy (Jussim 1991). Figure R1 presents the Reflection-Construction Model (Jussim 1991), within which Figure R1A depicts relations among the key variables involved in accuracy, bias, and self-fulfilling prophecy, and Figure R1B depicts constructive accuracy. The latter shows that impression accuracy (correspondence between perceivers' judgments of targets and those targets' behavior or attributes) can be quite high, *even when perceivers base their judgments of individual targets exclusively on their own expectations, and are oblivious to (ignore, overlook, do not have access to) targets' actual behavior or attributes.* If all three paths shown are high enough, perceiver judgments will correspond to (correlate with) target behavior or attributes, even though perceiver judgments are heavily based on their own expectations and not at all based on target behaviors or attributes. This is because, in Figure R1B, the correlation between perceiver judgments and target behavior or attributes is the multiplicative product of the three paths. For example, if all three equal .8, then impression accuracy equals $.8^3 = .51$. In

psychological, rather than mathematical terms, this means that, if perceivers' expectations are strongly based on highly valid information, *the more they rely on those expectations when judging targets, the more accurate they will be.*

This is a constructive phenomenon, because, in this example, the judgment is based *entirely* on perceiver expectations, with no direct input from targets' actual behavior or attributes. Furthermore, even if perceivers *do* partially base their judgments directly on targets' behavior or attributes, relying on accurate expectations can *still* increase accuracy further (see Jussim 1991, for details). Thus, I concur with **Kihlstrom** that constructive processes can and do play an important role in person perception; however, I would emphasize that, even so, such processes may, at least when those expectations are themselves based on valid information, increase rather than reduce accuracy.

R4.2. Social constructionism

Two of the commentaries (**Tappin, McKay, & Abrams** [**Tappin et al.**]; **Wilson & Huang**) make measured appeals to not completely throw out the social constructionist baby with (what I would call) the excessively political bathwater. However, both commentaries, in somewhat different ways, present defenses of social constructionist processes. Tappin et al. do so by arguing for the importance of collective action as a major influence on social reality; Wilson & Huang do so by emphasizing the role of institutions in creating social reality. I see these arguments as mutually reinforcing, so I address them both here.

This reply is not the place for a comprehensive review or critique of social constructionism, which is a single term that refers to quite a variety of perspectives. I would,

however, divide social constructionism into two main veins (which are not necessarily mutually exclusive). One is primarily a political liberation perspective, with the goals of combating oppressive and hegemonic practices and discourses, in part, by revealing them, thereby advancing the interests of certain groups that the users of such terms deem unfairly victimized or exploited in some way. Few in psychology capture the politicized nature of the efforts better than Jost and Kruglanski (2002), who approvingly declared: "From this perspective, we have a professional obligation to weigh in on ideological issues, policies, and decisions" (p. 175) and later on the same page, "The social constructionist movement emerged on the social science scene as a force for change and cultivated a leftist revolutionary spirit that posed a distinctive challenge to established scientific authority." As a movement with primarily political goals, my view is that this sort of politicization has little place in scientific psychological theorizing.

However, a separate vein of social constructionism aspires to be bona fide social science. Not all forms of social constructionism are blatantly political or liberationist. Some, instead, seek to understand social relationships, including but not restricted to relationships of power and status, and the reciprocal influences among individuals and institutions (regardless of whose interests or advocacy agendas these understandings might advance). In this spirit, **Tappin et al.** are surely correct in arguing that, under some conditions, collective actions can alter the nature of intergroup relations. Nonetheless, it is also, perhaps, worth pointing out that, although they review abundant evidence that *target groups* are motivated by perceived slights to and injustices inflicted on their groups, little, if any, of the research they cited links laypeople's *actual stereotypes* to collective action. I suspect that this failure stems from: (1) Social psychologists taking for granted that laypeople hold unjustified and pernicious stereotypes; so it was (2) (unjustifiably, in my view) deemed not even necessary to assess actual stereotypes, the derogatory nature of stereotypes could simply be taken for granted.

Space does not permit a citation-by-citation critical analysis of the work **Tappin et al.** have presented in support of their perspective, so perhaps one example will suffice. They cite a series of studies by Ellemers and Barreto (2009) three times in their short commentary, so they seem to consider it important to their perspective. Ellemers and Barreto (2009) showed that *believing* others had an insulting view of one's group (e.g., for women, someone believing that women are unintelligent), motivated collective action. But what if lay people do not routinely believe women are unintelligent? There is evidence that people believe boys are better at math than girls, but the same studies show that people also believed girls have higher verbal skills than boys (Swim 1994). Regardless, Ellemers and Barreto (2009) did not assess *anyone's* sex stereotypes regarding intelligence, nor do they review research that has done so. Their findings are still interesting, because they say something about how perceived intergroup insults motivate collective action, but not because it says anything about the role of the actual stereotypes held by any actual people in leading to collective action. This is not meant to dismiss the perspective entirely. In fairness, it probably can be interpreted as showing that *when* people hold derogatory stereotypes, *if* targets become aware of those stereotypes,

collective action may result. Of course, history is filled with counter-examples, cases where people did hold derogatory stereotypes and little collective action resulted over vast periods of time (consider, e.g., the inferior status ascribed women, three hundred years of slavery in the United States, and the Hindu caste system). I suspect, therefore, that the "holding insulting stereotypes–collective action" link is tenuous at best, and subject to many conditions not articulated in either Tappin et al.'s commentary or much of the underlying research. Indeed, I do not doubt the effect *exists*, but I would suspect that, in the real world, across many situations and contexts, it fits the pattern described in *SPSR*: occasionally strong, but usually quite weak, fragile, and fleeting.

Wilson & Huang are correct in pointing out that my conceptual analysis "freezes" institutions at a given point in time, and then examines the rationality versus the biased nature of social perception. As they point out, institutions are not actually frozen, and are subject to both slow-moving and, occasionally, dramatic and sudden changes. My argument was never intended to be "there are no conditions under which stereotypes or social beliefs construct reality." Indeed, *SPSR* is peppered with both real world examples and scientific studies showing that, sometimes, such effects can be quite powerful.

SPSR, however, did not have as its purpose identifying the nature of collective movements or the inter-relationships between institutions, demographic groups, and individuals. Instead, the purpose of the book was to review evidence regarding the extent to which *individuals'* beliefs about groups or other individuals were accurate, biased, or self-fulfilling. This is, as these commentaries suggest, a limitation of its scope. It is certainly an important and appropriate social science endeavor to address issues such as collective action and institutions. *SPSR* made no claims about such issues. It was, however, an attempted corrective to longstanding and unjustified social science claims about how *individuals'* beliefs relate to social reality – and, on this issue, it is, perhaps, worth noting that both **Tappin et al.** and **Wilson & Huang** presented neither argument nor evidence against the central claim that such corrective is justified and past due.

R5. Victims of the processistic fallacy

Two commentaries aspire to refute the conclusion reached in *SPSR* that stereotypes have been widely found to be at least moderately accurate. Both **Terbeck** and **Bian & Cimpian** propose processes that they believe cause inaccuracy in stereotypes. Both critiques fall victim to the *processistic fallacy,* which was addressed in *SPSR*. Thus, my response to these critiques begins by quoting that text (p. 394):

> The processistic fallacy involves concluding that laypeople's beliefs must be inaccurate because researchers have discovered cognitive processes that the researchers believe to be flawed.
>
> This is a fallacy for several reasons: (1) The process may not be as flawed as the researchers believe, and its degree of "flaw" cannot be assessed without assessing the validity or success of the judgments and decisions by people who do versus do not rely on this process (something social scientists rarely do); (2) even if the process is indeed flawed, in real life, people may rely on many other less flawed processes when making judgments and decisions; and (3) in real life, social reality often

intrudes upon people's erroneous beliefs—that is, it provides feedback that permits people to recognize their initial beliefs were wrong and to alter them accordingly. So, again, we cannot know how flawed the outcome is—the judgment or decision—unless we evaluate its success, accuracy, validity, etc. (which is another thing social scientists emphasizing error and bias do not often do). (Jussim 2012, p. 394)

The *processistic fallacy* is a form of overgeneralization. It occurs whenever researchers who demonstrate some error or bias under a very small set of (typically artificial laboratory) conditions unjustifiably assume or conclude that their findings mean that there is widespread human error under naturally occurring conditions (e.g., Cohen 1981; Funder 1987). Lab studies are often well-designed to test basic processes but not to generalize results to naturally occurring conditions (Mook 1983). It is hypothetically possible to appropriately generalize widespread error under naturalistic conditions on the basis of studies revealing flawed processes in the laboratory, but only under conditions that are almost never met. One way to justify such generalizations is to discover a process so flawed that it must be definitively known to produce pervasive inaccuracy in situations that go well beyond those studied in the lab. For example, the human visual system cannot detect radio waves, so that it is safe to conclude people will be universally inaccurate in their visual assessment of the presence/absence of such waves.

Such demonstrations are few and far between in psychology. A wide range of judgmental and perceptual errors and biases found in laboratory studies have turned out to be functional outside those studies. For example, Gigerenzer and Brighton (2009) reviewed evidence showing that:

> In contrast to the widely held view that less processing reduces accuracy, the study of heuristics shows that less information, computation, and time can in fact improve accuracy. We review the major progress made so far: (a) the discovery of less-is-more effects; (b) the study of the ecological rationality of heuristics, which examines in which environments a given strategy succeeds or fails, and why. (Gigerenzer & Brighton 2009, p. 107)

Such findings should give deep pause to modern researchers who, upon discovering some laboratory bias, leap to the assumption that process undermines accuracy in naturalistic conditions. Regardless, I am not aware of any research that has documented a social perceptual process so flawed that it can be definitively known to produce inaccuracy on purely logical grounds comparable to the radio wave example above.

However, even if such a process were discovered, additional conditions must also be met to generalize from lab studies of biased processes to a conclusion of widespread inaccuracy in life. It must be shown either that people are *incapable* of overcoming the bias or error by relying on alternative, superior or corrective processes, or, empirically, that, across most of a widely representative array of situations, people both rely on the flawed process and rarely enlist superior or corrective processes. If a program of research engages in a sufficiently large *representative sampling of situations* (Brunswick 1957; Monin & Oppenheimer 2014; Westfall et al. 2015), and shows that, in most such situations, a flawed process is heavily relied upon and other more appropriate processes are rarely enlisted, inferring widespread error in real life can be justified. Few programs of research, however, meet

these standards, whether in social perception or other areas of psychology (e.g., Cohen 1981; Westfall et al. 2015). This is probably because, as Wells and Windschitl (1999, p. 1115) found, among psychology faculty, there was an "insensitivity to the need for stimulus sampling except when the problem is made rather obvious."

R5.1 Common flaws in the critiques

Both **Terbeck**'s and **Bian & Cimpian**'s commentaries have identified potentially flawed processes, and both perspectives are capable of generating *testable (and falsifiable) hypotheses* about potential patterns and sources of stereotype inaccuracy. As such, their perspectives are potentially constructive and generative of new research directions and potentially valuable insights into sources and conditions of stereotype inaccuracy.

Nonetheless, neither **Terbeck**, nor **Bian & Cimpian** discuss any research that meets the standards articulated above for concluding that stereotypes *must be* inaccurate on the basis of the supposedly flawed processes that were identified. Neither present justification for assuming that those supposedly flawed processes *inherently* produce inaccuracy in other judgments (comparable to showing that vision cannot detect radio waves). Thus, we do not *know* that those processes produce inaccuracy.

Furthermore, **Terbeck** and **Bian & Cimpian** did not discuss any program of research that has shown that those processes produce inaccuracy most of the time in a representative sample of situations. Therefore, it is not knowable from that research whether people commonly rely on those processes, even if they are truly flawed. Last, even if those processes are truly flawed and widely relied upon, neither commentary reviews any research demonstrating that people rely *exclusively* on supposedly flawed process across situations (even unrepresentative ones). They have not eliminated the possibility that there are other, more appropriate processes that people rely upon, when arriving at stereotypes. Both critiques therefore, declare stereotypes to be inaccurate on the basis of research incapable of justifying such a conclusion. Both commit the *processistic fallacy:* over-inferring pervasive ("stereotypes must be inaccurate") error in real life from laboratory studies of processes that are incapable of generalizing to much of real life. It is of course *possible* that such studies do generalize widely; but that cannot be known without empirical demonstrations that they actually *do* generalize widely. To make these issues more concrete, the specific evidence each commentator discusses is reviewed next.

R5.2. Terbeck, on categorization, implicit prejudice, and the brain

In her commentary, **Terbeck** refers to research showing that: (1) Infants and primates categorize; (2) specific brain areas are associated with face recognition; and (3) drugs alter scores on the race implicit association test (IAT). This is all fine as far as it goes. Categorization is ubiquitous, thus, this passes the test for a justified generalization to real life. However, categorization is not inherently universally invalid, in the same way that visual detection of radio waves is. People are not wrong for believing that chairs usually have four legs, that Alaska is colder than

Arizona, or that men are, on average, taller than women. Thus, the claim that *any particular category* is wrong requires evidence, which Terbeck does not provide.

Similarly, specific brain areas may well be associated with face recognition, but the very term "recognition" implies that, at least some and perhaps most of the time, people are *correctly* distinguishing faces from other features of the stimulus array. It certainly provides no evidence that facial recognition is *wrong*. Finally, I have no doubt that drugs can alter IAT scores. Racial prejudice IAT scores are attitudes, and individuals and societies may deem certain attitudes *morally* good or bad, but attitudes cannot be factually correct or incorrect. It is *possible* that one's *reasons* for disliking diet soda, the Yankees, and Fred are factually incorrect, but the *attitude* itself cannot be accurate or inaccurate. Thus, all three phenomena identified by **Terbeck** may lead to *falsifiable hypotheses* about sources of stereotype inaccuracy; but, absent direct data on stereotype accuracy, they do not justify concluding that stereotypes *are* inaccurate.

R5.3. Bian & Cimpian and generic beliefs

Bian & Cimpian's critique similarly fails to meet the standards necessary to infer widespread naturally occurring error from studies of supposedly flawed processes. Their prototypical cases of supposedly inherently erroneous generic beliefs are those such as "mosquitos carry the West Nile virus" and "ducks lay eggs" (which was the example highlighted in the title of one of the articles they cite in support of their view: Leslie et al. 2011). They cite evidence that people judge such statements to be true. They argue that this renders people inaccurate because few mosquitos carry West Nile virus and not all ducks lay eggs.

Does agreeing that "mosquitos carry West Nile" mean that we can now assume that people's beliefs about mosquitos and West Nile are pervasively inaccurate? If these are absolutist beliefs ("all mosquitos carry West Nile") then they are clearly wrong and no further evidence is needed. *SPSR* made exactly this point when discussing absolutist stereotypes, which, because of widespread human variation, are almost always invalid. But there is no evidence that generic beliefs are *always, necessarily, or widely* absolutist.

Perhaps, instead, they capture the phenomenology of distinctive or salient differences between categories. I can only get West Nile from mosquitos, not from moths, mice, or musk ox. Perhaps people agree that "mosquitos carry West Nile" not because they believe "all mosquitos carry West Nile," but because they believe that "only mosquitos carry West Nile." Because generic beliefs, as studied, are not inherently inaccurate, the research does not meet the first standard necessary to avoid the processistic fallacy. We cannot assume all generic beliefs are necessarily inaccurate.

It also fails the second standard (even if not inherently inaccurate, is the process empirically found to be generally invalid?). One of the articles cited by **Bian & Cimpian** (Leslie et al. 2011) found that participants rephrased only 18 of 100 experimenter-provided generic statements as absolutist ("universals" in Leslie et al.'s [2011] terminology). Furthermore, overwhelming majorities (over 90%) recognized that, in fact, male sheep do not produce milk,

male snakes and male ducks do not lay eggs, and so on, for nearly all absolute beliefs studied. Thus, one cannot interpret agreement with the generic beliefs as evidence of *widespread* reliance on an invalid process. The Leslie et al. (2011) research did include a wide range of generic beliefs, so it is reasonable to conclude that their results are broadly generalizable to generic beliefs. What is generalizable, however, is that most generic beliefs *do not* equate to absolutist or inherently inaccurate beliefs. Of course, it is *still* possible that when stereotypes are generic beliefs, they are widely inaccurate. That is another *falsifiable hypothesis* about which there is currently no data. Inferring that stereotypes *are* inaccurate from such data is unjustified.

Bian & Cimpian cite another paper by Leslie (in press) in support of the claim that "more people hold the generic belief that Muslims are terrorists than hold the generic belief that Muslims are female." But Leslie (in press) provides no data whatsoever that bears on the frequency with which people hold such beliefs. Instead, she quoted headline-seeking politicians and cited a rise in hate crimes post-9/11. Such information may be interesting, but it does not address the frequency of lay beliefs about anything whatsoever.

Of course, even if the claim that more people agree that "Muslims are terrorists" than that "Muslims are women" was valid, it would not constitute evidence that stereotypes in general, or the Muslim stereotype in particular, must be inaccurate. Its status as such evidence does not hinge on researcher *assumptions* about what people mean when they agree with statements like, "Muslims are terrorists" but on evidence assessing what people *actually* mean. Because research on generics fails the first two tests necessary to avoid the processistic fallacy (they do not inherently produce inaccuracy and they have not been empirically demonstrated to usually produce inaccuracies), one could not conclude that greater agreement with the view that "Muslims are terrorists" than with "Muslims are women" *necessarily* means people believe there are more Muslim terrorists than Muslim women. It may simply mean "some Muslims are terrorists" or "Muslim terrorism is more widespread than other forms of terrorism" and that "being female is not an important distinguishing characteristic of Muslims." Absent data, we just do not know. The bias literature writ large (Cohen 1981; Gigerenzer & Brighton 2009; see also **Mousavi & Funder**'s commentary and *SPSR*) and the stereotyping literature in particular are so strongly riddled with invalid researcher *presumptions* about lay people's beliefs, that, absent hard empirical evidence about what people actually believe, researcher assumptions of inaccuracy that are not backed up by empirical evidence demonstrating widespread inaccuracy rarely warrant credibility.

Bian & Cimpian acknowledge that statistical beliefs are far more capable of being accurate, but then go on to claim that most stereotypes are not statistical beliefs, or, at least, generically based stereotypes are more potent influences on social perceptions. They present no assessment, however, of the relative frequencies with which people's beliefs about groups are generic versus statistical, and, given Leslie et al.'s (2011) evidence that people do not usually translate generics into absolutes, it may well be that agreement with generics such as "ducks lay eggs" and "Muslims are terrorists" does not preclude the statistical understanding that fewer than half of all ducks are even

capable of laying eggs or that the proportion of Muslims who are terrorists is tiny.

We can, however, consider the implications of their claim that most people's stereotypes include little or no statistical understanding of the distributions of characteristics among groups. This view leads to another *falsifiable hypothesis:* Laypeople would have little idea about racial/ethnic differences in high school or college graduate rates, or about the nonverbal skill differences between men and women, and are clueless about differences in the policy positions held by Democrats and Republicans. That leads to a very simple prediction – that people's judgments of these distributions would be almost entirely unrelated to the actual distributions; correlations of stereotypes with criteria would be near zero and discrepancy scores would be high. One cannot have it both ways. If people are statistically clueless, then their beliefs should be unrelated to statistical distributions of characteristics among groups. If people's beliefs do show strong relations to statistical realities, then they cannot be statistically clueless.

We already know that the predictions generated from the "most stereotypes are generic and are therefore statistically clueless" are disconfirmed by the data summarized in *SPSR* (see also Jussim et al. [2015b], for an updated review of stereotype accuracy that includes additional studies). **Bian & Cimpian** have developed compelling descriptions of the processes that they believe *should* lead people to be inaccurate. In point of empirical fact, however, people have mostly been found to be relatively accurate. Disconfirmation of such predictions can occur for any of several reasons: (1) The processes identified as "causing" inaccuracy do not occur with the frequency that those offering them assume (maybe most stereotypes are not generic); (2) The processes are quite common and do cause inaccuracy, but are mitigated by other countervailing processes that increase accuracy (e.g., adjusting beliefs in response to corrective information); or (3) The processes are common, but, in real life, lead to much higher levels of accuracy than those emphasizing inaccuracy presume (see **Mousavi & Funder**'s commentary for exactly such a point). Regardless, making declarations about levels of stereotype inaccuracy on the basis of a speculative prediction that some process causes stereotype inaccuracy, rather than on the basis of evidence that directly bears on accuracy, is a classic demonstration of the processistic fallacy.

R6. Confirmation bias and questionable interpretive practices

Kahan does not disagree with a single claim in *SPSR;* he does, however, urge me to consider the issues of bias and accuracy more broadly, and I do so here. Kahan correctly points out that there is an extensive literature on confirmation bias especially in politicized judgments that *SPSR* largely ignores. My goal was to evaluate the literature on *social perception* – how people view other people, especially individuals and groups; and especially with respect to judgments that *could* conceivably be assessed for their accuracy. To compare bias, self-fulfilling prophecy, and accuracy, it was necessary to focus on judgments that could be biased, self-fulfilling or accurate. *SPSR* purposely excluded people's beliefs about scientific or social science facts or evidence because I do not consider them *social*

perception in the classic sense of "how people understand specific other people or groups." *SPSR also* excluded moral and political beliefs because they often have no criteria for assessing accuracy. I concur with Kahan's view that confirmation biases can be quite powerful with respect to many of these excluded judgments.

Indeed, the very validity of **Kahan**'s commentary highlights an interesting irony. Exactly the types of confirmation biases in perceptions of science highlighted by Kahan's commentary may characterize *social psychological science.* There is ample evidence that scientists' confirmation biases about research conclusions are demonstrably powerful in at least many cases. Social psychological perspectives that emphasize the power of lay confirmation biases in person perception do so on the basis of a highly selective review of the evidence. Any review reaching the conclusion that the evidence shows that *person perception* is powerfully characterized by confirmation biases *must* be based on *researcher* confirmation bias because the evidence so overwhelmingly shows that lay person perception is mostly motivated by the desire to be accurate (e.g., Devine et al. 1990; Trope & Bassok 1983). Chapters 5 and 8 addressed this issue at length. With respect to seeking information that bears on their interpersonal expectations, in general, the evidence shows that people overwhelmingly seek and prefer diagnostic, not confirmatory, information.

Kahan's perspective, however, which focuses a great deal on the role of confirmation biases in how people evaluate science, exquisitely describes the production of *social psychological* theories of and conclusions about person perception, and many other topics. There are other examples in *SPSR* which are consistent with Kahan's confirmation bias perspective applied to how psychologists reach conclusions; these include:

Overstated claims about the power of self-fulfilling prophecies

Overstated claims about expectancy- or stereotype-induced perceptual biases

Underestimations of the power of accuracy, especially though not exclusively stereotype accuracy, and/or dismissals of its "importance"

Decades of misinterpretations of studies such as Hastorf and Cantril (1954) and Rosenhan (1973) as demonstrating the power of bias, when, in fact, they demonstrated overwhelmingly the power of accuracy

That science *sometimes* goes wrong is a normal part of science. But when science goes off the rails and fails to self-correct for decades, especially when the evidence is sitting in plain daylight from within the original published reports, something other than "pure science" may be going on. **Kahan**'s work points to some likely possibilities. Kahan's work helps explain the prevalence of *questionable interpretive practices* (QIPs) – narrative, conceptual, and interpretive means by which scientists can and do reach unjustified conclusions, even in the complete absence of statistical or methodological errors and flaws, and even when *findings* are replicable (Jussim et al. 2015a; 2016b; 2016c; 2016d). QIPs captured in *SPSR* include:

Logical incoherence: Reaching opposite or contradictory conclusions, as long as both advance one's preferred narratives, values, theory, or ideology. Simple example: Claiming there are no good criteria for assessing the

accuracy of stereotypes yet accepting "known groups validity" as a reasonable way to validate new measures.

Phantom facts: Declaring something to be a fact without evidence. Simple example from *SPSR*: Declaring stereotypes to be inaccurate without evidence.

Blind spots: Overlooking or ignoring research that contests one's preferred perspective. Simple example from *SPSR*: Citing Darley and Gross's (1983) single study that they interpreted as showing that stereotypes lead to their own confirmation, and ignoring Baron et al.'s (1995) two failed replications.

Double standards: Subjecting the research producing conclusions one dislikes to withering criticisms, and extolling the virtues and value of research producing conclusions one likes, even when the research one dislikes is of equal or higher methodological quality. Simple example: the common claim that there are no "good" criteria for assessing accuracy, while, at the same time, extolling the power of self-fulfilling prophecies. This is a double standard because *both* accuracy and self-fulfilling prophecies require showing correspondence between belief and reality, so that the *criteria* for doing so must be identical.

Exposés of major disconnects between accumulated data and common conclusions have been recently published regarding broad areas within cognitive psychology (Firestone & Scholl 2016), social psychology (Jussim et al. 2016b), social neuroscience (Vul et al. 2009), and sociology (Martin 2016). Over a decade ago Pinker (2002) exposed how political motivations led to invalid claims about education, parenting, crime, personality, evolution, and more.

What is going on here? Is it really possible that trained social psychologists, people with PhDs and years of experience, routinely engage in substantial confirmation bias in interpreting scientific research? Many scholarly perspectives answer this question with a clear, "yes indeed" (for general reviews of scientific susceptibility to confirmation bias, see: Greenwald et al. 1986; Ioannidis 2012; Lilienfeld 2010). For a review of how confirmation biases have led social psychology to specific unjustified conclusions in areas such as discrimination, stereotype threat, unconscious influences on sensory perception and more, see Jussim et al. (2016b). "Successful" motivated reasoning driven by the goal of reaching some particular conclusion requires information, experience, and skill with logic and argumentation. People with PhDs and extensive training – especially those with training in telling "compelling narratives" (Bem 1987; Jordan & Zanna 2007) – are more able to dismiss findings they do not like and defend findings they do like in the face of challenges than are less intelligent and less well-trained laypeople. Indeed, **Kahan** himself (Kahan et al. 2012b) has found that views about climate change become *more polarized* as people's science knowledge *increases* (see also Haidt 2012).

An even stronger view is presented by **Madison et al.**, who highlight scholarship on *the clever sillies* – which presents a perspective suggesting just how extremely distorted "scholarly" conclusions can get. Much of that research suggests that social scientists who are obviously very intelligent and have extraordinary levels of knowledge and expertise express manifestly silly claims primarily to signal their intelligence (Charlton 2009; Dutton & van der Linden 2015). Because manifestly silly ideas are often presented in high-

falutin and sophisticated-sounding language, they can appear rigorous and (to paraphrase Stephen Colbert) high in "scientificiness" and, therefore, can create an illusion of plausibility and validity. In the social sciences, such ideas often include the denial of evolutionary or biological bases of human psychology and behavior (see, e.g., Pinker [2002] for a broad review), the denial of stereotype accuracy, and, I would argue, attempts to stigmatize and ostracize those who point out that the data does not always advance social scientific narratives that are presumed to advance the interests of the oppressed (Gottfredson 2010; Pinker 2002).

I do not doubt that a desire to signal one's brilliance may indeed be one motivation underlying the clever sillies, but I do not think it is the only one, and, perhaps, not even the most important one in the social sciences. In addition to signaling intelligence, staking out positions that are logically incoherent or disconnected from scientific evidence can signal not just intelligence, but one's political allegiances, one's moral positions, and that one is on the "side" of one's colleagues fighting "the good fight" (**Kahan**). The extent to which scientific distortions, such as the denial of stereotype accuracy or evolutionary influences on psychology, result from motivation to signal one's egalitarian bona fides to one's colleagues, the desire to advance one's politics, values, and morals, or other less politicized sources is an important empirical question for the burgeoning area of meta-science and scientific integrity (e.g., Ioannidis 2012; Jussim et al. 2016b; Simmons et al. 2011)

R7. The fundamental publication error: Was Planck right?

As Max Planck wrote in 1950

> A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it. (Planck 1950, p. 97)

Self-correction is often taken to be a hallmark of science. Whereas religious, political, or moral beliefs may not be subject to change based on evidence, scientific beliefs, presumably, should be subject to change when sufficient new evidence contradicts existing conclusions. For example, Jost (2011) wrote: "This is because we, as a research community, take seriously the institutionalization of methodological safeguards against experimenter effects and other forms of bias. Any research program that is driven more by ideological axe-grinding than valid insight is doomed to obscurity, because it will not stand up to empirical replication and its flaws will be obvious to scientific peers."

If only it were so. *SPSR* presented numerous cases where: (1) An initial high impact "wow!" study yielding some dramatic result was published; (2) Many follow-up studies revealed that the conclusions based on that "wow" study were mostly not justified; and (3) The "wow" conclusions continued to march on for decades as if the correctives were never published. *SPSR* documented case after case of just this pattern with respect to self-fulfilling prophecies, biases, stereotypes, and accuracy.

Many of the commentaries (**Bonnefon et al.**; **Kihlstrom**; **Little**; **Madison et al.**; **Martin**; **Mousavi & Funder**; **Trafimow & Raut**; **Wagoner**) seem to welcome *SPSR* as a much-needed corrective to the "stupidism" (Kihlstrom) emphasized by much of social psychology

and the "clever silly" (Madison et al.) perspectives that back up such claims. Many of the rest acknowledge the validity of its main points but raise issues beyond the scope of the book (**Church**; **Kahan**; **Wilson & Huang**). If one is to believe the consensus of the commentaries on *SPSR*, one might believe that the field's emphasis on "stupidism" is in decline. Although I hope that is true, based on too much evidence from outside these commentaries, such a conclusion is premature, and not only because two of the commentaries have committed the processistic fallacy when attempting to defend claims emphasizing lay "stupidism" (**Bian & Cimpian**; **Terbeck**) regarding stereotypes.

My collaborators and I have recently updated the review of stereotype accuracy work that appears in *SPSR* (Jussim et al. 2015b; 2016a). More than 50 studies have been identified, almost double the number reviewed in *SPSR*, mainly because there has been an explosion of research on the accuracy of stereotypes about national character and political groups. The main conclusions of *SPSR* were reconfirmed, especially regarding the demographic stereotypes that social scientists generally seem most concerned about. Stereotype accuracy is one of the largest effects in all of social psychology. It has been replicated in multiple independent labs. Given social psychology's current crisis of replicability, and widespread concerns about questionable research practices (e.g., Open Science Collaboration 2015; Simmons et al. 2011), one might expect that social psychologists would be shouting to the world that we have actually found a valid, independently replicable, powerful phenomena.

But if one did think that, one could not be more wrong. Testaments to the inaccuracy of stereotypes still dominate textbooks and broad reviews of the stereotyping literature that appear in scholarly books (see Table R1). The new generation of scholars is *still* being brought up to believe that "stereotypes are inaccurate," a claim many will undoubtedly take for granted as true, and then promote in their own scholarship. Sometimes, these manifest as *definitions* of stereotypes as inaccurate; and even when stereotypes are not *defined* as inaccurate, they manifest as *declarations* that stereotypes are inaccurate, exaggerated, or overgeneralized.

R8. Conclusion: Facilitating self-correction regarding accuracy, bias, and self-fulfilling prophecies

Psychology is abuzz with an internal discussion of how it can do better. Greater transparency, pre-registration, replication, and more have all come to the fore. However, most of the unjustified testaments to the power of self-fulfilling prophecies and expectancy or stereotype biases, and most of the attempts to dismiss the power or importance of accuracy did not result primarily from failed replications or questionable statistical or methodological practices, or even lack of transparency. Instead, they are problems of interpretation and (exactly as **Kahan**'s commentary and perspective might predict) *researcher* confirmation biases. Even when failed replications did get published, they were generally ignored. Effect sizes were largely ignored. Simple contextual factors (such as the number of plays in a football game, or the total number of judgments made by staff at psychiatric institutions) that could have reigned

in overstated claims of bias were often simply ignored, not just by the original researchers, but by decades of subsequent scientists perpetuating the erroneous testaments to bias. Attention to contextual, statistical, and methodological details was seemingly short-circuited by the ability or desire to tell compelling "wow!" stories about the power and pervasiveness of expectancy effects.

What, then, can researchers who want to present valid and nuanced descriptions of the findings do to limit their vulnerability to perpetuating false claims that appear in scientific literatures? Unfortunately, psychology does not have a consensus on the answers to this question, and is currently in the process of searching for those answers (e.g., Jussim et al. 2016b). Here, I focus specifically on: (1) identifying general principles that may be broadly applicable; and then (2) give examples of how they could be applied to the literatures addressed by *SPSR*:

1. Resist the urge to tell compelling narratives by glossing over or ignoring contradictory findings and conclusions.
   - Stop citing Rosenthal and Jacobson (1968) as showing that teacher expectation effects are powerful or pervasive.
   - Do not assume that "story studies"– famous classics around which compelling narratives can be told – are necessarily true or replicable. Review the entire relevant literature before making claims regarding expectancies and stereotypes.
   - Avoid cherry-picking a biased sample of studies about expectancies or stereotypes (or any other topic) to make an argument.
2. Focus on the actual results of studies, rather than researcher claims about those results.
   - One can often find evidence of substantial accuracy and rationality in studies that emphasize or only reported error and bias.
   - Biases and self-fulfilling prophecies may be quite modest, or even contingent on moderators, even when the discussion touts their power and pervasiveness.
3. Search for skeptical reviews and meta-analyses, and do not depend exclusively on reviews or meta-analyses that appear to have as an agenda persuading the reader. Avoid repeating conclusions based on famous reviews, without either critically examining the basis for those conclusions, or, at least, searching the literature to find out whether other, perhaps less famous but more persuasive, skeptical or critical reviews or meta-analyses have reached different conclusions. Abide by the Mertonian norm of universalism, that evaluation of scientific claims hinges not at all on the status or prestige of the scientist making them, but on the quality of the evidence, logic, and argument being put forth (Merton 1942/1973).
   - For every review testifying to the power of expectancies, there are now others casting doubt on such conclusions. If one must make a point about expectancies, at minimum, one can reflect the state of the literature with statements such as:
   - "Whereas some reviews have concluded that expectancy effects are powerful and pervasive, others have concluded that such effects are weak, fragile, and fleeting."
   - "Although stereotypes have long been presumed to be inaccurate, several reviews have concluded that, in general, stereotypes are often at least moderately accurate."

Response/Jussim: Précis of Social Perception and Social Reality

Table R1. *Modern Claims about Stereotype (In)Accuracy*

	Explicitly acknowledges strong evidence of stereotype accuracy	Reviews little or no evidence of accuracy and either dismisses accuracy as unimportant or emphasizes stereotype inaccuracy and bias	Defines/declares stereotypes to be inaccurate	Representative Quotes:
Scholarly Books				
Banaji & Greenwald (2013) *Blindspot: The hidden biases of good people*		✓		p. 74: Because all stereotypes are partly true and partly false, it may seem pointless to debate their accuracy. p. 89: … stereotyping is an unfortunate by-product of the otherwise immensely useful human ability to conceive the world in terms of categories.
Brown (2010) *Prejudice: Its Social Psychology*		✓		p. 71: … the question of whether stereotypes are 'objectively' (in)accurate is only of marginal interest to most students of prejudice.
Fiske & Taylor (2008) *Social cognition: From brains to culture*		✓		p. 282: Stereotyping is the cognitive aspect of bias … and it comes in both blatant and subtle forms.
Whitley & Kite (2009) *The psychology of prejudice and discrimination*		✓		p. 100: At the group level, then, stereotypes may have a kernel of truth, but relying on them at the individual level may lead to serious judgment errors
Textbooks				
Aronson (2011) *The social animal*			✓	p. 309: To stereotype is to allow those pictures to dominate our thinking, leading us to assign identical characteristics to any person in a group, regardless of the actual variation among members of that group
Baumeister & Bushman (2014) *Social psychology and human nature*	✓			p. 485: The high level of accuracy in modern stereotypes may also indicate that stereotyping has changed.

Reference			Quote
Crisp & Turner (2014) *Essential social psychology*		✓	p. 57: Once a category is activated we tend to see members as possessing all the traits associated with the stereotype.
Greenberg et al. (2015) *Social psychology: The science of everyday life*		✓	p. 352: Even though this kernel [of truth] might be quite small, with much more overlap between groups than there are differences, as perceivers we tend to exaggerate any differences that might exist and apply them to all members of the group.
Grison et al. (2015) *Psychology in your life*	✓		p. 385: Indeed, some stereotypes are based in truth: Men tend to be more violent than women, and women tend to be more nurturing than men. However, these statements are true on average.
King (2013) *Experiencing psychology*		✓	p. 402: A stereotype is a generalization about a group's characteristics that does not consider any variations from one individual to another.
Schachter et al. (2015) *Introducing psychology*	✓		p. 403: … stereotyping is a useful process that often produces harmful results, and it does so because stereotypes have four properties: They can be (1) inaccurate, (2) overused, (3) self-perpetuating, and (4) unconscious and automatic

Table R1 reprinted from Jussim et al. (2015b).

Response/Jussim: Précis of Social Perception and Social Reality

- "Although social constructionist phenomena undoubtedly occur and can sometimes be powerful and important, at the level of individuals interacting with other individuals, such effects are usually quite modest."
- "Although people undoubtedly cognitively construct their social perceptual worlds to a considerable degree, and, sometimes such constructions can be quite biased, this does not mean their constructions are always or even mostly inaccurate."

4. In new original studies, be excessively transparent about methods and results. Provide means, standard deviations, and correlations for all variables. When available and relevant, provide frequency distributions. When reporting regression and structural equation modeling (SEM) results, report standardized and unstandardized coefficients and also the t- and F- values associated with each test of significance. If all this cannot make it into the main report, then at least provide it in supplementary materials. Report effect sizes and confidence intervals. This should be done when reporting new empirical studies; and it should be routine when reviewing empirical literatures.

- This is especially important when making claims about the relative power of bias versus accuracy. Distorted claims about bias could have been detected decades earlier, if, for example, effect sizes had been routinely reported, and if contextual data (e.g., total number of judgments) had been reported.

5. Be careful about definitions. Researchers have great latitude in how they define constructs, but then have to own the implications of their definitions.

- If one defines stereotypes as inaccurate or as exaggerations, then one must be willing to accept that only beliefs about groups that have been demonstrated to be inaccurate and exaggerations among the sample one is studying can be known to be stereotypes.
- One can avoid this problem by defining stereotypes in ways that permit them to be accurate, avoiding presumptions of inaccuracy, exaggeration, or overgeneralization. Base empirical claims about the state of the world on actual empirical evidence.
- This may seem obvious, but researchers have been making claims about stereotype inaccuracy without evidence for decades. See Pinker (2002) for similar claims without evidence regarding a range of issues, such as human malleability and the role of social factors in everything from intelligence to aggression to sex differences.

6. Avoid the processistic fallacy.

- Do not make claims about error, bias, or the inaccuracy of stereotypes on the basis of process studies, even ones that identify faulty processes in the lab that one speculatively presumes will cause inaccuracy in people's naturally-occurring judgments. Such processes might have theoretical import (Mook 1983), and they might generate predictions regarding patterns or sources of inaccuracy. But they rarely, if ever, constitute evidence of inaccuracy.

7. Reach conclusions about stereotype accuracy on the basis of studies reporting empirical data rather than sources (even "authoritative" ones such as G. W. Allport, 1954/1979; see also Table R1) declaring stereotypes to be inaccurate (or exaggerations) without data.

- Do not claim that characterizing stereotypes as possessing a "kernel of truth" constitutes some sort of acknowledgement that stereotypes are often substantially accurate. This functions as a disingenuous attempt to maintain the emphasis on inaccuracy, which can readily be seen with a "turnabout test" (Duarte et al. 2015; Tetlock 1994): Would declaring, "Psychological research has a kernel of truth" be a great testament to the validity of psychological science?
- If stereotypes do influence judgments regarding an individual target do not assume that increases inaccuracy without testing for accuracy.

8. Build rational judgment processes into theoretical perspectives on social perception.

- Because of social psychology's infatuation with error and bias, almost any result, no matter how reasonable and rational, has been framed as flawed. However, such conclusions regarding lay judgments require showing that some particular perceptual result deviates from some normative model. In social psychology, this is rarely done, thereby liberating researchers to cast almost any result as irrational.
- Social psychologists should stop casting results as irrational absent development of normative model of rational judgment and an assessment of the extent to which lay judgments both correspond to and deviate from that model.
- Social psychologists studying social perception should start developing models of rational judgment processes if they wish to continue reaching judgments about irrationality.

9. Be clear and consistent with respect to levels of analysis.

- If one is discussing perceptions of groups, then accuracy refers to correspondence between beliefs about groups and what those groups are like.
- If one is discussing perceptions of individuals, then accuracy refers to correspondence between beliefs about an individual and what that individual is like.
- Cease confounding levels of analysis by declaring that stereotypes are inaccurate because they do not apply to every individual.

Science can tolerate errors, even a great many errors, if it also has strong and largely successful and efficient mechanisms for self-correction. In this spirit, it is worth pointing out that none of the commentaries, not even those few who most strongly disagree with my conclusions, present any data showing that self-fulfilling prophecies or expectancy-based biases are generally large, or that stereotypes are generally inaccurate. The strongest arguments for modifying the conclusions reached in *SPSR*, in my view, have come from those suggesting that the emphasis on accuracy and the de-emphasis of bias and self-fulfilling prophecy might not be quite so applicable beyond the specific types of interpersonal contexts addressed in *SPSR* (**Kahan, Kihlstrom, Tappan et al., Wilson & Huang**). Perhaps, therefore, we can agree that, even if *SPSR* does not spell the death knell for social or cognitive constructivism, with respect to the topics that it has addressed – teacher expectations, person perception, beliefs about groups and how those beliefs influence social perceptions – a little scientific self-correction is overdue.

NOTE
1. Strictly speaking, the 14th amendment and Civil Rights acts focus on behaviors (discrimination), rather than beliefs. Failure to

provide Alfonso service because the provider believes Latinos are mostly criminals is a violation of those acts; however, failure to provide Alfonso service because the provider believes Alfonso is a criminal is not. Whether the behavior is based on a stereotype or on individuating information is taken as extremely important, thereby highlighting the perceived value of the distinction in legal contexts.

References

[The letters "a" and "r" before author's initials stand for target article and response references, respectively]

Abelson, R. P. (1963) Computer simulation of "hot cognition." In: *Computer simulation of personality*, ed. S. S. Tomkins & S. Messick, pp. 277–98. Wiley. [JFK]

Abelson, R. P. & Kanouse, D. E. (1966) Subjective acceptance of verbal generalizations. In: *Cognitive consistency: Motivational antecedents and behavioral consequents*, ed. S. Feldman, pp. 171–97. Academic Press. [LB]

Abrams, D. (2015) Social identity and intergroup relations. In: *APA handbook of personality and social psychology: Vol. 2. Group processes*, ed. M. Mikulincer & P. R. Shaver, pp. 203–28. American Psychological Association. Available at: http://doi.org/10.1037/14342-008 [BMT]

Abrams, D. & Grant, P. R. (2012) Testing the social identity relative deprivation (SIRD) model of social change: The political rise of Scottish nationalism. *British Journal of Social Psychology* 51:674–89. Available at: http://doi.org/10.1111/j.2044-8309.2011.02032.x [BMT]

Abrams, D. & Hogg, M. A. (2004) Metatheory: Lessons from social identity research. *Personality and Social Psychology Review* 8:98–106. Special issue on "Theory Construction in Social and Personality Psychology", ed. A. W. Kruglanski & E. T. Higgins. Available at: http://dx.doi.org/10.1207/s15327957pspr0802_22 [BMT]

Akerlof, G. A. & Kranton, R. E. (2000) Economics and identity. *Quarterly Journal of Economics* 115(3):715–53. [DMK]

Albright, L., Kenny, D. A. & Malloy, T. E. (1988) Consensus in personality judgments at zero acquaintance. *Journal of Personality and Social Psychology* 55(3):387–95. [ACL]

Allen, M. J. & Yen, W. M. (1979) *Introduction to measurement theory.* Brooks/Cole. [DT]

Allport, F. H. (1955) *Theories of perception and the concept of structure.* Wiley. [arLJ]

Allport, G. W. (1954a) The historical background of social psychology. In: *Handbook of social psychology*, ed. G. Lindzey & E. Aronson, *vol. 1*, pp. 1–46. Random House. [JFK]

Allport, G. W. (1954b) *The nature of prejudice.* Addison-Wesley. [aLJ, ST]

Allport, G. W. (1954/1979) *The nature of prejudice*, 2nd edition. Perseus. [arLJ]

Alvesson, M. (2013) *The triumph of emptiness.* Oxford University Press. [GM]

Ambady, N., Hallahan, M. & Conner, B. (1999) Accuracy of judgments of sexual orientation from thin slices of behavior. *Journal of Personality and Social Psychology* 77:538–47. [aLJ]

Anderson, E. (1993) *Value in ethics and economics.* Harvard University Press. [DMK]

Andersen, S. M. & Bem, S. L. (1981) Sex typing and androgyny in dyadic interaction: Individual differences in responsiveness to physical attractiveness. *Journal of Personality and Social Psychology* 41:74–86. [aLJ]

Andrews, K. (2012) *Do apes read minds? Toward a new folk psychology.* MIT Press. [KA]

Apicella, C. L., Dreber, A., Campbell, B., Gray, P. B., Hoffman, M. & Little, A. C. (2008) Testosterone and financial risk preferences. *Evolution and Human Behavior* 29(6):384–90. [ACL]

Apperly, I. (2010) *Mindreaders: The cognitive basis of "theory of mind."* Taylor & Francis. [KA]

Aronson, E. (2011) *The social animal*, 11th edition. Worth. [rLJ]

Ashmore, R. D. & Del Boca, F. K. (1981) Conceptual approaches to stereotypes and stereotyping. In: *Cognitive processes in stereotyping and intergroup behavior*, ed. D. L. Hamilton, pp. 1–35. Erlbaum. [aLJ]

Ashton, M. C. & Esses, V. M. (1999) Stereotype accuracy: Estimating the academic performance of ethnic groups. *Personality and Social Psychology Bulletin* 25:225–36. [aLJ]

Bamfield, L. & Horton, T. (2009) *Understanding attitudes to tackling economic inequality.* Joseph Rowntree Foundation. [BMT]

Banaji, M. R. & Greenwald, A. G. (2013) *Blindspot: Hidden biases of good people.* Delacorte Press. [rLJ]

Baron, R. M., Albright, L. & Malloy, T. E. (1995) The effects of behavioral and social class information on social judgment. *Personality and Social Psychology Bulletin* 21:308–15. [arLJ]

Baron-Cohen, S. (2011) Sex differences – a welcome dialogue. *The Psychologist* 24:3–4. Available at: https://thepsychologist.bps.org.uk/volume-24/edition-1/letters [GM]

Bartlett, F. C. (1932) *Remembering: A study in experimental and social psychology.* Cambridge University Press. [BW, rLJ]

Bartlett, F. C. (1968) Notes on Remembering. In: *Sir Frederic Bartlett Archive*, digital archive on F.C. Bartlett hosted by the Department of Psychology, University of Cambridge. Available at: http://www.bartlett.psychol.cam.ac.uk/NotesOnRemembering.htm [BW]

Bashir, N. Y., Lockwood, P., Chasteen, A. L., Nadolny, D. & Noyes, I. (2013) The ironic impact of activists: Negative stereotypes reduce social change influence. *European Journal of Social Psychology* 43:614–26. Available at: http://doi.org/10.1002/ejsp.1983 [BMT]

Baumeister, R. F. & Bushman, B. J. (2014) *Social psychology and human nature*, 3rd edition. Wadsworth. [rLJ]

Becker, J. C. (2012) The system-stabilizing role of identity management strategies: Social creativity can undermine collective action for social change. *Journal of Personality and Social Psychology* 103:647–62. Available at: http://doi.org/10.1037/a0029240 [BMT]

Becker, J. C. & Wright, S. C. (2011) Yet another dark side of chivalry: Benevolent sexism undermines and hostile sexism motivates collective action for social change. *Journal of Personality and Social Psychology* 101:62–77. Available at: http://doi.org/10.1037/a0022615 [BMT]

Bellezza, F. S. & Bower, G. H. (1981) Person stereotypes and memory for people. *Journal of Personality and Social Psychology* 41:856–65. [aLJ]

Bem, D. (1987) Writing the empirical journal article. In: *The compleat academic: A career guide*, ed. M. P. Zanna & J. M. Darley. 8, pp. 171–201. Erlbaum. [rLJ]

Berger, P. L. & Luckmann, H. (1966) *The social construction of reality: A treatise on the sociology of knowledge.* Anchor Books. [NHW]

Berggren, N., Jordahl, H. & Stern, C. (2009) The political opinions of Swedish social scientists. *Finnish Economical Papers* 22:75–88. [GM]

Bergman, T. J., Ho, L. & Beehner, J. C. (2009) Chest color and social status in male geladas (*Theropithecus gelada*). *International Journal of Primatology* 30(6):791–806. Available at: http://dx.doi.org/10.1007/s10764-009-9374-x [ACL]

Beyer, S. (1999) The accuracy of academic gender stereotypes. *Sex Roles* 40:787–813. [aLJ]

Blank, H. (1998) Memory states and memory tasks: An integrative framework for eyewitness memory and suggestibility. *Memory* 6:481–529. [BW]

Bond, C. F., Berry, D. S. & Omar, A. (1994) The kernal of truth in judgements of deceptiveness. *Basic and Applied Social Psychology* 15:523–34. [ACL]

Bond, C. F. & DePaulo, B. M. (2006) Accuracy of deception judgments. *Personality and Social Psychology Review* 10(3):214–34. [JFK]

Bond, C. F. & DePaulo, B. M. (2008) Individual differences in judging deception: Reply to O'Sullivan (2008) and Pigott and Wu (2008). *Psychological Bulletin* 134(4):501–503. [JFK]

Bonnefon, J. F., Hopfensitz, A. & De Neys, W. (2013) The modular nature of trustworthiness detection. *Journal of Experimental Psychology: General* 142:143–50. [J-FB]

Bonnefon, J. F., Hopfensitz, A. & De Neys, W. (2015) Face-ism and kernels of truth in facial inferences. *Trends in Cognitive Sciences* 19:421–22. [J-FB]

Boothroyd, L. G., Jones, B. C., Burt, D. M., DeBruine, L. M. & Perrett, D. I. (2008) Facial correlates of sociosexuality. *Evolution and Human Behavior* 29(3):211–18. Available at: http:dx.doi.org/10.1016/j.evolhumbehav.2007.12.009 [ACL]

Bosson, J. K., Pinel, E. C. & Vandello, J. A. (2010) The emotional impact of ambivalent sexism: Forecasts versus real experiences. *Sex Roles* 62:520–31. Available at: http://doi.org/10.1007/s11199-009-9664-y [BMT]

Brandone, A. C., Gelman, S. A. & Hedglen, J. (2015) Children's developing intuitions about the truth conditions and implications of novel generics versus quantified statements. *Cognitive Science* 39(4):711–38. [LB]

Bransford, J. D., McCarrell, N. S., Franks, J. J. & Nitsch, K. E. (1977) Toward unexplaining memory. In: *Perceiving, acting, and knowing: Toward an ecological psychology*, ed. R. E. Shaw & J. D. Bransford, pp. 431–66. Erlbaum [BW]

Brewer, W. F. & Treyens, J. C. (1981) Role of schemata in memory for places. *Cognitive Psychology* 13:207–30. [BW]

Brigham, J. C. (1971) Ethnic stereotypes. *Psychological Bulletin* 76:15–38. [aLJ]

Briton, N. J. & Hall, J. A. (1995) Beliefs about female and male nonverbal communication. *Sex Roles* 32:79–90. [aLJ]

Brodt, S. E. & Ross, L. D. (1998) The role of stereotyping in overconfident social prediction. *Social Cognition* 16:225–52. [aLJ]

Brown, H. E. (2013) Race, legality, and the social policy consequences of anti-immigration mobilization. *American Sociological Review* 78:290–314. Available at: http://doi.org/10.1177/0003122413476712 [BMT]

Brown, R. (2010) *Prejudice: Its social psychology*, 2nd edition. Wiley-Blackwell. [arLJ]

Bruner, J. (1992) Another look at New Look 1. *The American Psychologist* 47:780–83. [JFK]

Bruner, J. S. (1957a) Going beyond the information given. In: *Contemporary approaches to cognition*, ed. J. S. Bruner, E. Brunswik, L. Festinger, F. Heider, K. F. Muenzinger, C. E. Osgood & D. Rapaport, pp. 41–69. Harvard University Press. [JFK]

Bruner, J. S. (1957b) On perceptual readiness. *Psychological Review* 64:123–52. [JFK]

Bruner, J. S. & Goodman, C. C. (1947) Value and need as organizing factors in perception. *Journal of Abnormal and Social Psychology* 47:33–44. [JFK]

Bruner, J. S. & Klein, G. S. (1960) The function of perceiving: New Look retrospect. In: *Perspectives in psychological theory: Essays in honor of Heinz Werner*, ed. W. Wapner & B. Kaplan, pp. 61–77. International Universities Press. [JFK]

Bruner, J. S. & Tagiuri, R. (1954) Person perception. In: *Handbook of social psychology*, vol. 2, ed. G. Lindzey, pp. 634–54. Addison-Wesley. [JFK]

Bruno, D., Lyons, M. J. & Brewer, G. (2014) Response to Bayesian advice for gaydar-based picking up: Commentary on Lyons, Lynch, Brewer, and Bruno (2013) by Ploderl. *Archives of Sexual Behavior* 43(1):7–9. [JFK]

Brunswick, E. (1957) *Systematic and representative design of psychological experiments.* University of California Press. [rLJ]

Brunswik, E. (1952) *The conceptual framework of psychology.* University of Chicago Press. [aLJ, SM]

Brunswik, E. (1955a) In defense of probabilistic functionalism: A reply. *Psychological Review* 62:236–42. [JFK]

Brunswik, E. (1955b) Representative design and probabilistic theory in a functional psychology. *Psychological Review* 62:193–217. [JFK]

Campbell, A. (2013) *A mind of her own: The evolutionary psychology of women*, 2nd edition. Oxford University Press. [CCM]

Campbell, D. T. (1967) Stereotypes and the perception of group differences. *American Psychologist* 22:817–29. [aLJ]

Carlson, G. N. & Pelletier, F. J. (1995) *The generic book.* Chicago University Press. [LB]

Carre, J. M. & McCormick, C. M. (2008) In your face: Facial metrics predict aggressive behaviour in the laboratory and in varsity and professional hockey players. *Proceedings of the Royal Society B: Biological Sciences* 275 (1651):2651–56. [ACL]

Carre, J. M., McCormick, C. M. & Mondloch, C. J. (2009) Facial structure is a reliable cue of aggressive behavior. *Psychological Science* 20(10):1194–98. [ACL]

Carre, J. M., Morrissey, M. D., Mondloch, C. J. & McCormick, C. M. (2010) Estimating aggression from emotionally neutral faces: Which facial cues are diagnostic? *Perception* 39(3):356–77. Available at: http://dx.doi.org/10.1068/p6543 [ACL]

Cartwright, N. (1999) *The dappled world: A study of the boundaries of science.* Cambridge University Press. [NHW]

Cejka, M. A. & Eagly, A. H. (1999) Gender-stereotypic images of occupations correspond to the sex segregation of employment. *Personality and Social Psychology Bulletin* 25:413–23. [aLJ]

Chambers, C. G., Graham, S. A. & Turner, J. N. (2008) When hearsay trumps evidence: How generic language guides preschoolers' inferences about unfamiliar things. *Language and Cognitive Processes* 23(5):749–66. [LB]

Charlton, B. G. (2009) Clever sillies: Why high IQ people tend to be deficient in common sense. *Medical Hypotheses* 73:867–70. [GM, rLJ]

Charlton, B. G. (2011) *Thought prison – The fundamental nature of political correctness.* University of Buckingham Press. [GM]

Charlton, B. G. (2012) *Not even trying: The corruption of real science.* University of Buckingham Press. [GM]

Chen, M. & Bargh, J. A. (1997) Nonconscious behavioral confirmation processes: The self-fulfilling consequences of automatic stereotype activation. *Journal of Experimental Social Psychology* 33:541–60. [aLJ]

Cichocka, A., Winiewski, M., Bilewicz, M., Bukowski, M. & Jost, J. T. (2015) Complementary stereotyping of ethnic minorities predicts system justification in Poland. *Group Processes and Intergroup Relations* 1–13. Available at: http://doi.org/10.1177/1368430214566891 [BMT]

Cimpian, A., Brandone, A. C. & Gelman, S. A. (2010) Generic statements require little evidence for acceptance but have powerful implications. *Cognitive Science* 34(8):1452–82. [LB]

Cimpian, A. & Cadena, C. (2010) Why are dunkels sticky? Preschoolers infer functionality and intentional creation for artifact properties learned from generic language. *Cognition* 117(1):62–68. [LB]

Cimpian, A. & Erickson, L. C. (2012) The effect of generic statements on children's causal attributions: Questions of mechanism. *Developmental Psychology* 48 (1):159–70. [LB]

Cimpian, A. & Markman, E. M. (2009) Information learned from generic language becomes central to children's biological concepts: Evidence from their open-ended explanations. *Cognition* 113(1):14–25. [LB]

Cimpian, A. & Markman, E. M. (2011) The generic/nongeneric distinction influences how children interpret new information about social others. *Child Development* 82(2):471–92. [LB]

Cimpian, A., Mu, Y. & Erikson, L. C. (2012) Who is good at this game? Linking an activity to a social category undermines children's achievement. *Psychological Science* 23(5):533–41. [LB]

Cimpian, A. & Salomon, E. (2014) The inherence heuristic: An intuitive means of making sense of the world, and a potential precursor to psychological essentialism. *Behavioral and Brain Sciences* 37(5):461–80. [LB]

Clabaugh, A. & Morling, B. (2004) Stereotype accuracy of ballet and modern dancers. *Journal of Social Psychology* 144:31–48. [aLJ]

Claire, T. & Fiske, S. (1998) A systemic view of behavioral confirmation: Counterpoint to the individualist view. In: *Intergroup cognition and intergroup behavior*, ed. C. Sedikedes, J. Schopler & C. A. Insko, pp. 205–31. Erlbaum. [aLJ]

Clark, M. S. & Clark-Polner, E. (2012) Thinking critically about research on accuracy and bias in social perception. *PsycCRITIQUES* 57. (Online only publication) Available at: http://psycnet.apa.org/doi/10.1037/a0030346 [aLJ]

Cogsdill, E. J., Todorov, A. T., Spelke, E. S. & Banaji, M. R. (2014) Inferring character from faces: A developmental study. *Psychological Science* 25:1132–39. [J-FB]

Cohen, C. E. (1981) Personal categories and social perception: Testing some boundaries of the processing effects of prior knowledge. *Journal of Personality and Social Psychology* 40:441–52. [arLJ, ST]

Cohen, J. (1988) *Statistical power analysis for the behavioral sciences.* Academic Press. [aLJ]

Contreras, J. M., Banaji, M. R. & Mitchell, J. P. (2013) Multivoxel patterns in fusiform face area differentiate faces by sex and race. *PLoS ONE* 8:1–6. [ST]

Crawford, J. T., Jussim, L., Cain, T. & Cohen, F. (2013) Right-wing authoritarianism and social dominance orientation differentially predict biased evaluations of media reports. *Journal of Applied Social Psychology* 43:163–74. [GM]

Crawford, J. T., Jussim, L., Madon, S., Cain, T.R. & Stevens, S. T. (2011) The use of stereotypes and individuating information in political person perception. *Personality and Social Psychology Bulletin* 37:529–42. [aLJ]

Crisp, R. J. & Turner, R. N. (2014) *Essential social psychology*, 3rd edition. Sage. [rLJ]

Cronbach, L. J. (1955) Processes affecting scores on "understanding of others" and "assumed similarity." *Psychological Bulletin* 52:177–93. [aLJ]

Cuddy, A. J., Fiske, S. T. & Glick, P. (2008) Warmth and competence as universal dimensions of social perception: The stereotype content model and the BIAS map. *Advances in Experimental Social Psychology* 40:61–149. Available at: http://doi.org/10.1016/S0065-2601(07)00002-0 [BMT]

Cunningham, W. A., Johnson, M. K., Raye, C. L., Gatenby, J. C., Gore, J. C. & Banaji, M. R. (2004) Separable neural components in the processing of black and white faces. *Psychological Science* 15:806–13. [ST]

Darley, J. M. & Fazio, R. H. (1980) Expectancy confirmation processes arising in the social interaction sequence. *American Psychologist* 35:867–81. [aLJ]

Darley, J. M. & Gross, P. H. (1983) A hypothesis-confirming bias in labeling effects. *Journal of Personality and Social Psychology* 44:20–33. [arLJ]

Dawes, R. M. (1979) The robust beauty of improper linear models in decision making. *American Psychologist* 34:571–82. [aLJ]

De Neys, W., Hopfensitz, A. & Bonnefon, J.-F. (2013) Low second-to-fourth digit ratio predicts indiscriminate social suspicion, not improved trustworthiness detection. *Royal Society of London: Biology Letters* 9 (2):20130037. (Online article, published February 27, 2013. doi: 10.1098/rsbl/ 2013.0037. [J-FB]

De Neys, W., Hopfensitz, A. & Bonnefon, J.-F. (2015) Adolescents gradually improve at detecting trustworthiness from the facial features of unknown adults. *Journal of Economic Psychology* 47:17–22. [J-FB]

de Vries, R. (2015) An evaluation of the nature and effects of negative implicit attitudes towards welfare benefit claimants in the UK. *Centre for Experimental Social Sciences (CESS) working paper series*. Available at: https://cess-web.nuff. ox.ac.uk/files/pdfs/working_papers/CESS_DP2015_001.pdf [BMT]

Deaux, K. & Major, B. (1987) Putting gender into context: An interactive model of gender-related behavior. *Psychological Review* 94:369–89. [aLJ]

Deci, E. L. & Ryan, R. M. (2012) Self-determination theory. In: *Handbook of theories of social psychology,* ed. P. A. M. Van Lange, A. W. Kruglanski & E. T. Higgins, pp. 416–37. Sage. [CCM]

Del Giudice, M. (2013) Multivariate misgivings: Is D a valid measure of group and sex differences? *Evolutionary Psychology* 11:1067–76. [GM]

Del Giudice, M., Booth, T. & Irwing, P. (2012) The distance between Mars and Venus: Measuring global sex differences in personality. *PLoS ONE* 7:e29265. [GM]

Devine, P. (1995) Prejudice and outgroup perception. In: *Advanced social psychology*, ed A. Tesser, pp. 467–524. McGraw-Hill. [aLJ]

Devine, P. G., Hirt, E. R. & Gehrke, E. M. (1990) Diagnostic and confirmation strategies in trait hypothesis testing. *Journal of Personality and Social Psychology* 58:952–63. [arLJ]

Di Bella, L. & Crisp, R. J. (2015) Imagining oneself in a stereotyped role may stifle generalized tendencies to support social change. *Social Influence* 10:157–67. Available at: http://doi.org/10.1080/15534510.2015.1030446 [BMT]

Diekman, A. B., Eagly, A. H. & Kulesa, P. (2002) Accuracy and bias in stereotypes about the social and political attitudes of women and men. *Journal of Experimental Social Psychology* 38:268–82. [aLJ]

Dixon, J., Levine, M., Reicher, S. & Durrheim, K. (2012) Beyond prejudice: Are negative evaluations the problem and is getting us to like one another more the solution? *Behavioral and Brain Sciences* 35:411–25. Available at: http://doi.org/10.1017/S0140525X11002214 [BMT]

Downey, G., Freitas, A. L., Michaelis, B. & Khouri, H. (1998) The self-fulfilling prophecy in close relationships: Rejection sensitivity and rejection by romantic partners. *Journal of Personality and Social Psychology* 75:545–60. [aLJ]

Dreber, A., Gerdes, C., Graensmark, P. & Little, A. C. (2013) Facial masculinity predicts risk and time preferences in expert chess players. *Applied Economics Letters* 20(16):1477–80. Available at: http://dx.doi.org/10.1080/13504851.2013.826861 [ACL]

Drescher, S. (2009) *Abolition: A history of slavery and antislavery.* Cambridge University Press. [CCM]

Druckman, J. N. (2012) The politics of motivation. *Critical Review* 24(2):199–216. [DMK]

Duarte, J. L., Crawford, J. T., Stern, C., Haidt, J., Jussim, L. & Tetlock, P. E. (2015) Political diversity will improve social psychological science. *Behavioral and Brain Sciences* 38:e130. [rLJ]

Durante, F., Fiske, S. T., Kervyn, N., Cuddy, A. J., Akande, A. D., Adetoun, B. E., Adewuyi, M. F., Tserere, M. M., Ramiah, A. A., Mastor, K. A., Barlow, F. K., Bonn, G., Tafarodi, R. W., Bosak, J., Cairns, E., Doherty, C., Capozza, D., Chandran, A., Chryssochoou, X,. Iatridis, T., Contreras, J. M., Costa-Lopes, R., Gonzalez, R., Lewis, J. I., Tushabe, G., Leyens, J.-P., Mayorga, R., Rouhana, N. N., Castro, V. S., Perez, R., Rodriguez-Bailon, R., Moya, M., Marente, E. M., Galvez, M. P., Sibley, C. G., Asbrock, F. & Storari, C. C. (2013) Nations' income inequality predicts ambivalence in stereotype content: How societies mind the gap. *British Journal of Social Psychology* 52:726–46. Available at: http://doi.org/10.1111/bjso.12005 [BMT]

Durkheim, E. (1897) *Le suicide: étude de sociologie*. PUF (Presses Universitaires de France). [CCM]

Dutton, D. G. (2012) The case against the role of gender in intimate partner violence. *Aggression and Violent Behavior* 17:99–104. [GM]

Dutton, E. (2013) The cultural mediation hypothesis: A critical examination. *Intelligence* 41:321–27. [GM]

Dutton, E. (2014) *Religion and intelligence.* Ulster Institute for Social Research. [GM]

Dutton, E. & Lynn, R. (2014) Intelligence and religious and political differences among members of the U.S. academic elite. *Interdisciplinary Journal of Research on Religion* 10:1–29. [GM]

Dutton, E. & van der Linden, D. (2015) Who are the "Clever Sillies"? The intelligence, personality, and motives of clever silly originators and those who follow them. *Intelligence* 49:57–65. [aLJ, GM]

Eden, D. & Shani, A. B. (1982) Pygmalion goes to boot camp: Expectancy, leadership, and trainee performance. *Journal of Applied Psychology* 67:194–99. [aLJ]

Elashoff, J. D. & Snow, R. E. (1971) *Pygmalion reconsidered*. Charles A. Jones. [aLJ]

Ellemers, N. & Barreto, M. (2009) Collective action in modern times: How modern expressions of prejudice prevent collective action. *Journal of Social Issues* 65:749–68. Available at: http://doi.org/10.1111/j.1540-4560.2009.01621.x [BMT, rLJ]

Enquist, M.& Leimar, O. (1983) Evolution of fighting behaviour: Decision rules and assessment of relative strength. *Journal of Theoretical Biology* 102:387–410. [ACL]

Epstein, W. (1979) In the eye of the beholder: Competing theoretical formulations of visual perception. *Psychological Studies* 24(2):82–97. [JFK]

Epstein, W. & Park, J. (1964) Examination of Gibson's psychophysical hypothesis. *Psychological Bulletin* 62:180–96. [JFK]

Fink, B., Neave, N. & Seydel, H. (2007) Male facial appearance signals physical strength to women. *American Journal of Human Biology* 19(1):82–87. [ACL]

Firestone, C. & Scholl, B. J. (2016) Cognition does not affect perception: Evaluating the evidence for "top-down" effects. *Behavioral and Brain Sciences* 39: e229. Available at: https://doi.org/10.1017/S0140525X15000965 [JFK, rLJ]

Fiske, S. (1982) Schema-triggered affect: Applications to social perception. In: *Affect and cognition: 17th Annual Carnegie Mellon Symposium on Cognition,* ed. M. S. Clark & S. T. Fiske, pp. 55–78. Erlbaum. [BW]

Fiske, S. T. (1998) Stereotyping, prejudice, and discrimination. In: *The handbook of social psychology, vol. 2*, 4th edition, ed. D. Gilbert, S. T. Fiske & G. Lindzey, pp. 357–411. McGraw-Hill. [aLJ]

Fiske, S. T. (2004) *Social beings: A core motives approach to social psychology*. Wiley. [aLJ]

Fiske, S. T. & Neuberg, S. L. (1990) A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. *Advances in Experimental Social Psychology* 23:1–74. [aLJ]

Fiske, S. T. & Taylor, S. E. (1991) *Social cognition*, 2nd edition. McGraw-Hill. [aLJ]

Fiske, S. T. & Taylor, S. E. (2008) *Social cognition: From brains to culture*. McGraw-Hill. [rLJ]

Foster, M. D. (1999) Acting out against gender discrimination: The effects of different social identities. *Sex Roles* 40:167–86. Available at: http://doi.org/10.1023/A:1018842803813 [BMT]

Frickel, S. & Gross, N. (2005) A general theory of scientific/intellectual movements. *American Sociological Review* 70:204–32. [NHW]

Frisell, T., Lichtenstein, P. & Långström, N. (2011) Violent crime runs in families: A total population study of 12.5 million individuals. *Psychological Medicine* 41:97–105. [GM]

Funder, D. C. (1987) Errors and mistakes: Evaluating the accuracy of social judgment. *Psychological Bulletin* 101:75–90. [arLJ, SM]

Funder, D. C. (1995a) On the accuracy of personality judgment: A realistic approach. *Psychological Review* 102:652–70. [aLJ, SM]

Funder, D. C. (1995b) Stereotypes, base rates, and the fundamental attribution mistake: A content-based approach to judgmental accuracy. In: *Stereotype accuracy: Toward appreciating group differences,* ed. L. Jussim, Y.-T. Lee & C. McCauley, pp. 141–56. American Psychological Association. [SM]

Gage, N. L. & Cronbach, L. J. (1955) Conceptual and methodological problems in interpersonal perception. *Psychological Review* 62:411–22. [aLJ, SM]

Gelman, S. A. (2003) *The essential child: Origins of essentialism in everyday thought.* Oxford University Press. [LB]

Gelman, S. A., Tapia, I. S. & Leslie, S. J. (2016) Memory for generic and quantified sentences in Spanish-speaking children and adults. *Journal of Child Language* 43(6):1231–44. [LB]

Gelman, S. A., Taylor, M. G. & Nguyen, S. P. (2004) Mother-child conversations about gender: Understanding the acquisition of essentialist beliefs. *Monographs of the Society for Research in Child Development* 69(1):i–142. [LB]

Gelman, S. A., Ware, E. A. & Kleinberg, F. (2010) Effects of generic language on category content and structure. *Cognitive Psychology* 61(3):273–301. [LB]

Gibson, J. J. (1979) *The ecological approach to visual perception.* Houghton Mifflin. [ACL]

Gieryn, T. F. (1983) Boundary-work and the demarcation of science from non-science: Strains and interests in professional ideologies of scientists. *American Sociological Review* 48:781–95. [NHW]

Gigerenzer, G. (2005) I think, therefore I err. *Social Research* 72:195–218. (Reprinted in *Psychologica* 2006:93–110). [SM]

Gigerenzer, G. & Brighton, H. (2009) Homo heuristicus: Why biased minds make better inferences. *Topics in Cognitive Science* 1:107–43. [rLJ]

Gigerenzer, G., Swijtink, Z., Porter, T., Daston, L., Beatty, J. & Kruger, L. (1990) *The empire of chance: How probability changed science and everyday life.* Cambridge University Press. [BW]

Gigerenzer, G. & Todd, P. M. (2008) Rationality the fast and frugal way: Introduction. In: *Handbook of experimental economics results: Vol. 1 (Handbooks in Economics No. 28)*, ed. C. R. Plott & V. L. Smith, pp. 976–86. North-Holland. [SM]

Gigerenzer, G. & Todd, P. M. (2012) Ecological rationality: The normative study of heuristics. In: *Ecological rationality: Intelligence in the world,* ed. P. M. Todd, G. Gigerenzer & the ABC Research Group, pp. 487–97. Oxford University Press. [SM]

Gigerenzer, G., Todd, P. M. & the ABC Research Group (1999) *Simple heuristics that make us smart.* Oxford University Press. [JFK, SM]

Gilbert, D. T. (1995) Attribution and interpersonal perception. In: *Advanced social psychology,* ed. A. Tesser, pp. 99–147. McGraw-Hill. [aLJ]

Gilens, M. (2009) *Why Americans hate welfare: Race, media, and the politics of antipoverty policy*. The University of Chicago Press. [BMT]

Gilovich, T., Keltner, D. & Nisbett, R. E. (2006) *Social psychology.* W.W. Norton. [aLJ]

Gilson, C. & Abelson, R. P. (1965) The subjective use of inductive evidence. *Journal of Personality and Social Psychology* 2(3):301–10. [LB]

Glick, P. & Fiske, S. T. (1996) The ambivalent sexism inventory: Differentiating hostile and benevolent sexism. *Journal of Personality and Social Psychology* 70:491–512. Available at: http://doi.org/10.1037/0022-3514.70.3.491 [BMT]

Glick, P. & Fiske, S. T. (2001) An ambivalent alliance: Hostile and benevolent sexism as complementary justifications for gender inequality. *American Psychologist* 56:109–18. Available at: http://doi.org/10.1037/0003-066X.56.2.109 [BMT]

Glick, P., Fiske, S. T., Mladinic, A., Saiz, J. L., Abrams, D., Masser, B., Adetoun, B., Osagie, J. E., Akande, A, Alao, A. Annetje, B., Willemsen, T. M., Chipeta, K., Dardenne, B., Dijksterhuis, A., Wigboldus, D., Eckes, T., Six-Materna, I., Exposito, F., Moya, M., Foddy, M., Kim, H.-J., Lameiras. M, Sotelo, M. J., Mucchi-Faina, A., Romani, M., Sakalli, N., Udegbe, B., Yamamoto, M., Ui, M., Ferreira, M. C. & López, W. L. (2000) Beyond prejudice as simple antipathy: Hostile and benevolent sexism across cultures. *Journal of Personality and Social Psychology* 79:763–75. Available at: http://doi.org/10.1037/0022-3514.79.5.763 [BMT]

Gosling, L. M., Atkinson, N. W., Dunn, S. & Collins, S. A. (1996) The response of subordinate male mice to scent marks varies in relation to their own competitive ability. *Animal Behaviour* 52:1185–91. Available at: http://dx.doi.org/10.1006/anbe.1996.0266 [ACL]

Gosling, S. D., Ko, S. J., Mannarelli, T. & Morris, M. E. (2002) A room with a cue: Personality judgments based on offices and bedrooms. *Journal of Personality and Social Psychology* 82(3):379–98. [aLJ, ACL]

Gottfredson, L. S. (2010) Lessons in academic freedom as lived experience. *Personality and Individual Differences* 49:272–80. [rLJ]

Gould, S. J. (1981) *The mismeasure of man.* W. W. Norton. [aLJ]

Graham, J., Nosek, B. A. & Haidt, J. (2013) The moral stereotypes of liberals and conservatives: Exaggeration across the political spectrum. *PLoS ONE* 7(12): e50092. doi: 10.1371/journal.pone.0050092. [aLJ]

Greenberg, J., Schmader, T., Arndt, J. & Landau, M. (2015) *Social psychology: The science of everyday life.* Worth. [rLJ]

Greenwald, A. G., Pratkanis, A. R., Leippe, M. R. & Baumgardner, M. H. (1986) Under what conditions does theory obstruct research progress? *Psychological Review* 93:216–29. [rLJ]

Griffiths, T. L. & Tenenbaum, J. B. (2006) Optimal predictions in everyday cognition. *Psychological Science* 17:767–73. [aLJ]

Grison, S., Heatherton, T. F. & Gazzaniga, M. S. (2015) *Psychology in your life.* W. W. Norton. [rLJ]

Gulliksen, H. (1987) *Theory of mental tests.* Erlbaum. [DT]

Hacking, I. (1983) *Representing and intervening.* Cambridge University Press. [NHW]

Hacking, I. (1999) *The social construction of what?* Harvard University Press. [JFK]

Hacking, I. (2004) *Historical ontology.* Harvard University Press. [NHW]

Haidt, J. (2012) *The Righteous Mind: Why good people are divided by religion and politics.* Pantheon Books. [rLJ]

Hall, J. A. & Carter, J. D. (1999) Gender-stereotype accuracy as an individual difference. *Journal of Personality and Social Psychology* 77:350–59. [aLJ]

Hamilton, D. L., Sherman, S. J. & Ruvolo, C. M. (1990) Stereotype-based expectancies: Effects on information processing and social behavior. *Journal of Social Issues* 46:35–60. [aLJ]

Hampton, J. A. (2012) Thinking intuitively the rich (and at times illogical) world of concepts. *Current Directions in Psychological Science* 21(6):398–402. [LB]

Hardin, R. (1982) *Collective action.* The John Hopkins University Press. [BMT]

Harris, M. J., Milich, R., Corbitt, E. M., Hoover, D. W. & Brady, M. (1992) Self-fulfilling effects of stigmatizing information on children's social interactions. *Journal of Personality and Social Psychology* 63: 41–50. [aLJ]

Hartwig, M. & Bond, C. F. (2011) Why do lie-catchers fail? A lens model meta-analysis of human lie judgments. *Psychological Bulletin* 137:643–59. [JFK]

Hartwig, M. & Bond, C. F. (2014) Lie detection from multiple cues: A meta-analysis. *Applied Cognitive Psychology* 28:661–76. [JFK]

Haselton, M. G. (2003) The sexual overperception bias: Evidence of a systematic bias in men from a survey of naturally occurring events. *Journal of Research in Personality* 37(1):34–47. [ACL]

Haselton, M. G.& Buss, D. M. (2000) Error management theory: A new perspective on biases in cross-sex mind reading. *Journal of Personality and Social Psychology* 78(1):81–91. [ACL, rLJ]

Hassin, R. R., Aviezer, H. & Bentin, S. (2013) Inherently ambiguous: Facial expressions of emotions, in context. *Emotion Review* 5(1):60–65. [JFK]

Hastie, R. & Dawes, R. M. (2001) *Rational choice in an uncertain world : The psychology of judgment and decision making.* Sage. [JFK]

Hastorf, A. H. & Cantril, H. (1954) They saw a game: A case study. *Journal of Abnormal and Social Psychology* 49(1):129–34. [arLJ]

Hazlett, B. A. (1996) Assessments during shell exchanges by the hermit crab *Clibanarius vittatus*: The complete negotiator. *Animal Behaviour* 51:567–73. Available at: http://dx.doi.org/10.1006/anbe.1996.0060 [ACL]

Healy, K. (2015) The performativity of networks. *European Journal of Sociology* 56:175–205. [NHW]

Heine, S. J., Buchtel, E. E. & Norenzayan, A. (2008) What do cross-national comparisons of personality traits tell us? the case of conscientiousness. *Psychological Science* 19:309–13. [aLJ]

Herrnstein, R. J. & Murray, C. (1994) *The bell curve.* The Free Press. [aLJ]

Hinnant, J. B., O'Brien, M. & Ghazarian, S. R. (2009) The longitudinal relationship of teacher expectations to achievement in the early school years. *Journal of Educational Psychology* 101:662–70. [aLJ]

Hollander, M. A., Gelman, S. A. & Star, J. (2002) Children's interpretation of generic noun phrases. *Developmental Psychology* 38(6):883–94. [LB]

Hsu, L. M. (2004) Biases of success rate differences shown in binomial effect size displays. *Psychological Methods* 9(2):183–97. Available at: http://doi.org/10.1037/1082-989X.9.2.183 [DT]

Hurwitz, J. & Peffley, M. (2005) Playing the race card in the post-Willie Horton Era: The impact of racialized code words on support for punitive crime policy. *Public Opinion Quarterly* 69:99–112. Available at: http://doi.org/10.1093/poq/nfi004 [BMT]

Ickes, W., ed. (1997) *Empathic accuracy.* Guilford Press. [aLJ]

Ioannidis, J. P. (2012) Why science is not necessarily self-correcting. *Perspectives on Psychological Science* 7:645–54. [rLJ]

Johnson, J. D., Olivo, N., Gibson, N., Reed, W. & Ashburn-Nardo, L. (2009) Priming media stereotypes reduces support for social welfare policies: The mediating role of empathy. *Personality and Social Psychology Bulletin* 35:463–76. Available at: http://doi.org/10.1177/0146167208329856 [BMT]

Jones, E. E. (1985) Major developments in social psychology during the past five decades. In *The handbook of social psychology*, vol. 1, 3rd edition, ed. G. Lindzey & E. Aronson, pp. 47–107. Random House. [aLJ]

Jones, E. E. (1986) Interpreting interpersonal behavior: The effects of expectancies. *Science* 234:41–46. [aLJ]

Jones, E. E. (1990) *Interpersonal perception.* W. H. Freeman. [aLJ]

Jönsson, M. L. & Hampton, J. A. (2006) The inverse conjunction fallacy. *Journal of Memory and Language* 55(3):317–34. [LB]

Jordan, C. H.& Zanna, M. P. (2007) Not all experiments are created equal: On conducting and reporting persuasive experiments. In: *Critical thinking in psychology,* ed. R. J. Sternberg, D. Halpern & H. L. Roediger, III, pp. 160–76. Cambridge University Press. [rLJ]

Jost, J. T. (2011) Ideological bias in social psychology? *The Situationist.* Available at: https://thesituationist.wordpress.com/2011/03/02/ideological-bias-in-social-psychology/ [rLJ]

Jost, J. T. & Banaji, M. R. (1994) The role of stereotyping in system-justification and the production of false consciousness. *British Journal of Social Psychology* 33:1–27. [aLJ]

Jost, J. T., Chaikalis-Petritsis, V., Abrams, D., Sidanius, J., Van Der Toorn, J. & Bratt, C. (2012) Why men (and Women) do and don't rebel effects of system justification on willingness to protest. *Personality and Social Psychology Bulletin* 38:197–208. Available at: http: doi.org/10.1177/0146167211422544 [BMT]

Jost, J. T. & Kay, A. C. (2005) Exposure to benevolent sexism and complementary gender stereotypes: Consequences for specific and diffuse forms of system justification. *Journal of Personality and Social Psychology* 88:498–509. Available at: http://doi.org/10.1037/0022-3514.88.3.498 [BMT]

Jost, J. T., Kivetz, Y., Rubini, M., Guermandi, G. & Mosso, C. (2005) System-justifying functions of complementary regional and ethnic stereotypes: Cross-national evidence. *Social Justice Research* 18:305–33. Available at: http://doi.org/10.1007/s11211-005-6827-z [BMT]

Jost, J. T. & Kruglanski, A. W. (2002) The estrangement of social constructionism and experimental social psychology: History of the rift and prospects for reconciliation. *Personality and Social Psychology Review* 6:168–87. [arLJ]

Judd, C. M. & Park, B. (1993) Definition and assessment of accuracy in social stereotypes. *Psychological Review* 100:109–28. [aLJ]

Judd, C. M., Park, B. & Ryan, C. S. (1991) Accuracy in the judgment of in-group and out-group variability. *Journal of Personality and Social Psychology* 61:366–79. [aLJ]

Judd, C. M., Park, B., Ryan, C. S., Brauer, M., & Kraus, S. (1995). Stereotypes and ethnocentrism: Diverging interethnic perceptions of African American and White American youth. *Journal of Personality and Social Psychology* 69:460–81. [aLJ]

Jussim, L. (1991) Social perception and social reality: A reflection-construction model. P*sychological Review* 98:54–73. [arLJ]

Jussim, L. (2012) *Social perception and social reality: Why accuracy dominates bias and self-fulfilling prophecy.* Oxford University Press. [arLJ, KA, LB, J-FB, JC, DMK, JFK, ACL, GM, JM, CCM, SM, BMT, ST, DT, BW, NHW]

Jussim, L., Crawford, J. T., Anglin, S. M., Chambers, J. R., Stevens, S. T. & Cohen, F. (2016a) Stereotype accuracy: One of the largest and most replicable effects in all of social psychology. In: *Handbook of prejudice, stereotyping, and discrimination,* 2nd edition, ed. T. Nelson, pp. 31–63. Psychology Press. [rLJ]

Jussim, L., Crawford, J. T., Anglin, S. M. & Stevens, S. T. (2015a) Ideological bias in social psychological research. In: *Social psychology and politics,* ed. J. P. Forgas, K. Fiedler & W. Crano, pp. 91–109. Psychology Press/Taylor & Francis. [GM, rLJ]

Jussim, L., Crawford, J. T., Anglin, S. M., Stevens, S. M. & Duarte, J. L. (2016b) Interpretations and methods: Towards a more effectively self-correcting social psychology. *Journal of Experimental Social Psychology* 66:116–33. [rLJ]

Jussim, L., Crawford, J. T. & Rubinstein, R. S. (2015b) Stereotype (in)accuracy in perceptions of groups and individuals. *Current Directions in Psychological Science* 24:490–97. [rLJ]

Jussim, L., Crawford, J. T., Stevens, S. T. & Anglin, S. M. (2016c) The politics of social psychological science: Distortions in the social psychology of intergroup relations. In: *Social psychology of political polarization,* ed. P. Valdesolo, & J. Graham, pp. 165–96. Routledge. [rLJ]

Jussim, L., Crawford, J. T., Stevens, S. T., Anglin, S. M. & Duarte, J. L. (2016d) Can high moral purposes undermine scientific integrity? In: *The social psychology of morality,* ed. J. Forgas, L. Jussim & P. van Lange, pp. 173–95. Taylor and Francis. [rLJ]

Jussim, L. & Eccles, J. (1995) Naturalistic studies of interpersonal expectancies. *Review of Personality and Social Psychology* 15:74–108. [aLJ]

Jussim, L., Eccles, J. & Madon, S. (1996) Social perception, social stereotypes, and teacher expectations: Accuracy and the quest for the powerful self-fulfilling prophecy. *Advances in Experimental Social Psychology* 28:281–388. [aLJ, ST]

Jussim, L. & Harber, K. (2005) Teacher expectations and self-fulfilling prophecies: Knowns and unknowns; resolved and unresolved controversies. *Personality and Social Psychology Review* 9:131–35. [aLJ]

Kahan, D. M. (2010) Fixing the communications failure. *Nature* 463:296–97. [DMK]

Kahan, D. M. (2013) Ideology, motivated reasoning, and cognitive reflection. *Judgment and Decision Making* 8:407–24. [DMK]

Kahan, D. M. (2015a) Laws of cognition and the cognition of law. *Cognition* 135:56–60. [DMK]

Kahan, D. M. (2015b) What is the "science of science communication"? *Journal of Scientific Communication* 14(3):1–12. [DMK]

Kahan, D. M., Hoffman, D. A., Braman, D., Evans, D. & Rachlinski, J. J. (2012a) They saw a protest: Cognitive illiberalism and the speech-conduct distinction. *Stanford Law Review* 64:851–906. [DMK]

Kahan, D. M., Jenkins-Smith, H. & Braman, D. (2011) Cultural cognition of scientific consensus. *Journal of Risk Research* 14:147–74. [DMK]

Kahan, D. M., Peters, E., Dawson, E. & Slovic, P. (2013) Motivated numeracy and enlightened self-government. Cultural Cognition Project Working Paper No. 116. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2319992. [DMK]

Kahan, D. M., Peters, E., Wittlin, M., Slovic, P., Ouellette, L. L., Braman, D. & Mandel, G. (2012b) The polarizing impact of science literacy and numeracy on perceived climate change risks. *Nature: Climate Change* 2:732–35. [DMK, rLJ]

Kahneman, D. (2011) *Thinking, fast and slow.* Farrar, Straus, and Giroux. [GM]

Kahneman, D. & Frederick, S. (2005) A model of heuristic judgment. In: *The Cambridge handbook of thinking and reasoning*, ed. K. J. Holyoak & R.G. Morrison, pp. 267–93. Cambridge University Press. [DMK]

Katz, D. & Braly, K. (1933) Racial stereotypes of one hundred college students. *Journal of Abnormal and Social Psychology* 28:280–90. [aLJ]

Kay, A. C., Czapliński, S. & Jost, J. T. (2009) Left–right ideological differences in system justification following exposure to complementary versus noncomplementary stereotype exemplars. *European Journal of Social Psychology* 39:290–98. Available at: http://doi.org/10.1002/ejsp.500 [BMT]

Kay, A. C. & Jost, J. T. (2003) Complementary justice: Effects of "poor but happy" and "poor but honest" stereotype exemplars on system justification and implicit activation of the justice motive. *Journal of Personality and Social Psychology* 85:823–37. Available at: http://doi.org/10.1037/0022-3514.85.5.823 [BMT]

Kelley, H. H. & Stahelski, A. J. (1970) The social interaction basis of cooperators' and competitors' beliefs about others. *Journal of Personality and Social Psychology* 16:66–91. [aLJ]

Kelly, G. A. (1955) *The psychology of personal constructs: Vol. I. A theory of personality.* W.W. Norton. [SM]

Kenny, D. A. (1994) *Interpersonal perception: A social relations analysis.* Guilford Press. [aLJ]

Kenny, D. A., Albright, L., Malloy, T. E. & Kashy, D. A. (1994) Consensus in interpersonal perception: Acquaintance and the big five. *Psychological Bulletin* 116:245–58. [ACL]

Khemlani, S., Leslie, S. J. & Glucksberg, S. (2012) Inferences about members of kinds: The generics hypothesis. *Language and Cognitive Processes* 27(6):887–900. [LB]

Kihlstrom, J. F. (2004a) "An unwarrantable impertinence" [Commentary on *The Illusion of Conscious Will* by D. M. Wegner]. *Behavioral and Brain Sciences* 27:666–67. [JFK]

Kihlstrom, J. F. (2004b) Is there a "People are Stupid" school in social psychology? [Commentary on "Towards a balanced social psychology: Causes, consequences, and cures for the problem-seeking approach to social behavior and cognition" by J. I. Krueger & D. C. Funder]. *Behavioral and Brain Sciences* 27:348–49. [JFK]

Kihlstrom, J. F. (2004c) Is your unconscious smarter than you are? [Book review of *Strangers to ourselves: Discovering the adaptive unconscious* by T. D. Wilson]. *PsycCRITIQUES* 49(Suppl. 14):Article 99. [JFK]

Kihlstrom, J. F. (2008) The automaticity juggernaut. In: *Psychology and free will*, ed. J. Baer, J. C. Kaufman & R. F. Baumeister, pp. 155–80. Oxford University Press. [JFK]

Kihlstrom, J. F. (2013) The person-situation interaction. In: *Oxford handbook of social cognition*, ed. D. Carlston, pp. 786–805. Oxford University Press. [JFK]

King, L. A. (2013) *Experience psychology*, 2nd edition. McGraw-Hill. [rLJ]

Kinzler, K. D. & Spelke, E. S. (2011) Do infants show social preferences for people differing in race? *Cognition* 119:1–9. [ST]

Klayman, J. & Ha, Y. (1987) Confirmation, disconfirmation, and information in hypothesis testing. *Psychological Review* 94:211–28. [aLJ]

Klein, D. B. & Stern, C. (2005) Professors and their politics: The policy views of social scientists. *Critical Review* 17:257–303. [GM]

Klein, D. B. & Stern, C. (2009) By the numbers: The ideological profile of professors. In: *The Politically Correct University : Problems, scope, and reforms*, ed. R. Maranto, R. E. Redding, & F. M. Hess, pp. 15–37. AEI Press. [GM]

Kluegel, J. R. & Smith, E. R. (1986) *Beliefs about inequality: Americans' view of what is and what ought to be.* Transaction Publishers. [BMT]

Krebs, J. R. & Dawkins, R. (1984) Animal signals: Mind reading and manipulation. In: *Behavioural ecology: An evolutionary approach*, 2nd edition, ed. J. R. Krebs & N. B. Davies, pp. 380–402. Blackwell Scientific. [ACL]

Krueger, J. I. & Funder, D. C. (2004) Towards a balanced social psychology: Causes, consequences, and cures for the problem-seeking approach to social behavior and cognition. *Behavioral and Brain Sciences* 27(3):313–27. [JFK, SM]

Kruglanski, A. (1989) The psychology of being "right": The problem of accuracy in social perception and cognition. *Psychological Bulletin* 106:395–409. [aLJ]

Kuhn, T. S. (1962/1996) *The structure of scientific revolutions.* University of Chicago Press. (Original work published in 1962). [NHW]

Kulik, J. A. (1983) Confirmatory attribution and the perpetuation of social beliefs. *Journal of Personality and Social Psychology* 44:1171–81. [aLJ]

Kunda, Z. (1990) The case for motivated reasoning. *Psychological Bulletin* 108:480–98. [DMK]

Kunda, Z. & Thagard, P. (1996) Forming impressions from stereotypes, traits, and behaviors: A parallel-constraint-satisfaction theory. *Psychological Review* 103:284–308. [aLJ]

Kurzban, R. (2012) On the advantages of being wrong. *Bioscience* 62:516–17. [JM]

Lakatos, I. (1999) *The logic of mathematical discovery.* Cambridge University Press. [NHW]

Långström, N., Rahman, Q., Carlström, E. & Lichtenstein, P. (2010) Genetic and environmental effects on same-sex sexual behavior: A population study of twins in Sweden. *Archives of Sexual Behavior* 39:75–80. [GM]

LaPiere, R. T. (1936) Type-rationalizations of group antipathy. *Social Forces* 15:232–37. [aLJ]

LaTour, B. (1999) *Pandora's hope: Essays on the reality of science studies.* Harvard University Press. [NHW]

Lawler, J. M. (1973) Studies in English generics. *University of Michigan Papers in Linguistics* 1(1):1–184. [LB]

Leach, C. W., Iyer, A. & Pedersen, A. (2006) Anger and guilt about ingroup advantage explain the willingness for political action. *Personality and Social Psychology Bulletin* 32:1232–45. Available at: http://doi.org/10.1177/0146167206289729 [BMT]

Leach, C. W., Snider, N. & Iyer, A. (2002) "Poisoning the consciences of the fortunate": The experience of relative advantage and support for social equality. In: *Relative deprivation: Specification, development and integration*, ed. I. Walker & H. Smith, pp. 136–63. Cambridge University Press. [BMT]

Lefevre, C. E., Lewis, G. J., Perrett, D. I. & Penke, L. (2013) Telling facial metrics: Facial width is associated with testosterone levels in men. *Evolution and Human Behavior* 34(4):273–79. Available at: http://dx.doi.org/10.1016/j.evolhumbehav.2013.03.005 [ACL]

Leslie, S. J. (2007) Generics and the structure of the mind. *Philosophical Perspectives* 21(1):375–403. [LB]

Leslie, S. J. (2008) Generics: Cognition and acquisition. *Philosophical Review* 117(1):1–47. [LB]

Leslie, S. J. (in press) The original sin of cognition: Fear, prejudice and generalization. *The Journal of Philosophy.* [LB, rLJ]

Leslie, S. J. & Gelman, S. A. (2012) Quantified statements are recalled as generics: Evidence from preschool children and adults. *Cognitive Psychology* 64(3):186–214. [LB]

Leslie, S. J., Khemlani, S. & Glucksberg, S. (2011) Do all ducks lay eggs? The generic overgeneralization effect. *Journal of Memory and Language* 65(1):15–31. [LB, rLJ]

Lessig, L. (1995) The regulation of social meaning. *The University of Chicago Law Review* 62:943–1045. [DMK]

Lewis, J., DeGusta, D., Meyer, M., Monge, J., Mann, A. & Holloway, R. L. (2011) The mismeasure of science: Stephen Jay Gould versus Samuel George Morton on skulls and bias. *PLoS Biology* 9:e1001071. [GM]

Lewis, K. L., Hodges, S. D., Laurent, S., Srivastava, S. & Biancarosa, G. (2012) Reading between the minds: The use of stereotypes in empathic accuracy. *Psychological Science* 23:1040–46. [aLJ]

Lilienfeld, S. O. (2010) Can psychology become a science? *Personality and Individual Differences* 49:281–88. [rLJ]

Lilienfeld, S. O., Ammirati, R. & Landfield, K. (2009) Giving debiasing away: Can psychological research on correcting cognitive errors promote human welfare? *Perspectives on Psychological Science* 4(4):390–98. [DMK]

Lippa, R. (2010) Sex differences in personality traits and gender-related occupational preferences across 53 nations: Testing evolutionary and social-environmental theories. *Archives of Sexual Behavior* 39:619–36. [GM]

Lippmann, W. (1922/1991) *Public opinion.* Transaction Publishers. [aLJ]

Little, A. C., Jones, B. C., DeBruine, L. M. & Dunbar, R. I. M. (2013) Accuracy in discrimination of self-reported cooperators using static facial information. *Personality and Individual Differences* 54(4):507–12. Available at: http://dx.doi.org/10.1016/j.paid.2012.10.018 [ACL]

Little, A. C., McPherson, J., Dennington, L. & Jones, B. C. (2011) Accuracy in assessment of self-reported stress and a measure of health from static facial information. *Personality and Individual Differences* 51(6):693–98. Available at: http:dx.doi.org/10.1016/j.paid.2011.06.010 [ACL]

Little, A. C. & Perrett, D. I. (2007) Using composite images to assess accuracy in personality attribution to faces. *British Journal of Psychology* 98:111–26. [ACL]

Little, A. C., Trebicky, V., Havlicek, J., Roberts, S. C. & Kleisner, K. (2015) Human perception of fighting ability: Facial cues predict winners and losers in mixed martial arts fights. *Behavioural Ecology* 26:1470–75.. [ACL]

Löckenhoff, C. E., Chan, W., McCrae, R. R., De Fruyt, F., Jussim, L., De Bolle, M., Costa, P. T., Jr., Sutin, A. R., Realo, A., Allik, J., Nakazato, K., Shimonaka, Y., Hřebíčková, M., Graf, S., Yik, M., Ficková, E., Brunner-Sciarra, M., Leibovich de Figueora, N., Schmidt, V., Ahn, C.-K., Ahn, H.-N., Aguilar Vafaie, M. E., Siuta, J., Szmigielska, B., Cain, T. R., Crawford, J. T., Anwar Mastor, K., Rolland, J.-P., Nansubuga, F., Miramontez, D. R., Benet-Martínez, V., Rossier, J., Bratko, D., Marušić, I., Halberstadt, J., Yamaguchi, M., Knežević, G., Martin, T. A., Gheorghiu, M., Smith, P. B., Barbaranelli, C., Wang, L., Shakespeare-Finch, J., Lima, M. P., Klinkosz, W., Sekowski, A., Alcalay, L., Simonetti, F., Avdeyeva, T. V., Pramila, V. S. & Terracciano, A. (2014) Gender stereotypes of personality: Universal and accurate? *Journal of Cross-Cultural Psychology* 45:675–94. [aLJ]

Locksley, A., Borgida, E., Brekke, N. & Hepburn, C. (1980) Sex stereotypes and social judgment. *Journal of Personality and Social Psychology* 39:821–31. [KA]

Lodge, M. & Taber, C. S. (2013) *The rationalizing voter.* Cambridge University Press. [DMK]

Loftus, E. F. (1975) Leading questions and eyewitness reports. *Cognitive Psychology* 7:560–72. [BW]

Loftus, E. F., Miller, D. G. & Burns, H. J. (1978) Semantic integration of verbal information into a visual memory. *Journal of Experimental Psychology: Human Learning and Memory* 4:19–31. [BW]

Loftus, E. F. & Palmer, J. E. (1974) Reconstruction of automobile destruction: An example of the interaction between language and memory. *Journal of Verbal Learning and Verbal Behavior* 13:585–89. [BW]

Lord, C. G., Desforges, D. M., Fein, S., Pugh, M. A. & Lepper, M. R. (1994) Typicality effects in attitudes toward social policies: A concept-mapping approach. *Journal of Personality and Social Psychology* 66:658–73. Available at: http://doi.org/10.1037/0022-3514.66.4.658 [BMT]

Lord, F. M. & Novick, M. R. (1968) *Statistical theories of mental test scores.* Addison-Wesley. [DT]

Lyons, M. J., Lynch, A., Brewer, G. & Bruno, D. (2014) Detection of sexual orientation ("gaydar") by homosexual and heterosexual women. *Archives of Sexual Behavior* 43(2):345–52. [JFK]

MacKenzie, D. (2008) *A engine, not a camera: How financial models shape markets (inside technology).* MIT Press. [NHW]

Macrae, C. N., Bodenhausen, G. V., Milne, A. B. & Jetten, J. (1994) Out of mind but back in sight: Stereotypes on the rebound. *Journal of Personality and Social Psychology* 67:808. [ST]

Macrae, C. N., Milne, A. B. & Bodenhausen, G. V. (1994) Stereotypes as energy-saving devices: A peek inside the cognitive toolbox. *Journal of Personality and Social Psychology* 66:37–47. [aLJ]

Madon, S., Guyll, M., Spoth, R. & Willard, J. (2004) Self-fulfilling prophecies: The synergistic accumulation of parents' beliefs on children's drinking behavior. *Psychological Science* 15:837–45. [aLJ]

Madon, S. J., Jussim, L. & Eccles, J. (1997) In search of the powerful self-fulfilling prophecy. *Journal of Personality and Social Psychology* 72:791–809. [aLJ]

Madon, S. J., Jussim, L., Keiper, S., Eccles, J., Smith, A. & Palumbo, P. (1998) The accuracy and power of sex, social class and ethnic stereotypes: Naturalistic studies in person perception. *Personality and Social Psychology Bulletin* 24:1304–18. [aLJ]

Malle, B. F. (2006) The actor-observer asymmetry in attribution: A (surprising) meta-analysis. *Psychological Bulletin* 132(6):895–919. [JFK]

Maranto, R., Redding, R. E. & Hess, F. M. (2009) *The politically correct university: Problems, scope, and reforms.* AEI Press. [GM]

Martin, C. (2016) How ideology has hindered sociological insight. *The American Sociologist* 47(1):115–30. doi: 10.1007/s12108-015-9263-z. [rLJ]

Marx, K. (1906) *Das Kapital.* C. H. Kerr. [CCM]

Maurer, K. L., Park, B. & Judd, C. M. (1996) Stereotypes, prejudice, and judgments of group members: The mediating role of public policy decisions. *Journal of Experimental Social Psychology* 32:411–36. Available at: http://doi.org/10.1006/jesp.1996.0019 [BMT]

Mazella, R. & Feingold, A. (1994) The effects of physical attractiveness, race, socioeconomic status, and gender of defendants and victims on judgments of mock jurors: A meta-analysis. *Journal of Applied Social Psychology* 24:1315–44. [aLJ]

Mazur, A. & Booth, A. (1998) Testosterone and dominance in men. *Behavioral and Brain Sciences* 21:353–71. [ACL]

McArthur, L. Z. & Baron, R. M. (1983) Toward an ecological theory of social perception. *Psychological Review* 90:215–38. [JFK]

McCauley, C. & Stitt, C. L. (1978) An individual and quantitative measure of stereotypes. *Journal of Personality and Social Psychology* 36:929–40. [aLJ]

McCauley, C. & Thangavelu, K. (1991) Individual differences in sex stereotyping of occupations and personality traits. *Social Psychology Quarterly* 54:267–79. [aLJ]

McCauley, C., Thangavelu, K. & Rozin, P. (1988) Sex stereotyping of occupations in relation to television representations and census facts. *Basic and Applied Social Psychology* 9:197–212. [aLJ]

McCrae, R. R., Chan, W., Jussim, L., De Fruyt, F., Löckenhoff, C. E., De Bolle, M., Costa, P. T., Jr., Hřebíčková, M., Graf, S., Realo, A., Allik, J., Nakazato, K., Shimonaka, Y., Yik, M., Ficková, E., Brunner-Sciarra, M., Reátigui, N., Leibovich de Figueora, N., Schmidt, V., Ahn, C.-K., Ahn, H., Aguilar-Vafaie, M. E., Siuta, J., Szmigielska, B., Cain, T. R., Crawford, J. T., Mastor, K. A., Rolland, J.-P., Nansubuga, F., Miramontez, D. R., Benet-Martínez, V., Rossier, J., Bratko, D., Marušić, I., Halberstadt, J., Yamaguchi, M., Knežević, G., Purić, D., Martin, T. A., Gheorghiu, M., Smith, P. B., Barbaranelli, C., Wang, L., Shakespeare-Finch, J., Lima, M. P., Klinkosz, W., Sekowski, A., Alcalay, L., Simonetti, F., Avdeyeva, T. V., Pramila, V. S. & Terracciano, A. (2013) The inaccuracy of national character stereotypes. *Journal of Research in Personality* 47:831–42. [aLJ]

McNatt, D. B. (2000) Ancient Pygmalion joins contemporary management: A meta-analysis of the result. *Journal of Applied Psychology* 85:314–22. [aLJ]

McVee, M. B., Dunsmore, K. & Gavelek, J. R. (2005) Schema theory revised. *Review of Educational Research* 75:531–66. [BW]

Mercier, H. & Sperber, D. (2011) Why do humans reason? Arguments for an argumentative theory. *Behavioral and Brain Sciences* 34(2):57–111. [JM]

Merton, R. K. (1948) The self-fulfilling prophecy. *Antioch Review* 8:193–210. [aLJ]

Merton, R.K. (1957) *Social theory and social structure.* Free Press. [aLJ]

Merton, R. K. (1973) The normative structure of science. In: *The sociology of science: Theoretical and empirical investigations*, pp. 267–80. University of Chicago Press. [GM]

Merton, R. K. (1996) *On social structure and science.* University of Chicago Press. [NHW]

Merton, R. K. (1942/1973) The normative structure of science. In: *The sociology of science: Theoretical and empirical investigations*, ed. R. K. Merton. University of Chicago Press. [rLJ]

Meyer, M., Gelman, S. A. & Stilwell, S. M. (2011) Generics are a cognitive default: Evidence from sentence processing. In: *Proceedings of the 33rd Annual Conference of the Cognitive Science Society*, ed. L. Carlson, C. Hölscher & T. Shipley, pp. 913–18. Cognitive Science Society. [LB]

Mileva, V. R., Cowan, M. L., Cobey, K. D., Knowles, K. K. & Little, A. C. (2014) In the face of dominance: Self-perceived and other-perceived dominance are positively associated with facial-width-to-height ratio in men. *Personality and Individual Differences* 69:115–18. Available at: http://dx.doi.org/10.1016/j.paid.2014.05.019 [ACL]

Milkman, K., Akinola, M. & Chugh, D. (2015) What happens before? A field experiment exploring how pay and representation differentially shape bias on the pathway into organizations. *Journal of Applied Psychology* 100:1678–712. [JM]

Mill, J. S. (1867) *On liberty.* James R Osgood. [CCM]

Miller, D.T. & Turnbull, W. (1986) Expectancies and interpersonal processes. *Annual Review of Psychology* 37:233–56. [aLJ]

Miller, G. F. (2011) *The mating mind.* Doubleday. [GM]

Mills, C. W. (1959) *The sociological imagination.* Oxford University Press. [CCM]

Monin, B. & Oppenheimer, D. M. (2014) The limitations of direct replications and the virtues of stimulus sampling. *Social Psychology* 45:299–311. [rLJ]

Mook, D. G. (1983) In defense of external invalidity. *American Psychologist* 38:379–87. [rLJ]

Moscovici, S. (1981) On social representations. In: *Social cognition*, ed. J. P. Forgas, pp. 181–209. Academic Press. [BMT]

Mosing, M. A., Madison, G., Pedersen, N. L., Kuja-Halkola, R. & Ullén, F. (2014) Practice does not make perfect: No causal effect of music practice on music ability. *Psychological Science* 25:1795–803. [GM]

Moss-Racusin, C., Dovidio, J., Brescoll, V., Graham, M. & Handelsman, J. (2012) Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences USA* 109:16474–79. [JM]

Mousavi, S. & Gigerenzer, G. (2011) Revisiting the "error" in studies of cognitive errors. In: *Errors in organizations*, ed. D. A. Hofmann & M. Frese, pp. 97–112. Taylor & Francis. [SM]

Neisser, U. (1976a) *Cognition and reality: Principles and implications of cognitive psychology.* Freeman. [JFK]

Neisser, U. (1976b) Gibson's ecological optics: Consequences of a different stimulus description. *Journal for the Theory of Social Behavior* 7:17–28. [JFK]

Neisser, U., Boodoo, G., Bouchard, T. J. Jr., Boykin, A. W., Brody, N., Ceci, S. J., Halpern, D. F., Loehlin, J. C., Perloff, R., Sternberg, R. J. & Urbina, S. (1996) Intelligence: Knowns and unknowns. *American Psychologist* 51:77–101. [aLJ]

Nelson, N. L. & Russell, J. A. (2013) Universality revisited. *Emotion Review* 5(1):8–15. [JFK]

Nelson, T. E. & Kinder, D. R. (1996) Issue frames and group-centrism in American public opinion. *The Journal of Politics* 58:1055–78. Available at: http://doi.org/10.2307/2960149 [BMT]

Neth, H. & Gigerenzer, G. (2015) Heuristics: Tools for an uncertain world. In: *Emerging trends in the social and behavioral sciences*, ed. R. Scott & S. Kosslyn, pp. 1–18. Wiley. Available at: http://doi.org/10.1002/9781118900772.etrds0394 [SM]

Oishi, S., Kesebir, S. & Snyder, B. H. (2009) Sociology: A lost connection in social psychology. *Personality and Social Psychology Review* 13:334–53. Available at: http://doi.org/10.1177/1088868309347835 [BMT]

Olivola, C. Y., Funk, F. & Todorov, A. (2014) Social attributions from faces bias human choices. *Trends in Cognitive Sciences* 18:566–70. [J-FB]

Open Science Collaboration (2015) Estimating the reproducibility of psychological science. *Science* 349(6251): Article No. 4716. doi: 10.1126/science.aac4716. [rLJ]

Ost, J. & Costall, A. (2002) Misremembering Bartlett: A study in serial reproduction. *British Journal of Psychology* 93:243–55. [BW]

Pager, D. (2003) The mark of a criminal record. *American Journal of Sociology* 108:937–75. [NHW]

Paine, T. (1794) *The age of reason: Being an investigation of true and fabulous theology.* Printed by Barrois. [CCM]

Palmer, S. E. (1999) *Vision science: Photons to phenomenology.* MIT Press. [JFK]

Parker, G. A. (1974) Assessment strategy and evolution of fighting behavior. *Journal of Theoretical Biology* 47(1):223–43. Available at: http://dx.doi.org/10.1016/0022-5193(74)90111-8 [ACL]

Passini, F. T. & Norman, W. T. (1966) A universal conception of personality structure? *Journal of Personality and Social Psychology* 4:44–49. [ACL]

Peirce, C. S. (1877) The fixation of belief. *Popular Science Monthly* 12:1–15. [DMK]

Peirce, C. S. (1991) *Peirce on signs: Writings on semiotic.* University of North Carolina Press. [NHW]

Penner, A. M. & Saperstein, A. (2008) How social status shapes race. *Proceedings of the National Academy of Sciences USA* 105:19628–30. [NHW]

Penton-Voak, I. S. & Chen, J. Y. (2004) High salivary testosterone is linked to masculine male facial appearance in humans. *Evolution and Human Behavior* 25:229–41. [ACL]

Perilloux, C., Munoz-Reyes, J., Turiegano, E., Kurzban, R. & Pita, M. (2015) Do (non-American) men overestimate women's sexual intentions? *Evolutionary Psychological Science* 1:150–54. [JM]

Perrett, D. I., Lee, K. J., Penton-Voak, I. S., Rowland, D. R., Yoshikawa, S., Burt, D. M., Henzi, S. P., Castles, D. L. & Akamatsu, S. (1998) Effects of sexual dimorphism on facial attractiveness. *Nature* 394:884–87. Available at: http:dx.doi.org/10.1038/29772 [ACL]

Pettigrew, T. F. (2006) The advantages of multilevel approaches. *Journal of Social Issues* 62:615–20. Available at: http://doi.org/10.1111/j.1540-4560.2006.00477.x [BMT]

Pinker, S. (2002) *The blank slate.* Penguin. [rLJ]

Planck, M. K. (1950) *Scientific autobiography and other papers.* Philosophical Library. [rLJ]

Poderl, M. (2014) Bayesian adice for gaydar-based picking up: Commentary on Lyons, Lynch, Brewer, and Bruno (2013). *Archives of Sexual Behavior* 43(1):7–9. [JFK]

Porter, S., England, L., Juodis, M., ten Brinke, L. & Wilson, K. (2008) Is the face a window to the soul? Investigation of the accuracy of intuitive judgments of the trustworthiness of human faces. *Canadian Journal of Behavioural Science* 40:171–77. [J-FB]

Porter, S., Gustaw, C. & ten Brinke, L. (2010) Dangerous decisions: The impact of first impressions of trustworthiness on the evaluation of legal evidence and defendant culpability. *Psychology, Crime, and Law* 16:477–91. [J-FB]

Prasada, S. (2000) Acquiring generic knowledge. *Trends in Cognitive Sciences* 4 (2):66–72. [LB]

Prasada, S. & Dillingham, E. M. (2006) Principled and statistical connections in common sense conception. *Cognition* 99(1):73–112. [LB]

Prasada, S. & Dillingham, E. M. (2009) Representation of principled connections: A window onto the formal aspect of common sense conception. *Cognitive Science* 33(3):401–48. [LB]

Prasada, S., Khemlani, S., Leslie, S. J. & Glucksberg, S. (2013) Conceptual distinctions amongst generics. *Cognition* 126(3):405–22. [LB]

Putnam, H. (1988) *The many faces of realism.* Open Court. [NHW]

Raudenbush, S. W. (1984) Magnitude of teacher expectancy effects on pupil IQ as a function of the credibility of expectancy inductions: A synthesis of findings from 18 experiments. *Journal of Educational Psychology* 76:85–97. [aLJ]

Raudenbush, S. W. (1994) Random effects models. In: *Handbook of research synthesis,* ed. H. Cooper & L. V. Hedges, pp. 301–21. Russell Sage Foundation. [aLJ]

Reyna, C., Henry, P. J., Korfmacher, W. & Tucker, A. (2006) Examining the principles in principled conservatism: The role of responsibility stereotypes as cues for deservingness in racial policy decisions. *Journal of Personality and Social Psychology* 90:109–28. Available at: http://doi.org/10.1037/0022-3514.90.1.109 [BMT]

Rhodes, M., Leslie, S. J. & Tworek, C. M. (2012) Cultural transmission of social essentialism. *Proceedings of the National Academy of Sciences USA* 109 (34):13526–31. [LB]

Richard, F. D., Bond, C. F., Jr. & Stokes-Zoota, J. J. (2003) One hundred years of social psychology quantitatively described. *Review of General Psychology* 7:331–63. [aLJ]

Rist, R. (1970) Student social class and teacher expectations: The self-fulfilling prophecy in ghetto education. *Harvard Educational Review* 40:411–51. [aLJ]

Rosenhan, D. L. (1973) On being sane in insane places. *Science* 179:250–68. [arLJ]

Rosenthal, R. & Jacobson, L. (1968) *Pygmalion in the classroom: Teacher expectations and pupils' intellectual development.* Holt, Rinehart, and Winston. [arLJ, NHW]

Rosenthal, R. & Rosnow, R. L. (1991) *Essentials of behavioral research: Methods and data analysis.* McGraw-Hill. [DT]

Rosenthal, R. & Rubin, D. B. (1978) Interpersonal expectancy effects: The first 345 studies. *Behavioral and Brain Sciences* 3:377–86. [aLJ]

Ross, L. D., Lepper, M. & Ward, A. (2010) History of social psychology: Insights, challenges, and contributions to theory and application. In: *Handbook of social psychology,* vol. 1, 5th edition, eds. S. T. Fiske, D. T. Gilbert & G. Lindzey, pp. 3–50. Wiley. [aLJ]

Rothbart, M., Evans, M. & Fulero, S. (1979) Recall for confirming events: Memory processes and the maintenance of social stereotypes. *Journal of Experimental Social Psychology* 15:343–55. [aLJ]

Rubovits, R. & Maehr, M. (1973) Pygmalion black and white. *Journal of Personality and Social Psychology* 19:197–203. [aLJ]

Rule, N. O. & Ambady, N. (2010) Democrats and republicans can be differentiated from their faces. *PLoS ONE* 5(1):e8733. Available at: http://dx.doi.org/10.1371/journal.pone.0008733 [ACL]

Rule, N. O., Ambady, N., Adams, R. B., Jr., Ozono, H., Nakashima, S., Yoshikawa, S. & Watabe, M. (2010) Polling the face: Prediction and consensus across cultures. *Journal of Personality and Social Psychology* 98:1–15. [J-FB]

Rule, N. O., Krendl, A. C., Ivcevic, Z. & Ambady, N. (2013) Accuracy and consensus in judgments of trustworthiness from faces: Behavioral and neural correlates. *Journal of Personality and Social Psychology* 10:409–26. [J-FB]

Ryan, C. (1996) Accuracy of Black and White college students' in-group and out-group stereotypes. *Personality and Social Psychology Bulletin* 22:1114–27. [aLJ]

Ryan, C. S. (2002) Stereotype accuracy. *European Review of Social Psychology* 13:75–109. [aLJ]

Ryan, C. S. & Bogart, L. M. (2001) Longitudinal changes in the accuracy of new group members' in-group and out-group stereotypes. *Journal of Experimental Social Psychology* 37:118–33. [aLJ]

Ryan, R. M. & Deci, E. L. (2000) Self-determination theory and the faciliation of intrinsic motivation, social development, and well-being. *American Psychologist* 55(1):68–78. [CCM]

Ryff, C. D. (1989) Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology* 57:1069–81. Available at: http://dx.doi.org/10.1037/0022-3514.57.6.1069 [CCM]

Ryff, C. D. & Keyes, C. L. M. (1995) The structure of psychological well-being revisited. *Journal of Personality and Social Psychology* 69:719–27. Available at: http://doi.org/10.1037/0022-3514.69.4.719 [CCM]

Saab, R., Tausch, N., Spears, R. & Cheung, W. Y. (2014) Acting in solidarity: Testing an extended dual pathway model of collective action by bystander group members. *British Journal of Social Psychology* 54:539–60. Available at: http://doi.org/10.1111/bjso.12095 [BMT]

Schacter, D. L., Gilbert, D. T., Wegner, D. M. & Nock, M. K. (2015) *Introducing psychology,* 3rd edition. Worth. [rLJ]

Schmidt, F. L. & Hunter, J. E. (1998) The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin* 124:262–74. [aLJ]

Schneider, D. J., Hastorf, H. & Ellsworth, P. C. (1979) *Person perception,* 2nd edition. Addison-Wesley. [aLJ]

Schwartz, B. (2004) *The paradox of choice: Why more is less.* HarperCollins. [CCM]

Searle, J. (1995) *The construction of social reality.* Free Press. [JFK, NHW]

Searle, J. R. (2011) *Making the social world: The structure of human civilization.* Oxford University Press. [JFK]

Sedikides, C. & Skowronski, J. J. (1991) On the law of cognitive structure activation: Reply to commentaries. *Psychological Inquiry* 2:211–19. [aLJ]

Sesardic, N. (2010) Race: A social destruction of a biological concept. *Biology and Philosophy* 25:143–62. [GM]

Shank, R. & Abelson, R. (1977) *Scripts, plans, goals and understanding.* Erlbaum. [BW]

Sherman, D. K. & Cohen, G. L. (2006) The psychology of self-defense: Self-affirmation theory. In: *Advances in experimental social psychology,* vol. 38, ed. M. P. Zanna, pp. 183–242. Academic Press. [DMK]

Silver, N. C. & Dunlap, W. P. (1987) Averaging correlation coefficients: Should Fisher's z transformation be used? *Journal of Applied Psychology* 72(1):146–48. [aLJ]

Simmons, J. P., Nelson, L. D. & Simonsohn, U. (2011) False-positive psychology undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science* 22:1359–66. [rLJ]

Simon, B. & Klandermans, B. (2001) Politicized collective identity: A social psychological analysis. *American Psychologist* 56:319–31. Available at: http://doi.org/10.1037/0003-066X.56.4.319 [BMT]

Siy, J. O. & Cheryan, S. (2013) When compliments fail to flatter: American individualism and responses to positive stereotypes. *Journal of Personality and Social Psychology* 104(1):87–102. Available at: http://doi.org/10.1037/a0030183 [CCM]

Smith, A., Jussim, L. & Eccles, J. (1999) Do self-fulfilling prophecies accumulate, dissipate, or remain stable over time? *Journal of Personality and Social Psychology* 77:548–65. [aLJ]

Smith, C. (2003) Moral, believing animals: *Human personhood and culture.* Oxford University Press. [CCM]

Smith, C. (2015) *To flourish or destruct: A personalist theory of human goods, motivations, failure, and evil.* University of Chicago Press. [CCM]

Snow, R. E. (1995) Pygmalion and intelligence? *Current Directions in Psychological Science* 4:169–71. [aLJ]

Snyder, M. (1984) When belief creates reality. *Advances in Experimental Social Psychology* 18:247–305. [aLJ]

Snyder, M. & Swann, W. B., Jr. (1978a) Behavioral confirmation in social interaction: From social perception to social reality. *Journal of Experimental Social Psychology* 14:148–62. [arLJ]

Snyder, M. & Swann, W. B., Jr. (1978b) Hypothesis-testing processes in social interaction. *Journal of Personality and Social Psychology* 36:1202–12. [aLJ]

Snyder, M., Tanke, E. D. & Berscheid, E. (1977) Social perception and interpersonal behavior: On the self-fulfilling nature of social stereotypes. *Journal of Personality and Social Psychology* 35:656–66. [aLJ]

Snyder, M. & Uranowitz, S. W. (1978) Reconstructing the past: Some cognitive consequences of person perception. *Journal of Personality and Social Psychology* 36:941–50. [aLJ]

Söderlund, T. & Madison, G. (2015) Characteristics of gender studies publications: A bibliometric analysis based on a Swedish population database. *Scientometrics* 105:1347–87. [GM]

Spitz, H. H. (1999) Beleaguered Pygmalion: A history of the controversy over claims that teacher expectancy raises intelligence. *Intelligence* 27:199–234. [aLJ]

Spitzer, R. L. (1975) On pseudoscience in science, logic in remission, and psychiatric diagnosis: A critique of Rosenhan's "On being sane in insane places." *Journal of Abnormal Psychology* 84:442–52. [aLJ]

Spitzer, R. L., Andreasen, N. C. & Endicott, J. (1978) Schizophrenia and other psychotic disorders in DSM-III. *Schizophrenia Bulletin* 4:489–509. [aLJ]

Stangor, C. (1995) Content and application inaccuracy in social stereotyping. In: *Stereotype accuracy: Towards appreciating group differences*, ed. Y. T. Lee, L. Jussim & C. R. McCauley, pp. 275–92. American Psychological Association. [aLJ]

Stangor, C. & McMillan, D. (1992) Memory for expectancy-congruent and expectancy-incongruent information: A review of the social and social developmental literatures. *Psychological Bulletin* 111:42–61. [aLJ]

Stanovich, K. E. (2009) *What intelligence tests miss.* Yale University Press. [GM]

Stanovich, K. E. (2011) *Who is rational?* Routledge. [GM]

Steele, C. M. & Aronson, J. (1995) Stereotype threat and the intellectual performance of African Americans. *Journal of Personality and Social Psychology* 69:797–811. [aLJ]

Stern, C., West, T. V., Jost, J. T. & Rule, N. O. (2013) The politics of gaydar: Ideological differences in the use of gendered cues in categorizing sexual orientation. *Journal of Personality and Social Psychology* 104:520–41. [aLJ]

Stewart, A. L., Pratto, F., Zeineddine, F. B., Sweetman, J., Eicher, V., Licata, L., Morselli, D., Saab, R., Aiello, A,. Chryssochoou, X., Cichocka, A., Cidam, A. Foels, R., Giguere, B., Lui, L., Prati, F. & van Stekelenburg, J. (2016) International support for the Arab uprisings: Understanding sympathetic collective action using theories of social dominance and social identity. *Group Processes and Intergroup Relations* 19:6–26. Available at: http://doi.org/10.1177/1368430214558310 [BMT]

Stirrat, M. & Perrett, D. I. (2010) Valid facial cues to cooperation and trust: Male facial width and trustworthiness. *Psychological Science* 21:349–54. [J-FB]

Sunstein, C. R. (2006) Misfearing: A reply. *Harvard Law Review* 119(4):1110–25. [DMK]

Sunstein, C. R. (2007) On the divergent American reactions to terrorism and climate change. *Columbia Law Review* 107:503–57. [DMK]

Surowiecki, J. (2004) *The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies, and nations.* Doubleday. [aLJ]

Swann, W. B., Jr. & Ely, R. J. (1984) A battle of wills: Self-verification versus behavioral confirmation. *Journal of Personality and Social Psychology* 46:1287–302. [aLJ]

Swim, J. K. (1994) Perceived versus meta-analytic effect sizes: An assessment of the accuracy of gender stereotypes. *Journal of Personality and Social Psychology* 66:21–36. [arLJ]

Swim, J. K., Borgida, E., Maruyama, G. & Myers, D. G. (1989) Joan McKay vs. nJohn McKay: Do gender stereotypes bias evaluations? *Psychological Bulletin* 105:409–29. [aLJ]

Swim, J. K., Hyers, L. L., Cohen, L. L. & Ferguson, M. J. (2001) Everyday sexism: Evidence for its incidence, nature, and psychological impact from three daily diary studies. *Journal of Social Issues* 57:31–53. Available at: http://doi.org/10.1111/0022-4537.00200 [BMT]

Tajfel, H. (1974) Intergroup behaviour, social comparison and social change. *Unpublished Katz-Newcomb lectures*. University of Michigan. [BMT]

Tajfel, H. (1981) Social stereotypes and social groups. In: *Intergroup behaviour*, ed. J. C. Turner & H. Giles, pp. 144–67. Blackwell. [BMT]

Tajfel, H. & Turner, J. C. (1979) An integrative theory of intergroup conflict. In: *The social psychology of intergroup relations*, ed. W. G. Austin & S. Worchel, pp. 33–47. Brooks-Cole. [BMT]

Tausch, N., Becker, J. C., Spears, R., Christ, O., Saab, R., Singh, P. & Siddiqui, R. N. (2011) Explaining radical group behavior: Developing emotion and efficacy routes to normative and nonnormative collective action. *Journal of Personality and Social Psychology* 101(1):129–48. Available at: http://doi.org/10.1037/a0022728 [BMT]

Taylor, M. C. (1979) Race, sex, and the expression of self-fulfilling prophecies in a laboratory teaching situation. *Journal of Personality and Social Psychology* 37:897–912. [aLJ]

Terbeck, S., Kahane, G., McTavish, S., McCutcheon, R., Hewstone, M., Savulescu, J., Chesterman, L. P., Cowen, P. J. & Norbury, R. (2015) β-Adrenoceptor blockade modulates fusiform gyrus activity to black versus white faces. *Psychopharmacology* 22:1–8. [ST]

Terbeck, S., Kahane, G., McTavish, S., Savulescu, J., Cowen, P. J. & Hewstone, M. (2012) Propranolol reduces implicit negative racial bias. *Psychopharmacology* 222:419–24. [ST]

Terracciano, A., Abdel-Khalek, A. M., Adám, N., Adamova, L., Ahn, C.-K., Ahn, H.-N., Alansari, B. M., Alcalay, L., Allik, J., Angleitner, A., Avia, M. D., Ayearst, L. E., Barbaranelli, C., Beer, A., Borg-Cunen, M. A., Bratko, D., Brunner-Sciarra, M., Budzinski, L, Camart, N., Dahourou, D., De Fruyt, F., de Lima, M. P., del Pilar, G. E., Diener, E., Falzon, R., Fernando, K., Fickóvá, E., Fischer, R., Flores-Mendoza, C., Ghayur, M. A., Gulgoz, S., Hagberg, B., Halberstadt, J., Halim, M. S., Hřebičková, M., Humrichouse, J., Jensen, H. H., Jočič, D. D., Jonsson, F. H., Khoury, B., Klinkosz, W., Knežević, G., Lauri, M. A., Leibovich, N., Martin, T. A., Marusič, I., Mastor, K. A., Matsumoto, D., McRorie, M., Meshcheriakov, B., Mortensen, E. L., Munyae, M., Nagy, J., Nakazato, K., Nansubuga, F., Oishi, S., Ojedokun, A. O., Ostendorf, F., Paulhus, D. L., Pelevin, S., Petot, J. M., Podobnik, N., Porrata, J. L., Pramila, V. S., Prentice, G., Realo, A., Reátegui, N., Rolland, J.-P., Rossier, J., Ruch, W., Rus, V. S., Sánchez-Bernardos, M. L., Schmidt, V., Sciculna-Calleja, S., Sekowski, A., Shakespeare-Finch, J., Shimonaka, Y., Simonetti, F., Sineshaw, T., Siuta, J., Smith, P. B., Trapnell, P. D., Trobst, K. K., Wang, L., Yik, M., Zupančič, A. & McCrae, R. R. (2005) National character does not reflect mean personality trait levels in 49 cultures. *Science* 310:96–100. [aLJ]

Tetlock, P. E. (1994) Political psychology or politicized psychology: Is the road to scientific hell paved with good moral intentions? *Political Psychology* 509–29. [rLJ]

Thaler, R. H. & Sunstein, C. R. (2008) *Nudge: Improving decisions about health, wealth, and happiness.* Penguin. [CCM]

Tibbetts, E. A. & Dale, J. (2004) A socially enforced signal of quality in a paper wasp. *Nature* 432(7014):218–22. Available at: http://dx.doi.org/10.1038/nature02949 [ACL]

Tilly, C. & Wood, L. J. (2003) Contentious connections in Great Britain, 1828–34. In: *Social movements and networks: Relational approaches to collective action*, ed. M. Diani & D. McAdam, pp. 147–72. Oxford University Press. [BMT]

Tinbergen, N. (1963) On aims and methods of Ethology. *Zeitschrift für Tierpsychologie* 20:410–33. [JM]

Todd, P. M., Gigerenzer, G. & the ABC Research Group (2012) *Ecological rationality: Intelligence in the world.* Oxford University Press. [SM]

Todorov, A., Funk, F. & Olivola, C. Y. (2015a) Response to Bonnefon et al.: Limited "kernels of truth" in facial inferences. *Trends in Cognitive Sciences* 19:422. [J-FB]

Todorov, A., Olivola, C. Y., Dotsch, R. & Mende-Siedlecki, P. (2015b) Social attributions from faces: Determinants, consequences, accuracy, and functional significance. *Annual Review of Psychology* 66:519–45. [J-FB]

Tooby, J. & Cosmides, L. (1992) The psychological foundations of culture. In: *The adapted mind: Evolutionary psychology and the generation of culture*, ed. Barkow, J., Cosmides, L. & Tooby, J., pp. 19–136. Oxford University Press. [JM]

Trebicky, V., Havlicek, J., Roberts, S. C., Little, A. C. & Kleisner, K. (2013) Perceived aggressiveness predicts fighting performance in mixed-martial-arts fighters. *Psychological Science* 24(9):1664–72. Available at: http://dx.doi.org/10.1177/0956797613477117 [ACL]

Trope, Y. & Bassok, M. (1982) Confirmatory and diagnosing strategies in social information gathering. *Journal of Personality and Social Psychology* 43:22–34. [aLJ]

Trope, Y. & Bassok, M. (1983) Information-gathering strategies in hypothesis-testing. *Journal of Experimental Social Psychology* 19:560–76. [arLJ]

Tversky, A. & Kahneman, D. (1982) Evidential impact of base rates. In: *Judgment under uncertainty: Heuristics and biases*, ed. D. Kahneman, P. Slovic & A. Tversky, pp. 153–60. Cambridge University Press. [SM]

van Zomeren, M., Postmes, T. & Spears, R. (2012) On conviction's collective consequences: Integrating moral conviction with the social identity model of collective action. *British Journal of Social Psychology* 51:52–71. Available at: http://doi.org/10.1111/j.2044-8309.2010.02000.x [BMT]

van Zomeren, M., Spears, R. & Leach, C. W. (2008) Exploring psychological mechanisms of collective action: Does relevance of group identity influence how people cope with collective disadvantage? *British Journal of Social Psychology* 47:353–72. Available at: http://doi.org/10.1348/014466607X231091 [BMT]

von Baeyer, C. L., Sherk, D. L. & Zanna, M. P. (1981) Impression management in the job interview: When the female applicant meets the male (chauvinist) interviewer. *Personality and Social Psychology Bulletin* 7:45–51. [aLJ]

Von Hippel, W. & Trivers, R. (2011) The evolution and psychology of self-deception. *Behavioral and Brain Sciences* 34(1):1–56. [rLJ]

Vul, E., Harris, C., Winkielman, P. & Pashler, H. (2009) Puzzlingly high correlations in fMRI studies in emotion, personality, and social cognition. *Perspectives on Psychological Science* 4:274–90. [rLJ]

Wagoner, B. (2013) Bartlett's concept of schema in reconstruction. *Theory and Psychology* 23:553–75. [BW]

Wagoner, B. (2015) Qualitative experiments in psychology: The case of Frederic Bartlett's methodology [82 paragraphs]. *Forum Qualitative Sozialforschung/ Forum: Qualitative Social Research 16(3):* Article 23. Available at: http://nbn-resolving.de/urn:nbn:de:0114-fqs1503230. [BW]

Wagoner, B. (2017) *The constructive mind: Bartlett's psychology in reconstruction.* Cambridge University Press. [BW]

Wagoner, B. & Gillespie, A. (2014) Sociocultural mediators of remembering: An extension of Bartlett's method of repeated reproduction. *British Journal of Social Psychology* 53:622–39. [BW]

Wald, E. (2008) The rise and fall of the WASP and Jewish law firms. *Stanford Law Review* 60(6):1803–66. [CCM]

Weber, M. (1922/1946) Science as vocation. In: *From Max Weber: Essays in sociology*, ed. H. H. Gerth & C. Wright Mills. Free Press. (Original work published in 1922). [NHW]

Weinstein, R. S., Gregory, A. & Strambler, M. J. (2004) Intractable self-fulfilling prophecies: Fifty years after Brown v. Board of Education. *American Psychologist* 59:511–20. [aLJ]

Wells, G. L. & Windschitl, P. D. (1999) Stimulus sampling and social psychological experimentation. *Personality and Social Psychology Bulletin* 25:1115–25. [rLJ]

West, C. & Anderson, T. (1976) The question of preponderant causation in teacher expectancy research. *Review of Educational Research* 46:613–30. [aLJ]

Westen, D., Blagov, P. S., Harenski, K., Kilts, C. & Hamann, S. (2006) Neural bases of motivated reasoning: An fMRI study of emotional constraints on partisan political judgment in the 2004 U.S. Presidential election. *Journal of Cognitive Neuroscience* 18(11):1947–58. [DMK]

Westfall, J., Judd, C. M. & Kenny, D. A. (2015) Replicating studies in which samples of participants respond to samples of stimuli. *Perspectives on Psychological Science* 10:390–99. [rLJ]

Wheeler, M. E. & Fiske, S. T. (2005) Controlling racial prejudice social-cognitive goals affect amygdala and stereotype activation. *Psychological Science* 16:56–63. [ST]

Whitley, B. & Kite, M. (2009) *The psychology of prejudice and discrimination.* Cengage Learning. [rLJ]

Williams, T. (1976) Teacher prophecies and the inheritance of inequality. *Sociology of Education* 49:223–36. [aLJ]

Willis, J. & Todorov, A. (2006) First impressions: Making up your mind after 100 ms exposure to a face. *Psychological Science* 17:592–98. [J-FB]

Wilson, J. P. & Rule, N. O. (2015) Facial trustworthiness predicts extreme criminal-sentencing outcomes. *Psychological Science* 26:1325–31. [J-FB]

Wineburg, S. S. (1987) The self-fulfillment of the self-fulfilling prophecy: A critical appraisal. *Educational Researcher* 16:28–40. [aLJ]

Wolsko, C., Park, B., Judd, C. M. & Wittenbrink, B. (2000) Framing interethnic ideology: Effects of multicultural and color-blind perspectives on judgments of groups and individuals. *Journal of Personality and Social Psychology* 78:635–54. [aLJ]

Woodley, M. A. (2010) Are high-IQ individuals deficient in common sense? A critical examination of the 'clever sillies' hypothesis. *Intelligence* 38:471–80. [GM]

Woodley, M. A. & Dunkel, C. S. (2015) Beyond the cultural mediation hypothesis: A reply to Dutton (2013). *Intelligence* 49:186–91. [GM]

Word, C. O., Zanna, M. P. & Cooper, J. (1974) The nonverbal mediation of self-fulfilling prophecies in interracial interaction. *Journal of Experimental Social Psychology* 10:109–20. [aLJ]

Wright, S. C. & Baray, G. (2012) Models of social change in social psychology: Collective action or prejudice reduction? Conflict or harmony? In: *Beyond prejudice: Extending the social psychology of conflict, inequality and social change*, ed. J. Dixon & M. Levine, pp. 225–47. Cambridge University Press. [BMT]

Zahavi, A. (1975) Mate selection – A selection for a handicap. *Journal of Theoretical Biology* 53(1):205–14. [GM, JM]

Zanna, M. P. & Pack, S. J. (1975) On the self-fulfilling nature of apparent sex differences in behavior. *Journal of Experimental Social Psychology* 11:583–91. [aLJ]

Zawidzki, T. W. (2013) *Mindshaping: A new framework for understanding human social cognition.* A Bradford Book/MIT Press. [KA]

Zebrowitz-McArthur, L. & Baron, R. M. (1983) Toward and ecological approach to social perception. *Psychological Review* 90:215–38. [ACL]

Zimbardo, P. G. (1999) Experimental social psychology: Behaviorism with minds and matters. In: *Reflections on 100 years of experimental social psychology*, ed. A. Rodrigues & R. V. Levine, pp. 135–57. Basic Books. [JFK]

Zuckerman, M., Knee, C. R., Hodgins, H. S. & Miyake, K. (1996) Hypothesis confirmation: The joint effect of positive test strategies and acquiescence response set. *Journal of Personality and Social Psychology* 68:52–60. [aLJ]