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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

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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

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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 & Baray2012). 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