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Reliance on individuating information and stereotypes in implicit and explicit person perception☆

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ABSTRACT

This research investigated whether stereotypes or individuating information take primacy in implicit and explicit person perception. Study 1 investigated whether variation in the diagnosticity of individuating information moderated stereotype bias in implicit and explicit person perception. Increases in diagnosticity produced a linear reduction in explicit and implicit stereotype bias; with more diagnostic individuating information, there was less bias. Studies 2 and 3 examined the effects on person perception of racial stereotypes and of diagnostic individuating information that varied in valence. Study 2 found no substantial implicit or explicit anti-Black stereotype bias in the presence of diagnostic individuating information and large individuating information effects on explicit person perception. Study 3 found no explicit anti-Black stereotype bias in the presence of diagnostic individuating information and that individuating information influenced both implicit and explicit person perception. Together, these studies showed that individuating information can reduce or eliminate stereotype bias in implicit and explicit person perception and that its effect depends on the diagnosticity of the information. In addition, patterns of reliance on stereotypes and individuating information in implicit and explicit person perception generally converged. Results are discussed in the context of current controversies about the processes underlying implicit and explicit social cognition.

1. Introduction

What sources of information do people prioritize when consciously and subconsciously forming impressions of others? Do they primarily rely on stereotypes (general beliefs about the characteristics of social groups and their individual members; Ashmore & Del Boca, 1981) or on individuating information (any information about an individual group member other than category information; Kunda & Thagard, 1996; Locksley, Borgida, Brekke, & Hepburn, 1980; cf. Brewer, 1988)? Does this reliance change when the impressions are implicit rather than explicit? The present research investigated the roles of individuating information and stereotypes in implicit and explicit person perception and addressed the convergence versus divergence of these two modes of impression formation.

2. Do stereotypes or individuating information take primacy in explicit person perception?

2.1. Theoretical perspectives

Early theoretical models of impression formation disagreed about the primacy of stereotypes versus individuating information in explicit person perception. In these perspectives, primacy generally refers to information that dominates person perception with effects that are typically large or difficult to eliminate. Some argued that stereotypes take primacy over individuating information in person perception (Brewer, 1988; Fiske & Neuberg, 1990). Others asserted that neither individuating information nor stereotypes take primacy in person perception by default—rather, that reliance on stereotypes versus individuating information in person perception depends in part on the characteristics of the individuating information and the judgment task (Kunda & Thagard, 1996).

In addition, some have argued that stereotypes lead people to ignore individual differences (e.g., APA, 1991; Aronson, 2011; Aronson, Wilson, Akert, & Sommers, 2015; Whitley & Kite, 2009). For example,

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Aronson et al. (2015) defined a stereotype as "a generalization about a group of people in which *identical* characteristics are assigned to *virtually all* members of the group, regardless of actual variation among the members" (p. 416, emphasis added). Such perspectives are interpretable as predicting that individuating information will be ignored, whereas stereotypes will produce powerful biases.

2.2. Empirical evidence

Kunda and Thagard (1996) reported a meta-analysis showing that the effect of individuating information on person perception was considerably larger ($r = 0.71$) than that of stereotypes ($r = 0.25$; see Jussim, 2012, for a review of meta-analyses reaching similar findings). Subsequent research has also found that individuating information generally has larger effects on person perception than do stereotypes (e.g., Monroe et al., 2017), but that their effects are not mutually exclusive (Crawford, Jussim, Madon, Cain, & Stevens, 2011; Gawronski, Ehrenberg, Banse, Zukova, & Klauer, 2003). Thus, despite earlier theoretical claims to the contrary, the very large effects in the empirical data can be plausibly interpreted as indicating that, in most of the contexts in which it has been studied, relevant individuating information takes primacy over stereotypes in explicit person perception (for a review, see Jussim, 2012).

3. Implicit versus explicit social cognition

In contrast to explicit social cognition, implicit social cognition has typically been defined as thoughts and feelings about social objects that are at least partially outside of conscious awareness (Bargh & Chartrand, 1999; Devine, 1989; Greenwald & Banaji, 1995). The processes underlying implicit and explicit social cognition have been the subject of extensive debate (see Cone, Mann & Ferguson, 2017; Ferguson, Mann, & Wojnowicz, 2014). The classic dual-process perspective (e.g., Gawronski & Bodenhausen, 2006, 2011; Rydell & McConnell, 2006; Sloman, 1996, 2014; Smith & DeCoster, 2000) distinguishes between two types of cognitive processes: associative processes and propositional processes. In contrast, more recent perspectives reject the argument for two processes, instead espousing multiprocess (Amodio, 2014; Amodio & Ratner, 2011) or single-process (DeHouwer, 2014a, 2014b; Hughes, Barnes-Holmes, & DeHouwer, 2011) models of social cognition.

The present research did not take an a priori position with respect to this debate. Instead, we derived a series of competing hypotheses from this literature to empirically address the unresolved questions of (a) whether stereotypes or individuating information take primacy in implicit person perception, and (b) whether patterns of reliance on individuating information and stereotypes in implicit and explicit person perception converge or diverge.

4. Do stereotypes or individuating information take primacy in implicit person perception?

4.1. Theoretical perspectives consistent with the primacy of individuating information in implicit person perception

A central tenet of propositional models of implicit evaluations (DeHouwer, 2014a, 2014b; see also Hughes et al., 2011) is that the automatic formation or activation of propositions mediates implicit evaluations. Propositional information can be defined as a statement about the world that has an objective truth value (e.g., "The sky is blue"; DeHouwer, 2014a; Gawronski & Bodenhausen, 2006, 2011). According to this definition, many types of individuating information are propositional in nature because they provide information about targets that generally has objective truth values (e.g., a target did or did not engage in a behavior, received a certain score on a test, etc.). Because individuating information is oftentimes inherently propositional, these propositional models can be interpreted as predicting sensitivity of implicit evaluations to individuating information.

In addition, the associative-propositional evaluations (APE) dual process model of implicit and explicit attitude change (Gawronski & Bodenhausen, 2006, 2011) posits that implicit evaluations should be sensitive to information that affirms new propositions. According to this model, revision of existing implicit attitudes and beliefs to incorporate counterinformation falls under this umbrella. This idea can easily be extended to reliance on counterstereotypic individuating information (the processing of which presumably constitutes affirmation of new propositions; see Mann & Ferguson, 2015) in person perception. The resulting prediction is that individuating information should take primacy over stereotypes in implicit person perception.

4.2. Theoretical perspectives consistent with the primacy of stereotypes in implicit person perception

Other perspectives suggest that, once they are formed, implicit evaluations should be less likely than explicit evaluations to take into account new information (Amodio, 2014; Amodio & Ratner, 2011; Gregg, Seibt, & Banaji, 2006; Rydell & McConnell, 2006; Sloman, 1996; Smith & DeCoster, 2000; Wilson, Lindsey, & Schooler, 2000). Several of these perspectives draw the distinction between slow-learning, associative processes, more recently named "System 1," and fast-learning, rule-based, propositional processes known as "System 2" (Rydell & McConnell, 2006; Sloman, 1996; Smith & DeCoster, 2000). This view posits that, because System 1 processes are based on associations that accumulate gradually (cf. Gregg et al., 2006), they less readily incorporate new information than do System 2 processes (Smith & DeCoster, 2000). Some of these theories contend that at least that some types of implicit social cognition are System 1 processes (Amodio, 2014; Amodio & Ratner, 2011; Rydell & McConnell, 2006; Smith & DeCoster, 2000; see also Wilson et al., 2000). In contrast, explicit social cognition is a System 2 process according to this view (Rydell & McConnell, 2006; Smith & DeCoster, 2000). Taken together, these perspectives are consistent with the prediction that *implicit* evaluations should be relatively resistant to the influence of individuating (new) information and instead be based on stereotypes (existing associative information), whereas *explicit* evaluations should readily incorporate individuating information.

4.3. Empirical evidence regarding the responsiveness of implicit person perception to new information is mixed

Some empirical research shows that implicit evaluations of individuals do not easily change in response to new information (Rydell & McConnell, 2006; Rydell, McConnell, Strain, Claypool, & Hugenberg, 2007). Other research has found that implicit evaluations readily incorporate new information (Brannon & Gawronski, 2017; Peters & Gawronski, 2011; Whitfield & Jordan, 2009, Study 3), or that they do so to an extent (Cao & Banaji, 2016). Still other evidence suggests that implicit evaluations of individuals can be revised under particular circumstances (Cone & Ferguson, 2015; Gawronski, Rydell, Vervliet, & De Houwer, 2010; Mann & Ferguson, 2015, 2017; Rydell, McConnell, Mackie, & Strain, 2006; Wyer, 2010, 2016). Thus, no single pattern has emerged regarding the sensitivity of implicit evaluations of individuals to new information (for a review, see Cone, Mann, & Ferguson, 2017).

Two of these previous programs of research are particularly relevant to the present studies. In one, Cone and Ferguson (2015) found that a single instance of highly diagnostic behavior induced revision of implicit evaluations of an individual. The present research builds on this by investigating the effect of diagnostic individuating information on *stereotype bias* in implicit person perception and by examining implicit impressions in a specific domain (intelligence or unintelligence) rather than overall positivity or negativity.

In the other, Cao and Banaji (2016) found that counterstereotypic

Table 1
Competing hypotheses about the power of individuating information and stereotypes in implicit and explicit person perception.

		Study 1		Study 2		Study 3	
	Hypothesis consistent with:	Power of individuating information	Power of stereotypes	Power of individuating information	Power of stereotypes	Power of individuating information	Power of stereotypes
Hypothesis domain:							
1. Stereotype bias with individuating information that varies in diagnosticity		1a. Implicit and explicit bias should decrease with more diagnostic individuating information	1b. Implicit and explicit bias should not change based on diagnosticity of individuating information	Not tested	Not tested	Not tested	Not tested
2. Stereotype bias in the presence of highly diagnostic individuating information		2a. Implicit and explicit bias should be trivial[a] or nonexistent	2b. Implicit and explicit bias should be substantial[b]	2a. Implicit and explicit bias should be trivial or nonexistent, regardless of the valence of the information	2b. Implicit and explicit bias should be substantial, regardless of the valence of the information	2a. Explicit bias should be trivial or nonexistent, regardless of the valence of the information	2b. Explicit bias should be substantial, regardless of the valence of the information
3. Individuating information effects		3a. Reliance on individuating information in explicit PP should increase with increasingly diagnostic individuating information	3b. No reliance on individuating information in explicit PP regardless of the diagnosticity of available individuating information	3a. Reliance on highly diagnostic individuating information in explicit PP: Excellent applicants should be evaluated more favorably than weak applicants	3b. No reliance on highly diagnostic individuating information in explicit PP: Evaluations of excellent and weak applicants should be equal in (un)favorability	3a. Reliance on highly diagnostic individuating information in explicit and implicit PP: Excellent applicants should be evaluated more favorably than weak applicants	3b. No reliance on highly diagnostic individuating information in explicit and implicit PP: Excellent and weak applicants should be evaluated equally favorably

Note. Hypotheses are numbered according to their labels in the text of the paper. PP = person perception.

[a] An explicit stereotype bias effect size of $r < 0.10$ is considered "trivial" in this table and in the paper, as is $D < |0.15|$, the cutoff for "meaningful" implicit preferences (Nosek et al., 2007).

[b] An explicit stereotype bias effect size of $r \geq 0.10$ and an implicit stereotype bias effect of $|D| \geq 0.15$ are considered "substantial" in this table and in the paper.

individuating information reduced, but did not eliminate, stereotype bias in implicit person perception. The present research extends that of Cao & Banaji by examining the moderating effects of the diagnosticity of the individuating information on implicit stereotype bias and by using individuating information that is inherently different than that employed by Cao & Banaji. In addition, it attempts to identify conditions under which implicit stereotype bias is eliminated rather than reduced.

5. Do patterns of reliance on individuating information and stereotypes in implicit and explicit person perception converge or diverge?

The APE model (e.g., Gawronski & Bodenhausen, 2006, 2011) argues that learning information that runs counter to existing attitudes or beliefs should induce "*corresponding* changes in implicit and explicit attitudes" (2006, p. 706; emphasis added). Thus, the APE model is consistent with the prediction that patterns of reliance on stereotypes (existing beliefs) and individuating information (new information) in implicit and explicit person perception should converge.

Other perspectives explicitly predict the divergence of implicit and explicit evaluations in their responsiveness to updated information (Gregg et al., 2006; Rydell & McConnell, 2006). Because individuating information is "new" information relative to previously established stereotypes, these accounts are consistent with the prediction of divergence of patterns of reliance on stereotypes and individuating information in implicit versus explicit person perception.

6. Contributions of the present research

Previous research has not identified circumstances under which implicit stereotype bias in person perception is eliminated by individuating information. Thus, the present research was the first to address the question of, *under what circumstances might perceivers rely exclusively on individuating information in implicit person perception, thereby disregarding their stereotypes*? This was an important question to answer because even small implicit biases can have real-world significance (Greenwald, Banaji, & Nosek, 2015).

Moreover, the present research provided further empirical evidence relevant to the debate about the processes underlying implicit and explicit social cognition; although it was not designed specifically to address this issue, we drew from this literature to derive our hypotheses. If perceivers' implicit evaluations were not influenced by individuating information and were instead based on stereotypes, this would be more consistent with the slow-learning perspective on implicit social cognition (e.g., Gregg et al., 2006; Rydell & McConnell, 2006; Smith & DeCoster, 2000). On the other hand, if implicit evaluations were based on individuating information, this would be more consistent with propositional models of implicit evaluations (e.g., DeHouwer, 2014a, 2014b; Hughes et al., 2011) and the APE model (Gawronski & Bodenhausen, 2006, 2011).

7. Research questions and hypotheses

The present research tested three sets of competing predictions derived from alternative perspectives that addressed the power of individuating information versus stereotypes in implicit and explicit person perception (Research Question 1). It also compared patterns of reliance on stereotypes and individuating information in implicit person perception with those in explicit person perception (Research Question 2).

7.1. Research question 1

What are the relative effects of stereotypes and individuating information in implicit and explicit stereotype-relevant target evaluations? In this section, Hypotheses labeled "a" (e.g., Hypothesis 1a) are consistent with perspectives on explicit person perception that emphasize the importance of individuating information over stereotypes (Jussim, 2012; Kunda & Thagard, 1996), and with propositional models of implicit evaluations (e.g., DeHouwer, 2014a, 2014b) and the APE model of implicit and explicit attitude change (Gawronski & Bodenhausen, 2006, 2011). In contrast, hypotheses labeled "b" (e.g., Hypothesis 1b) are consistent with the competing view that stereotypes cause perceivers to ignore individual differences at the explicit level (e.g., Aronson, 2011) and with the slow learning perspective on implicit social cognition (e.g., Rydell & McConnell, 2006). See Table 1 for a summary of all hypotheses relevant to Research Question 1.

Hypothesis set 1 comprised alternative predictions about stereotype bias that were derived from the competing perspectives. These hypotheses addressed the effects of variation in the diagnosticity of individuating information:

Stereotype bias Hypothesis 1a. Stereotype bias should decrease as the diagnosticity of available individuating information increases.

Stereotype bias Hypothesis 1b. Stereotype bias in person perception should be equal in magnitude regardless of the diagnosticity of available individuating information.

Hypothesis set 2 consisted of alternative predictions regarding the presence or absence of stereotype bias after exposure to highly diagnostic individuating information.

Stereotype bias Hypothesis 2a. There should be no stereotype bias after exposure to highly diagnostic individuating information.[2]

Stereotype bias Hypothesis 2b. Stereotype bias in person perception should persist despite highly diagnostic individuating information.

The third set of hypotheses addressed individuating information effects from the standpoint of the competing perspectives.

Individuating information Hypothesis 3a. All individuating information effects should be substantial.

Individuating information effect Hypothesis 3b. All individuating information effects should be trivial or nonexistent.

7.2. Research Question 2

When the results of all three studies are considered as a whole, the present research also addresses the question of, *do perceivers show similar patterns of reliance on individuating information and stereotypes in implicit* versus *explicit person perception, or do these patterns diverge*? The former outcome would be consistent with the APE model (Gawronski & Bodenhausen, 2006, 2011), while the latter result would be congruent with the slow-learning perspective on implicit evaluations (e.g., Gregg et al., 2006; Rydell & McConnell, 2006; Smith & DeCoster, 2000).

8. Overview of the present research

A series of preliminary studies was conducted to create the stimulus materials that were used in the main studies. In the three main studies, Study 1 examined the effect of variation in the diagnosticity of available individuating information on stereotype bias in implicit and explicit person perception and the effects of this variation on explicit person perception. Study 2 varied the valence of diagnostic individuating information and investigated its effect on stereotype bias in implicit and

[2] Theories of impression formation promoting the power of explicit stereotypes make a similar prediction, but only when the information is counterstereotypic (Fiske & Neuberg, 1990), under certain motivational circumstances (Brewer, 1988; Fiske & Neuberg, 1990), and provided adequate attentional capacities (Fiske & Neuberg, 1990). These theories are not cited here because the present research does not address all of these conditions.

explicit person perception and its effect on explicit person perception.

Studies 1 and 2 assessed effects of individuating information on implicit and explicit racial biases and on explicit person perception. They did not assess effects of individuating information on implicit person perception (i.e., they did not assess differences in perceivers' judgments about individuals with differing types or levels of individuating information). To do so, implicit measures—in this case, Implicit Association Tests (IATs; Greenwald, McGhee, & Schwartz, 1998)—must compare implicit evaluations of two individuals who differ with respect to *individuating information* (e.g., an intelligent vs. unintelligent target) rather than individuals who differ with respect to their *racial group memberships*. Because the IATs in Studies 1 and 2 compared evaluations of two individuals of different racial backgrounds about whom equivalent individuating information was provided, these IATs only assessed whether individuating information reduced the application of racial stereotype bias to these pairs of individuals.

Like Study 2, Study 3 varied the valence of diagnostic individuating information. However, it differed because it was the only study to assess implicit individuating information effects. This study also examined the effects of diagnostic individuating information on explicit person perception and the effects of diagnostic individuating information on stereotype bias in explicit person perception.

9. Preliminary studies

The pilot studies ensured that: (a) names were perceived as prototypically Black or White, (b) application information conveyed high or low intelligence, and (c) counterbalanced application information indicated an equal level of intelligence (see Supplementary Materials Tables S1–S4 for full statistical details of all pilot results). In one study, participants rated how prototypically White or Black each name was on a scale ranging from 1 (very White) to 7 (very Black). We chose the most stereotypical (extreme) Black and White names. In another, participants evaluated how competent and intelligent college applicants with the GPAs and SAT scores used on the applications in our studies were on scales ranging from 1 (e.g., very incompetent) to 7 (e.g., very competent). Results revealed that these GPAs and SAT scores conveyed either high or low competence and intelligence and that the counterbalanced information did not differ in potency.

We also compared the relative strength of the stereotype and individuating information manipulations. To permit this comparison, stereotypicality and intelligence/competence ratings needed to be put on the same scale. To do so, we first reverse scored the stereotypicality ratings of the White names so that higher scores now indicated more stereotypicality for both Black *and* White names. We then created a new variable: stereotypicality scores for all Black and White names. Next, we created a new variable capturing the extremity of the combined intelligence and competence ratings. To do so, we put the evaluations of competence and intelligence on the same scale of extremity for the strong and weak application information by reverse scoring the ratings of the weak application information. Higher scores now indicated more extreme ratings. We then averaged ratings for intelligence and competence to create a new overall extremity rating.

To compare the strength of the stereotype and individuating information manipulations, we compared the mean stereotypicality ratings of the names to the mean extremity ratings for competence and intelligence. The mean stereotypicality rating was more extreme than was the mean combined intelligence and competence rating [5.64 vs 5.17, $t(65) = 3.26$, $p = .002$, 95% $CI_{\text{difference}}$ $(-0.75, -0.18)$, $d = 0.83$]. Because the stereotype manipulations were more extreme than were the individuating information manipulations, our studies provided a conservative test of the effects of the power of individuating information and a liberal test of the power of stereotypes.

10. Study 1

10.1. Overview

Participants evaluated either: (a) racial groups, (b) one Black and one White individual given somewhat diagnostic individuating information about them, or (c) one Black and one White individual given highly diagnostic individuating information about them. In the first condition, participants completed a questionnaire that assessed perceptions of the intelligence of "the average Black person" and "the average White person." This questionnaire assessed explicit racial stereotypes about intelligence. Participants also completed an IAT that assessed implicit racial stereotypes about intelligence. In the other two conditions, participants completed a questionnaire and IAT that assessed evaluations of the individuals' intelligence. The questionnaire assessed application of explicit racial stereotypes to the pairs of individuals and explicit individuating information effects. The IAT assessed application of implicit racial stereotypes to the pairs of individuals.

Study 1 assessed Hypothesis sets 1 (changes or no changes in stereotype bias given variation in the diagnosticity of individuating information), 2 (the absence or presence of stereotype bias given highly diagnostic individuating information) and 3 (the presence or absence of individuating information effects; see Table 1 for a summary of all Hypotheses).

10.2. Method

In accordance with the 21-word solution (Simmons, Nelson, & Simonsohn, 2012), we report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures for all studies reported in this paper. All three studies in this program of research averaged at least 80% power to detect all possible effects (see Supplement 2.1 for details of power analyses). Data collection for all three studies stopped before analysis began. All raw data from all three studies will be retained indefinitely and is publicly posted at https://osf.io/hymkc.

10.2.1. Participants

The sample size in Study 1 was based on a goal of having at least 30 participants per cell in the design. However, we collected extra data to ensure adequate power given planned data exclusions and the potential for incomplete or missing data. Thus, we collected data from 183 participants, who were General Psychology students at a large northeastern state university. Their participation partially fulfilled a course requirement. In all studies in this research, data from all Black and mixed-race participants were excluded from analysis because Black perceivers' implicit and explicit racial stereotypes and attitudes differ from those of other racial groups (e.g., Nosek et al., 2007; Nosek, Banaji, & Greenwald, 2002). Consequently, data from the 14 Black and 10 mixed race participants were discarded. Also discarded were 13 participants who failed manipulation checks. The final sample included 146 students (see Supplement 2.1 for power analysis), 79 of whom were male. There were 76 White, 50 Asian, and 15 Latino students, and 5 students who identified with another racial group.

10.2.2. Experimental design

The implicit experimental design was a one-way between-subjects design (individuating information: no information vs. somewhat diagnostic information vs. highly diagnostic information). Because IAT scores are difference scores, they inherently incorporate the race of target factor.

The explicit experimental design was a 3 (individuating information: no information vs. somewhat diagnostic information vs. highly diagnostic information) × 2 (race of target: Black vs. White) mixed-model design. Individuating information was the between-subjects factor.

10.2.3. Stimuli

10.2.3.1. No information condition. Participants in the no information condition received no stimulus information.

10.2.3.2. Somewhat diagnostic information condition. These participants viewed the college applications of one Black and one White applicant to the university at which the study was run. (See Supplement 3 for representative college applications from all three studies). The names on the applications (Jamal DeShawn Robinson and Luke Connor Reed) were selected on the basis of the pilot data that measured the racial prototypicality the names (Supplementary Materials Tables S1 and S2). Only demographic information (e.g., fictitious hometown) was included in these applications; academic information was omitted. However, these applications still constituted individuating information because not every person applies to college, and even among college applicants, not all apply to universities of this caliber.

10.2.3.3. Highly diagnostic information condition. This condition provided additional individuating information on the applications that was highly diagnostic of intelligence. Academic information included SAT scores, high school GPAs, and the fact that the applicants were National Merit Scholars. The pilot studies showed that evaluations of the intelligence and competence of applicants with the following credentials were similarly high: (a) SAT score of 1400 and GPA of 3.9, and (b) SAT score of 1420 and GPA of 3.8 (Supplementary Materials Tables S3 and S4). This information was counterbalanced with race of target. Extracurricular activity information was also included (see Supplement 3).

10.2.4. Measures

All measures were administered using Inquisit software. A questionnaire assessed explicit evaluations of targets' competence. Some items were open-ended (e.g., "What is your estimate of Jamal's IQ?"), and others were trait ratings that employed Likert-type scales (e.g., "How intelligent is Jamal?"; 1 = *Not intelligent at all*, 5 = *Very intelligent*; see Supplement 2.2 for complete questionnaire[3]).

In the highly diagnostic information and somewhat diagnostic information conditions, participants evaluated the applicants' competence. In the no information condition, participants evaluated the competence of "the average Black [White] person." The specification of "the average Black person" and "the average White person" approximated a group stereotype condition while still remaining in the realm of person perception. The IAT measured implicit stereotype-relevant associations regarding intelligence as they related to the individuals (highly diagnostic and somewhat diagnostic individuating information conditions) or racial groups (no information condition; see Supplement 2.5 for details of the format and administration of the IAT and Supplement 2.6 for IAT stimuli).

10.2.5. Procedure

In the somewhat and highly diagnostic individuating information conditions, participants had seven minutes to memorize the applications (ostensibly for a memory test) and to answer eight manipulation check questions. These questions ensured that participants were reviewing the applications (e.g., "What is Jamal's GPA?"). Next, experimenters collected the applications and participants completed the explicit measures and the IAT, answered demographic questions, were probed for suspicion, and were debriefed. The procedure in the no information condition was identical to that in the individuals with highly diagnostic and somewhat diagnostic information conditions except that participants did not review college applications.

10.3. Results and discussion

10.3.1. Preliminary analyses

The scoring procedures recommended by Greenwald, Nosek, and Banaji (2003) were followed to calculate *D* scores (IAT effects; see Supplement 2.5). Larger positive *D* scores indicated stronger implicit anti-Black stereotype bias, and greater negative *D* scores indicated stronger implicit anti-White stereotype bias.

The eight trait rating items that measured participants' evaluations of the targets' competence demonstrated strong internal consistency, $\alpha_{Black} = 0.94$, $\alpha_{White} = 0.93$ and were combined to form a competence scale. The competence scale was computed separately for each target. The potential range of values for the competence scale was from 6 to 30. The dependent measures in this experiment were estimated IQ, the competence scale, and *D* scores (see Supplementary Materials Table S5 for Study 1 explicit variable descriptive statistics and for correlations among all Study 1 dependent measures).

10.3.2. Standards of comparison

10.3.2.1. Benchmark for determining the presence or absence of implicit preferences. Traditionally, nonsignificant IAT scores are interpreted as indicating a lack of implicit preference (i.e., the "true zero" interpretation; e.g., Stout, Dasgupta, Hunsinger, & McManus, 2011). Another standard that has been put forth is that $|D| \geq 0.15$ indicates substantial implicit preferences (Nosek et al., 2007, p. 10) regardless of statistical significance. We adopted this standard because statistical significance is an arbitrary function of sample size rather than exclusively measuring the amount of bias, and because the IAT is "right biased"—egalitarian responding on other measures often corresponds to IAT scores greater than zero (Blanton, Jaccard, Strauts, Mitchell, & Tetlock, 2015).

10.3.2.2. Standard of comparison for determining reduction or elimination of stereotype bias. Although the primary purpose of this research was to examine reliance on stereotypes and individuating information in person perception, we intentionally included a condition in Study 1 (the no information condition) that was designed to assess group stereotypes. Responses to explicit and implicit measures in this constituted a benchmark for subsequent comparisons evaluating whether individuating information of varying levels of diagnosticity reduced or eliminated bias (see Locksley et al., 1980, for a similar approach).

10.3.3. Stereotype bias in implicit person perception

10.3.3.1. Implicit stereotype bias in the presence of individuating information that varied in diagnosticity. A single-sample *t*-test on *D* scores in the no information condition established the presence of implicit group stereotype bias in the absence of individuating information. According to standard IAT score interpretation conventions (e.g., Rudman, 2011) this analysis showed slight to moderate implicit anti-Black stereotype bias,[4] $D = 0.29$ (> 0.15), $SD = 0.32$, 95% CI (0.20, 0.38), $t(51) = 6.49$, $p < .001$; people implicitly believed that White people were smarter than Black people.

Stereotype bias Hypothesis 1a predicted that stereotype bias would decrease with increasingly diagnostic individuating information. In contrast, stereotype bias Hypothesis 1b predicted that stereotype bias would be equal in magnitude regardless of the diagnosticity of the individuating information. A one-way between-subjects ANOVA on the *D* scores tested these hypotheses and revealed a significant main effect for individuating information, $F(2, 140) = 4.09$, $p = .02$, $\eta = 0.24$. The amount of implicit anti-Black stereotype bias was reduced by the

[3] Also administered were the Modern Racism Scale (McConahay, 1986) and the Political Correctness Scale (Jussim et al., 2017). However, results are not reported because they were not relevant to any of our hypotheses.

[4] Because *D* is computed as an effect size for each participant in a manner similar to that of Cohen's *d* (Greenwald et al., 2003), we only report separate effect sizes for the explicit measures

Table 2
Main effect cell means, standard deviations, and 95% confidence intervals, Study 1.

	Race of target						Individuating information								
	Black[a]			White[b]			No information[c]			Somewhat diagnostic information[d]			Highly diagnostic information[e]		
	M	*SD*	95% CI	M	(*SD*)	95% CI	M	(*SD*)	95% CI	M	(*SD*)	95% CI	M	(*SD*)	95% CI
IQ Estimate	106.50[g]	10.79	105.37, 107.64	108.81[h]	10.20	107.59, 110.03	101.14[i]	4.62	99.34, 102.95	103.14[i]	7.13	101.29, 105.00	118.68[j]	9.27	116.72, 120.64
Competence Scale (6–30)	21.02[k]	4.34	13.79, 14.37	21.48[l]	3.90	14.20, 14.77	18.78[m]	2.08	18.14, 19.42	19.03[m]	2.71	18.37, 19.69	25.94[n]	2.75	25.26, 26.63

Note. Means within race of target *or* individuating information conditions that do not share superscripts statistically differ ($p < .01$). Race of applicant was within-subjects; individuating information was between-subjects. Higher scores indicate greater perceived IQ and competence.
[a] $n = 146$.
[b] $n = 146$.
[c] $n = 52$.
[d] $n = 49$.
[e] $n = 44$.

diagnosticity of available individuating information (*Ds* = *0.*29, 0.20, 0.11, respectively, for the no information, somewhat diagnostic individuating information, and highly diagnostic individuating information conditions).

Although the ANOVA supported Hypothesis 1a, a stronger test of this hypothesis was provided by an a priori linear contrast testing the prediction that implicit stereotype bias would decline as diagnosticity increased. The no information cell was coded as 1, the somewhat diagnostic information cell as 0, and the highly diagnostic information cell as −1. The contrast was significant, $F(1, 140) = 8.17$, $p = .005$, $\eta = 0.23$, and the cell means were perfectly correlated with the contrast coefficients, $r(142) = 1.00$. Thus, the contrast explained 100% of the systematic between-groups variance. No systematic residual between-groups variance remained, $F(2, 140) = 0.01$, $p = .99$, $\eta = 0.009$. These results showed an exactly linear pattern of decreased implicit stereotype bias in the presence of individuating information that was increasingly diagnostic. These findings further supported Hypothesis 1a, which predicted that stereotype bias would be moderated by the diagnosticity of individuating information.

10.3.3.2. Implicit stereotype bias with highly diagnostic individuating information. Hypothesis 2a predicted no substantial stereotype bias in the presence of highly diagnostic individuating information, whereas Hypothesis 2b predicted substantial stereotype bias in the presence of highly diagnostic individuating information. Single-sample *t*-tests performed on *D* scores from the highly diagnostic information condition tested these hypotheses at the implicit level. Results supported Hypothesis 2a: there was no substantial implicit stereotype bias in this condition, $D = 0.11$ (< 0.15), $SD = 0.28$, 95% *CI* (0.02, 0.20), $t(43) = 2.60$, $p = .013$. In contrast, there was substantial bias both in the somewhat diagnostic information condition, $D = 0.20$, (> 0.15), $SD = 0.31$, 95% *CI* (0.12, 0.29), $t(46) = 4.59$, $p < .001$, and in the no information condition ($D = 0.29$, reported above).

10.3.4. Stereotype bias in explicit person perception

Analyses next assessed the competing hypotheses as they related to explicit evaluations. Two 3 (individuating information: no information vs. somewhat diagnostic information vs. highly diagnostic information) × 2 (race of target: Black vs. White) mixed-model ANOVAs were performed to test these hypotheses: one on IQ estimates, and the other on the competence scale. Individuating information was the between-subjects factor.

10.3.4.1. Explicit stereotype bias in the presence of individuating information that varied in diagnosticity. A significant main effect for race of target on both explicit dependent variables indicated that overall, Black targets were evaluated as less competent than White targets, IQ estimate $F(1, 142) = 23.77$, $p < .001$, $\eta = 0.11$, competence scale $F(1, 143) = 8.69$, $p = .004$, $\eta = 0.06$ (see Table 2 for means, standard deviations, and 95% confidence intervals). In addition, both

race of target X individuating information interactions were significant, IQ estimate $F(2, 142) = 4.55$, $p = .01$, $\eta = 0.07$, competence scale $F(2, 143) = 11.83$, $p < .001$, $\eta = 0.09$ (see Table 3 for full design cell means, *SD*s, and 95% CIs). These analyses disconfirmed Hypothesis 1b's prediction that stereotype biases would be similar regardless of the diagnosticity of the individuating information.

Additional analyses identified how individuating information moderated stereotype biases, further addressing Hypothesis 1a's prediction of decreased stereotype bias with greater diagnosticity of individuating information. First we established the presence of stereotype bias in the absence of individuating information, IQ estimate $t(50) = 5.18$, $p < .001$, $d = 1.46$, competence scale $t(50) = 5.55$, $p < .001$, $d = 1.54$ (see Table 3 for full design cell means, *SD*s, and 95% *CI*s). This subsequently served as a standard of comparison for bias reduction.

Next, we performed a one-way ANOVA on perceived racial difference scores for each dependent measure and then performed a priori linear contrasts on these difference scores. Racial difference scores were computed by subtracting evaluations of the White target from evaluations of the Black target (see Table 4 for cell means, *SD*s, and 95% *CI*s). Both ANOVAs showed significant individuating information effects on racial biases, IQ estimate difference $F(2, 142) = 4.55$, $p = .01$, $\eta = 0.25$, competence difference score $F(2, 143) = 11.83$, $p < .001$, $\eta = 0.38$. For the linear contrasts performed on the difference scores, the no information cell was coded as 1, the somewhat diagnostic information cell as 0, and the highly diagnostic information cell as −1. The contrasts were significant both for IQ estimate difference scores, $F(1, 142) = 9.09$, $p = .003$, $\eta = 0.25$, and competence scale difference scores, $F(1, 143) = 23.18$, $p < .001$, $\eta = 0.37$. For these analyses, the top two rows of Table 5 report the correlation of the contrast coefficients with the cell means (both *r*s ≥ 0.99), the proportion of systematic (between condition) variance explained by the contrast ($> 96\%$), and the significance tests for the variance left *unexplained* by the contrast (both *p*s > 0.61). Consistent with stereotype bias Hypothesis 1a, there was a strong pattern of less explicit racial stereotype bias with individuating information that was increasingly diagnostic.

10.3.4.2. Explicit stereotype bias in the presence of highly diagnostic individuating information. Hypothesis 2a predicted that there would be no stereotype bias in the presence of highly diagnostic individuating information, whereas Hypothesis 2b posited that stereotype bias would persist. Contrast *t*-tests comparing evaluations of Jamal to evaluations

Table 3
Full design cell means, standard deviations, and 95% confidence intervals, Study 1.

Individuating information							
		No information[a]		Somewhat diagnostic information[b]		Highly diagnostic information[c]	
	Target race:	Black	White	Black	White	Black	White
		M (*SD*) 95% CI	M (*SD*) 95% CI	M (*SD*) 95% CI	M (*SD*) 95% CI	M (*SD*) 95% CI	M (*SD*) 95% CI
DV:	IQ Estimate	99.10[d] (3.63) **97.21, 100.99**	103.19[e] (5.61) **101.16, 105.22**	102.02[f] (6.99) **100.07, 103.97**	104.27[g] (7.28) **102.17, 106.36**	118.39[h] (9.32) **120.44, 121.19**	118.98[h] (9.22) **116.77, 121.19**
	Competence Scale (6–30)	18.06[i] (2.11) **17.37, 18.74**	19.50[j] (2.03) **18.81, 20.20**	18.88[k] (2.74) **18.17, 19.58**	19.18[k] (2.03) **18.47, 19.90**	26.13[l] (2.61) **25.40, 26.87**	25.76[l] (2.89) **25.01, 26.50**

Note. Means *within individuating information conditions* that do not share a superscript differ at $p < .01$. Race of applicant was within-subjects; individuating information was between-subjects. Higher scores indicate greater perceived IQ and competence.
[a] $n = 52$.
[b] $n = 49$.
[c] $n = 44$.

of Luke indicated no stereotype bias in the presence of highly diagnostic individuating information, IQ estimate $t(43) = 0.69$, $p = .49$, $d = 0.10$, competence scale $t(41) = -1.31$, $p = .19$, $d = 0.18$ (see Table 3 for means). These results supported Hypothesis 2a. In comparison, in the somewhat diagnostic information condition, there was anti-Black bias in IQ estimates, $t(48) = 2.77$, $p = .006$, $d = 0.41$, but not on the competence scale, $t(48) = 1.12$, $p = .26$, $d = 0.16$ (see Table 3 for means).

10.3.5. Individuating information effects in explicit person perception

The next set of competing predictions related to individuating information effects. Hypothesis 3a predicted individuating information effects: Explicit evaluations should follow a pattern of increasingly more favorable evaluations with increasingly diagnostic, positive individuating information, regardless of target race. Hypothesis 3b predicted trivial or no individuating information effects: Evaluations of all White targets should be equally favorable, whereas evaluations of all Black targets should be equally unfavorable. Hypothesis 3b was disconfirmed by the significant individuating information X race of target interactions (discussed above).

It was hypothetically possible that Hypothesis 3a would be supported for one racial group but not the other. For example, perceivers might have relied on individuating information for Black targets but not for White targets. Thus, one-way ANOVAs performed separately for Black and White targets provided appropriate tests of Hypothesis 3a. These ANOVAs assessed the effects of variation in the diagnosticity of available individuating information on evaluations of competence. The ANOVAs showed large main effects of individuating information on both dependent measures for Black targets, IQ estimate $F(2, 142) = 105.20$, $p < .001$, $\eta = 0.77$, competence scale $F(2, 143) = 148.91$, $p < .001$, $\eta = 0.82$, and for White targets, IQ estimate $F(2, 143) = 65.84$, $p < .001$, $\eta = 0.69$, competence scale $F(2, 143) = 99.72$, $\eta = 0.76$. With more positive, diagnostic individuating information, evaluations were more favorable (see Table 3 for cell means, *SD*s, and 95% *CI*s).

A priori linear contrast tests were performed to investigate the linearity of these individuating information effects. The no information cell was coded as 1, the somewhat diagnostic information cell as 0, and the highly diagnostic information cell as −1. The contrasts were significant for estimated IQ of Black targets, $F(2, 142) = 179.66$, $p < .001$, $\eta = 0.71$, estimated IQ of White targets, $F(2, 143) = 104.38$ $p < .001$, $\eta = 0.62$, evaluations of Black targets' competence, $F(2, 143) = 243.70$, $p < .001$, $\eta = 0.74$, and evaluations of White targets' competence, $F(2, 143) = 139.43$, $p < .001$, $\eta = 0.64$. For these analyses, the bottom four rows of Table 5 report the correlation of the contrast coefficients with the cell means ($rs > 0.83$), the proportion of systematic (between condition) variance explained by the contrast (> 69%) and the significance tests for the variance left *unexplained* by the contrast ($ps < 0.001$). Overall, individuating information effects were mostly—but not entirely—linear.

A series of Tukey's HSD tests assessed differences among experimental conditions. Black targets in the highly diagnostic information were evaluated as significantly more intelligent and competent than Black targets in the no information condition on IQ estimates, $t(94) = 13.68$, $p < .001$, $d = 2.73$, and on competence evaluations, $t(95) = 15.84$, $p < .001$, $d = 3.40$ (see Table 3 for cell means). The same was true for White targets, IQ estimate $t(95) = 10.40$, $p < .001$, $d = 2.07$, competence scale $t(95) = 12.04$, $p < .001$, $d = 2.51$. Tukey's HSD tests also showed that Black targets in the highly diagnostic information condition were evaluated as more intelligent and competent than Black targets in the somewhat diagnostic information condition, IQ estimates, $t(91) = 11.45$, $p < .001$, $d = 1.99$, competence

Table 4
Cell means, standard deviations, and 95% confidence intervals of racial difference scores by individuating information condition, Study 1.

	Individuating information								
	No Information[a]			Somewhat Diagnostic Information[b]			Highly Diagnostic Information[c]		
DV	M	(*SD*)	95% CI	M	(*SD*)	95% CI	M	(*SD*)	95% CI
IQ estimate	4.10[d]	5.17	2.66, 5.54	2.24[d, e]	6.74	0.31, 4.18	0.59[e]	4.96	1.45, 3.36
Competence scale (6–30)	1.44[f]	2.11	0.86, 2.03	0.31[g]	2.04	−0.28, 0.89	−0.38[g]	1.28	−0.76, 0.01

Note. Difference scores were computed by subtracting the mean for Black targets from the mean for White targets. Higher scores indicated greater perceived IQ and competence. Means within each row that do not share a superscript differ at $p < .01$.
[a] $N = 52$.
[b] $N = 49$.
[c] $N = 44$.

Table 5
A Priori linear contrast follow-up analyses.

	Correlation between cell means and contrast coefficients[a]	% of systematic variance explained by contrast	*F* for significance of residual between-groups variance left unexplained by contrast[b], η
Explicit stereotype bias effect			
Estimated IQ racial difference scores	0.99	99.34%	0.01, 0.008
Competence racial difference scores	0.99	96.65%	0.47, 0.05
Explicit individuating information effect			
Estimated IQ Black	0.91	85.39%	30.74***, 0.30
Estimated IQ White	0.90	79.28%	27.29***, 0.32
Competence Black	0.91	81.82%	54.10***, 0.35
Competence White	0.84	69.91%	60.04***, 0.42

*** $p < .001$.
[a] All correlations involved 3 cell means and contrast coefficients.
[b] Degrees of freedom for estimated IQ racial difference scores and Estimated IQ Black are (1, 142). Degrees of freedom for all other analyses are (1, 143).

evaluations, $t(92) = 14.23$, $p < .001$, $d = 2.71$. The same was true for White targets, IQ estimate $t(92) = 9.56$, $p < .001$, $d = 1.77$, competence scale $t(92) = 12.63$, $p < .001$, $d = 2.37$. However, there were no significant differences in target evaluations in the somewhat diagnostic information versus no information conditions, $ts(99) < 2.67$, $ps > 0.08$, $ds < 0.53$ (see Supplementary Materials, Table S6 for full results).

Overall, the results confirmed the hypothesis of substantial individuating information effects (Hypothesis 3a), but this was primarily due to the difference in judgments regarding targets in the highly diagnostic information condition compared to the other targets. Weak support for Hypothesis 3b was found in the nonsignificant differences between evaluations of targets in the no information versus somewhat diagnostic information condition. We characterize this as "weak" support because, given that the individuating information was only somewhat diagnostic, this difference does not provide a strong test of the effects of individuating information.

10.4. Summary

There were three main findings in Study 1: (a) decreased implicit and explicit stereotype bias with increasingly diagnostic individuating information; (b) no substantial implicit or explicit stereotype bias in the presence of highly diagnostic individuating information; and (c) increasingly favorable explicit target evaluations with increasingly diagnostic, positive individuating information. Overall, these findings were consistent with hypotheses derived from propositional models of implicit evaluations (e.g., DeHouwer, 2014a, 2014b), the APE model (Gawronski & Bodenhausen, 2006, 2011), and with the perspective that individuating information takes primacy in person perception (e.g., Jussim, 2012). They were inconsistent with hypotheses drawn from the slow-learning perspective on implicit social cognition (e.g., Gregg et al., 2006; Rydell & McConnell, 2006; Smith & DeCoster, 2000), and with the view that stereotypes cause perceivers to ignore individual differences (e.g., Aronson et al., 2015).

11. Study 2

11.1. Overview

One limitation of Study 1 was that the valence of individuating information did not vary; the diagnostic individuating information was only positive in nature. Thus, it did not test the effects of a diverse range of individuating information, and it was possible that positive and negative individuating information would affect person perception differently (e.g., Cone & Ferguson, 2015). Study 2 addressed this limitation by having some participants view high school records of one Black and one White college applicant who had excellent high school records, and others view records of one Black and one White college applicant who had weak high school records. Participants then completed a questionnaire and an IAT in which they explicitly and implicitly evaluated the applicants' competence. Thus, Study 2 addressed competing hypothesis sets 2 (the presence or absence of stereotype bias given highly diagnostic individuating information) and 3 (the presence of absence of individuating information effects; see Table 1 for a summary of all hypotheses) under different conditions than Study 1.

11.2. Method

11.2.1. Experimental design

The implicit experimental design was a one-way between-subjects design (individuating information: excellent high school record vs. weak high school record). The explicit experimental design was a 2 (individuating information: excellent high school record vs. weak high school record) × 2 (race of applicant: Black vs. White) mixed-model design. Individuating information was the between-subjects factor.

11.2.2. Participants

The sample size for Study 2 was based on a goal of having at least 45 participants per cell in the design. However, we collected extra data to ensure that we obtained this goal given planned data exclusions and the potential for incomplete or missing data. Participants were 195 General Psychology students. Participation partially fulfilled a course requirement. As in Study 1, data from the 17 Black and 13 mixed-race participants were excluded from the analyses. Also excluded were data from 13 participants whose experimental condition was not randomized properly, 12 participants who did not answer manipulation check questions correctly, and 11 participants who did not follow instructions. Of the 130 participants included in the analyses (see Supplement 2.1 for power analysis), 68 were female. There were 78 White, 36 Asian, and 11 Latino participants, and 5 identified with another racial group.

11.2.3. Stimuli

The college applications in Study 2 were identical to those used in the highly diagnostic individuating information condition of Study 1 with the following exceptions. First, the White name was changed to Ryan Eric Reed and the Black name to Jamal DeShawn Jackson (these names were determined by the pilot test to be prototypically White and Black, respectively; see Supplemental Materials Tables S1 and S2.) Also, SAT scores were on a 1600-point scale instead of the newer 2400-point scale because Study 2 was conducted before the SATs changed to the 2400-point scoring system. The scores in the excellent high school record condition were 1400 and 1420 with GPAs of 3.9 and 3.8,

Table 6
Main effect means, standard deviations, and 95% confidence intervals for explicit measures, Study 2.

	Race of target						Individuating information					
	Black[a]			White[b]			Strong HS record[c]			Weak HS record[d]		
	M	*SD*	*95% CI*	*M*	*SD*	*95% CI*	*M*	*SD*	*95% CI*	*M*	*SD*	*95% CI*
IQ	105.92[e]	16.10	103.87, 107.59	104.79[f]	15.35	102.90, 106.32	117.06[g]	10.25	114.62, 119.50	93.28[h]	10.31	90.80, 95.76
GPA Scale (0–8)	5.95[i]	1.45	5.82, 6.04	5.78[j]	1.43	5.65, 5.87	7.13[k]	0.58	6.98, 7.28	4.56[l]	0.69	4.40, 4.71
Hours Studying	11.74[m]	9.82	10.11, 13.24	10.57[n]	8.46	9.19, 11.84	14.91[o]	9.79	12.91, 16.91	7.28[p]	6.45	5.24, 9.31
Remedial Help (1–7)[†]	3.61[q]	3.61	3.37, 3.83	3.59[q]	3.59	3.35, 3.82	4.15[r]	1.33	3.85, 4.46	3.03[s]	1.32	2.72, 3.34
Academic Comparison (1–9)	4.99[t]	2.41	4.66, 5.27	4.85[u]	2.31	4.53, 5.13	6.51[v]	1.78	6.09, 6.93	3.29[w]	1.68	2.87, 3.71
Competence (8–56)	39.58[x]	11.44	38.28, 40.59	38.65[y]	11.05	37.38, 39.64	48.07[z]	5.85	46.50, 49.64	29.88[ab]	7.28	28.28, 31.47

Note. [a]n = 130; [b]n = 130; [c]n = 66; [d] n = 64. HS Record = high school record. Means within individuating information *or* race of target conditions that do not share superscripts e through ab differ statistically ($p < .01$). Race of target was within-subjects; individuating information was between-subjects. Higher scores indicate greater perceived competence and academic capability.
[†] Variable reverse coded; reverse coded values reported.

respectively, and in the weak high school record condition, the scores were 1000 and 1020 with GPAs of 2.1 and 2.0, respectively. The academic information in each condition was pretested to be equally excellent or equally weak (Supplementary Materials Tables S3 and S4).

11.2.4. Measures

The explicit measures used in Study 2 (Supplement 2.3) were similar to those from Study 1 with the following exceptions. Several questions relevant to academic capabilities were added [e.g., "What do you predict Jamal's GPA will be at the end of freshman year (on a 4.0 scale)?"] because, unlike Study 1, all targets in Study 2 were students. In addition, the response scales for several questions were changed from 5-point to 7-point scales. The IAT was the same as that from Study 1 except that some categories and stimulus words were revised based on changes to the applicants' names (Supplement 2.6).

11.2.5. Procedure

The procedure for Study 2 was identical to that in the highly diagnostic information and somewhat diagnostic information conditions in Study 1 aside from the differences in stimulus materials.

11.3. Results and discussion

11.3.1. Preliminary analysis

The two items that related to predictions of the applicants' college GPAs showed strong internal consistency, $\alpha_{Jamal} = 0.93$, $\alpha_{Ryan} = 0.93$ and were combined to form a GPA scale, computed separately for each target. Potential scores on this scale could range from 0 to 8, with a higher score representing higher GPA predictions. The eight trait rating items that measured evaluations of the applicants' competence demonstrated excellent internal consistency, $\alpha_{Jamal} = 0.96$, $\alpha_{Ryan} = 0.97$, and were combined to form a competence scale, computed separately for each target. Potential values for the competence scale ranged from 8 to 56, with a higher score indicating higher evaluations of the target's competence. The explicit dependent measures were estimated IQ, the GPA scale, the competence scale, estimated hours spent studying per week, likelihood of the target needing remedial help, and academic comparison with students from university to which the applicants were applying (see Supplementary Materials Table S7 for descriptive statistics). The implicit dependent measure was *D*, the IAT effect (Greenwald et al., 2003; see Supplementary Materials Table S8 for correlations among explicit measures and *D* scores).

11.3.2. Stereotype bias in implicit person perception

The first set of analyses assessed support for two competing hypotheses regarding IAT scores: Hypothesis 2a, which posited that highly diagnostic individuating information would eliminate racial stereotype bias, versus Hypothesis 2b, which predicted that racial stereotype bias would persist even in the presence of highly diagnostic individuating information.

Overall, across both experimental conditions, perceivers showed no substantial implicit stereotype bias, $D = 0.08$ (< 0.15), $SD = 0.26$, *95% CI*$_{difference}$ (0.03, 0.12), $t(128) = 3.36$, $p = .001$. In the excellent high school record condition, perceivers showed no significant implicit stereotype bias $D = 0.06$ (< 0.15), $SD = 0.27$, *95% CI*$_{difference}$ (-0.01, 0.12), $t(65) = 1.66$, $p = .10$. In the weak high school record condition perceivers showed no substantial stereotype bias, $D = 0.10$ (< 0.15), $SD = 0.25$, *95% CI*$_{difference}$ (0.04, 0.16), $t(63) = 3.14$, $p = .003$. The difference in IAT effects in the presence of positive versus negative individuating information were nonsignificant, $t(128) = -0.95$, $p = .35$, $d = 0.15$. These results supported Hypothesis 2a, and did not support Hypothesis 2b; implicit racial stereotype bias in person perception was effectively eliminated by highly diagnostic individuating information regardless of the valence of the information.

11.3.3. Explicit person perception analyses

Competing hypotheses about explicit evaluations were assessed next. To do so, explicit measures were subjected to 2 (individuating information: excellent high school record vs. weak high school record) × 2 (race of applicant: Black vs. White) mixed-model ANOVAs. Individuating information was the between-subjects factor.

11.3.3.1. Stereotype bias in explicit person perception. Hypothesis 2a predicted no stereotype bias in the presence of highly diagnostic individuating information. Hypothesis 2b predicted substantial stereotype bias in the presence of highly diagnostic individuating information. The ANOVAs showed significant race of applicant main effects on five out of the six dependent measures, $Fs(1, 128) > 7.13$, $ps < 0.01$, $\eta s = 0.03$–0.06 (see Table 6 for explicit main effect cell means, standard deviations, and 95% CIs; see Table 7 for Study 2 ANOVA results and effect sizes for explicit dependent variables). However, the means revealed that participants evaluated *Jamal* slightly more favorably than *Ryan*. This pattern of evaluations indicated that the effect of individuating information was so strong that it *reversed* stereotype bias (i.e., contrast effects; Jussim, Coleman, & Lerch, 1987). Because the race of target main effects were contrast

Table 7
ANOVA Results for All Explicit Dependent Variables, Study 2.

Dependent variable	Target race Main effect (df), *F*, η	Individuating information Main effect (df), *F*, η	Race of applicant x individuating information interaction (df), *F*, η
IQ estimate	(1, 128), 7.90**, 0.04	(1, 128), 182.60**, 0.76	(1, 128), 0.48, 0.01
GPA scale	(1, 128), 105.71**, 0.06	(1, 128), 541.63**, 0.90	(1, 128), 1.89, 0.01
Estimated hours per week spent studying	(1, 128), 19.08**, 0.06	(1, 128), 28.08**, 0.42	(1, 128), 0.87, 0.01
Will request remedial help†	(1, 128), 0.04, 0.00	(1, 128), 26.24**, 0.39	(1, 128), 0.35, 0.02
Academic comparison to other students at the same university	(1, 128), 10.99**, 0.03	(1, 128), 114.38**, 0.68	(1, 128), 4.76*, 0.02
Competence scale	(1, 128), 15.19**, 0.04	(1, 128), 258.79**, 0.82	(1, 128), 2.34, 0.02

Note. Target race was within-subjects; individuating information was between-subjects.
* $p < .05$.
** $p < .01$.
† Variable was reverse-coded.

effects, they supported Hypothesis 2a, which predicted no stereotype bias in the presence of highly diagnostic individuating information. Nonsignificant high school record X target race interactions on five of six dependent variables, Fs(1, 128) < 2.34, ps > 0.12, ηs < 0.02 (Table 7), indicated that this effect was not qualified by the valence of the individuating information.

11.3.3.2. Individuating information effects in explicit person perception. Next, we tested competing hypotheses related to individuating information effects. Hypothesis 3a predicted substantial individuating information effects: Excellent applicants should be evaluated as more competent than weak applicants. Hypothesis 3b predicted that individuating information effects would be trivial or nonexistent—that evaluations of excellent and weak applicants of the same race would be equal. There were large main effects for individuating information on all explicit dependent measures, Fs(1, 128) > 26.24, ps < 0.001, ηs = 0.39–0.90 (Table 7), and the means showed that Black and White applicants with excellent high school records were evaluated as more competent than Black and White applicants with weak high school records (Table 6). The lack of significant interactions showed that the pattern of individuating information effects was the same for Black and White targets. Thus, the data were consistent with Hypothesis 3a, which predicted substantial individuating information effects. Moreover, within each target race, explicit evaluations of the excellent applicant were more favorable than the weak applicant, thereby disconfirming Hypothesis 3b.

11.4. Summary

This study provided additional evidence in support of the primacy of individuating information over stereotypes in implicit and explicit person perception: Highly diagnostic individuating information eliminated stereotype bias in both modes of person perception. In addition, there were large individuating information effects in explicit person perception. Overall, as in Study 1, the data were consistent with hypotheses derived from propositional models of implicit evaluations (e.g., DeHouwer, 2014a, 2014b), the APE model (Gawronski & Bodenhausen, 2006, 2011) and with the perspective that individuating information takes primacy in person perception (e.g., Jussim, 2012). They were inconsistent with hypotheses drawn from the slow-learning perspective on implicit social cognition (e.g., Rydell & McConnell, 2006; Smith & DeCoster, 2000), and with the claim that stereotypes cause perceivers to ignore individual differences (e.g., Aronson et al., 2015).

12. Study 3

12.1. Overview

One limitation of Studies 1 and 2 is that they did not provide direct tests of the effects of individuating information on implicit person perception. Study 3 provided such a test. To do so, as in the high and low information conditions in Study 1 and as in Study 2, participants viewed the two college applications and completed a questionnaire and an IAT. However, in Study 3 participants evaluated either two Black or two White individuals, one of whom had an excellent high school record and one of whom had a weak record. Study 3 tested competing hypothesis sets 2 (the presence or absence of stereotype bias in the presence of highly diagnostic individuating information) and 3 (the presence or absence of individuating information effects; see Table 1 for a summary of all hypotheses).

12.2. Method

12.2.1. Experimental design

The implicit experimental design was a one-way (individuating information: excellent high school record vs. weak high school record) between-subjects design. The explicit experimental design was a 2 (race of applicants: Black vs. White) × 2 (individuating information: excellent high school record vs. weak high school record) mixed-model design. Unlike Studies 1 and 2, race of applicants was the between-subjects factor and individuating information was the within-subjects factor.

12.2.2. Participants

The sample size for Study 3 was based on a target of having at least 45 participants per cell in the experimental design. Again, however, we collected data on more participants than needed to obtain this goal after data loss. Participants were 278 General Psychology students. Data from all 29 Black and mixed-race participants were excluded from analysis. Also excluded were data from 33 participants who did not answer manipulation check questions correctly. Of the 216 participants included in the analyses (see Supplement 2.1 for power analysis), 143 were female. The final sample comprised 141 White, 57 Asian, and 12 Latino students, and 6 students who identified with another racial group. The mean age was 18.70 years.

12.2.3. Stimuli

All participants viewed college applications from two Black or two White applicants (Jamal DeShawn Robinson and Tyrone Darnell Jackson, *or* Ryan Bradley Winkler and Bruce Eric Reed, respectively). Because more names were needed for this study than for the prior studies, we pretested lists of additional first and last names for racial prototypicality (Supplementary Materials Tables S1 and S2). The

applications were adapted from Study 2. The only changes were that the SAT scores were revised to reflect the new scoring system (1500 or 1520 in the weak information condition and 2100 or 2120 in the excellent information condition) and in the excellent high school record condition, the extracurricular clubs were different (see Supplement 3).

12.2.4. Measures

The explicit measures (Supplement 2.4) included all questions from Study 1 but also used some items from the Study 2 questionnaire. In the IAT in this study, applicant category names and stimulus words were changed to match the additional names on the applications (Supplement 2.6).

In addition, since participants viewed information about applicants of only one racial background, the applicant names in the IAT were either only Black or only White for each participant. Thus, unlike the prior studies, this IAT did not measure racial stereotype bias. Instead, it measured implicit individuating information effects—differences in implicit evaluations of excellent and weak applicants. Positive *D* scores indicated that the excellent applicant was evaluated more favorably, whereas negative *D* scores showed that the weak applicant was evaluated more favorably.

12.2.5. Procedure

The procedure in Study 3 was identical to that of Study 2 except for the differences in stimulus materials described above.

12.3. Results and discussion

12.3.1. Preliminary analyses

The two items that measured participants' predictions of the applicants' college GPAs [e.g., “What do you predict Jamal's GPA will be at the end of freshman year (on a 4.0 scale)?”] showed adequate internal consistency, $\alpha_{excellent} = 0.81$, $\alpha_{weak} = 0.61$, and were combined to form a GPA scale, which was computed separately for each target. The range of potential scores on this scale was 0 to 8. The eight trait rating items assessing participants' evaluations of the applicants' competence (e.g., “How intelligent is Jamal?”) on a 1 (e.g., *Unintelligent*) to 7 (e.g., *Very intelligent*) scale showed good internal consistency, $\alpha_{excellent} = 0.83$, $\alpha_{weak} = 0.84$, and were combined to form a competence scale. This scale was computed separately for each target. The range of potential scores on this scale was from 8 to 56. The dependent measures in this experiment were estimated IQ, the GPA scale, the competence scale, and *D* (see Supplementary Materials Tables S9 and S10 for descriptives for Study 3 explicit dependent measures and inter-variable correlations for all dependent measures; see Table 8 for cell means, standard deviations, and 95% CIs).

12.3.2. Implicit individuating information effect

We first tested individuating information effect Hypotheses 3a and 3b at the implicit level. Hypothesis 3a predicted substantial individuating information effects. Hypothesis 3b predicted trivial or no substantial individuating information effects. A single-sample *t*-test indicated that excellent applicants were implicitly evaluated more favorably than weak applicants, $D = 0.30$, $SD = 0.30$, $95\%\ CI_{difference}$ (0.26, 0.34), $t(211) = 14.51$, $p < .001$. An independent samples *t*-test revealed that mean *D* scores for Black targets [$D_{Black} = 0.28$, $SD = 0.30$, $95\%\ CI_{difference}$ (0.22, 0.33) $t(104) = 9.49$, $p < .001$) and White targets ($D_{White} = 0.33$, $SD = 0.31$, $95\%\ CI_{difference}$ (0.27, 0.39), $t(106) = 11.04$, $p < .001$] did not differ, $t(1, 210) = -1.29$, $p = .20$, $d = 0.16$. The finding that excellent applicants were implicitly evaluated more favorably than weak applicants regardless of target race supported the prediction of substantial individuating information effects (Hypothesis 3a).

12.3.3. Explicit person perception analyses

A 2 (race of target: Black vs. White) × 2 (individuating information: excellent high school record vs. weak high school record) mixed-model ANOVA was performed on each explicit dependent measure. Race of target was the between-subjects factor.

12.3.3.1. Stereotype effects in explicit person perception. The next set of analyses compared competing hypotheses related to stereotype bias in person perception in the presence of highly diagnostic individuating information. Stereotype bias Hypothesis 2a predicted no substantial stereotype effects. Stereotype bias Hypothesis 2b predicted stereotype effects. Nonsignificant race of applicants main effects on all explicit dependent measures, IQ estimate $F(1, 200) = 2.53$, $p = .11$, $\eta = 0.05$, GPA scale $F(1, 213) = 0.23$, $p = .63$, $\eta = 0.01$, competence scale $F(1, 213) = 1.41$, $p = .24$, $\eta = 0.02$, indicated that overall, comparable Black and White applicants were evaluated similarly. Nonsignificant individuating information X race of target interactions indicated that this was true regardless of the valence of the individuating information, IQ estimate $F(1, 200) = 3.14$, $p = .08$, $\eta = 0.06$, GPA scale $F(1, 213) = 0.32$, $p = .57$, $\eta = 0.01$, competence scale $F(1, 213) = 1.55$, $p = .22$, $\eta = 0.03$. These results supported the prediction of no substantial stereotype effects in the presence of highly diagnostic individuating information (Hypothesis 2a).

12.3.3.2. Explicit individuating information effects. The next set of analyses tested Hypotheses 3a and 3b at the explicit level. Hypothesis 3a predicted substantial individuating information effects—that excellent college applicants would be perceived more favorably than weak applicants. Hypothesis 3b predicted trivial or nonexistent individuating information effects—that there would be no differences between evaluations of excellent and weak applicants within each target race.

Large main effects for individuating information on all explicit dependent measures, IQ estimate $F(1, 200) = 519.10$, $p < .001$,

Table 8
Main effect cell means, standard deviations, and 95% confidence intervals for explicit dependent variables, Study 3.

	Race of target						Individuating information					
	Black[a]			White[b]			Strong HS record[c]			Weak HS record[d]		
	M	*SD*	95% CI	M	*SD*	95% CI	M	*SD*	95% CI	M	*SD*	95% CI
IQ Estimate	104.70[e]	9.71	103.41, 106.00	106.17[e]	13.62	104.90, 107.44	117.26[f]	8.64	116.09, 118.43	93.61[g]	8.77	92.42, 94.81
GPA Scale (0–8)	5.94[h]	0.81	5.85, 6.03	5.97[h]	0.62	5.88, 6.06	7.27[i]	0.50	7.20, 7.34	4.64[j]	0.76	4.54, 4.74
Competence (8–56)	38.02[k]	5.84	37.34, 38.70	38.59[k]	5.66	37.92, 39.27	49.20[l]	5.00	48.53, 49.87	27.42[m]	6.38	26.56, 28.27

Note. [a]$n = 216$; [b]$n = 216$. [c]$n = 107$; [d]$n = 109$. Excellent HS record = Excellent High School Record; Weak HS record = Weak High School Record. Race of target was between-subjects; individuating information was within-subjects. Cells that do not share superscripts *e* through *m* differ at $p < .001$. Higher scores indicate greater perceived competence and academic capability.

$\eta = 0.76$, GPA scale $F(1, 213) = 1122.53$, $p < .001$, $\eta = 0.87$, competence scale $F(1, 213) = 1180.47$, $p < .001$, $\eta = 0.88$, indicated that excellent applicants were evaluated far more favorably than weak applicants. The nonsignificant interactions reported above revealed that this was true regardless of target race. These results supported Hypothesis 3a, which predicted substantial individuating information effects.

12.4. Summary

Study 3 was important because it provided an implicit individuating information effect size ($D = 0.30$), which Studies 1 and 2 could not do. In addition, it demonstrated that highly diagnostic individuating information eliminated stereotype bias in explicit person perception. The results were especially noteworthy in terms of the relative power of individuating information over stereotypes in explicit person perception because in this study, race of target was a between-subjects factor. The fact that target race was between-subjects reduced the potential for social desirability bias to influence the results, providing a purer test of racial stereotype bias in explicit person perception.

Overall, as in Studies 1 and 2, the data were congruent with predictions derived from propositional models of implicit evaluations (e.g., DeHouwer, 2014a, 2014b), the APE model (Gawronski & Bodenhausen, 2006, 2011) and with the view that individuating information takes primacy in person perception (e.g., Jussim, 2012). They were incongruent with hypotheses that draw from the slow-learning perspective on implicit social cognition (e.g., Rydell & McConnell, 2006; Smith & DeCoster, 2000), and with the claim that stereotypes cause perceivers to ignore individual differences (e.g., Aronson et al., 2015).

13. General discussion

13.1. Summary of all findings

This research tested a series of hypotheses that addressed the question of, *what are the relative effects of stereotypes and individuating information in implicit and explicit person perception*? We found that the amount of stereotype bias present depended heavily upon the diagnosticity of the individuating information. For both implicit and explicit evaluations, there was a decline in stereotype bias as the diagnosticity of individuating information increased. This was demonstrated directly by the confirmation of Hypothesis 1a, which predicted decreases in implicit and explicit stereotype reliance with individuating information that was more diagnostic (Study 1). The pattern can also be seen by considering the results across all three studies as an aggregate: (a) in the absence of individuating information there was significant implicit and explicit anti-Black stereotype bias (Study 1); (b) when given somewhat diagnostic individuating information, perceivers demonstrated a modest amount of implicit and explicit stereotype bias (Study 1); and (c) in the presence of highly diagnostic individuating information, there was no substantial explicit (Studies 1, 2, & 3) or implicit (Studies 1 & 2) stereotype bias in person perception.

In addition, we found that individuating information consistently and strongly influenced explicit person perception (Studies 1, 2, & 3). Although its effect on implicit person perception was smaller ($D = 0.30$; Study 3), it was among the largest implicit effects found in this program of research. Thus, there was little or no evidence that perceivers ignore clear individual differences (see Table 9 for summary of support or lack of support for all Hypotheses).

13.2. Did patterns of implicit versus explicit evaluations converge or diverge?

Taken together, these results address our second research question—that of the convergence or divergence of reliance on individuating information and stereotypes in implicit versus explicit evaluations. We found that, consistent with predictions of the APE model (e.g., Gawronski & Bodenhausen, 2006, 2011) patterns of reliance on stereotypes and individuating information in implicit and explicit person perception generally converged; all of the findings described above characterized the data from both the IAT and the explicit measures. Thus, results indicated that individuating information took primacy in both modes of person perception, though to a larger extent in explicit than in implicit person perception. This was inconsistent with slow-learning perspectives, some of which explicitly predict the divergence of implicit and explicit evaluations (Gregg et al., 2006; Rydell & McConnell, 2006).

13.3. Implicit social cognition

13.3.1. Comparison with empirical research on updating implicit attitudinal evaluations in the presence of highly diagnostic information

Considered in the context of the empirical literature on revision of implicit impressions, our findings fall squarely into the category of evidence suggesting that implicit impressions can be updated under some conditions (e.g., Cone & Ferguson, 2015; Mann & Ferguson, 2015, 2017; Rydell et al., 2006). The condition we found is that the individuating information must be highly diagnostic. This is consistent with Cone and Ferguson's (2015) findings, which demonstrated that one instance of extreme, diagnostic individuating information led to revised implicit impressions of individuals. However, unlike Cone & Ferguson (Study 2), we did not find differences between the effects of positive versus negative information. Perhaps the valence asymmetry in changes in evaluations based on moral or immoral behavior (as their participants' evaluations were) does not apply in the same way to beliefs about competence because immoral behavior may be perceived as rarer (and thus more diagnostic) than incompetence.

13.3.2. Comparison with prior empirical research addressing reliance on individuating information and stereotypes in implicit person perception

Our results partially converge with those of Cao and Banaji (2016), who also examined reliance on stereotypes and individuating information in implicit and explicit person perception. There were two main similarities in the two sets of findings: individuating information (a) influenced both modes of person perception and (b) at least reduced stereotype bias. These are key points of similarity because they indicate that the studies converge on concluding that individuating information plays an important role in implicit person perception.

However, there were also some differences. One was that that their manipulation yielded somewhat weaker implicit individuating information effects than ours ($D = 0.16$, compared with our $D = 0.30$), a difference that is probably too small to warrant extended theoretical analysis. In addition, they found that rather than *eliminating* implicit stereotype bias (as we found in the present studies), individuating information *reduced* implicit stereotype bias (e.g., from D = 0.43 to D = 0.20 in their Study 1). We next consider several possible explanations for this divergence.

First, perhaps one or the other pattern will subsequently prove difficult to replicate. That is, it is possible that elimination of bias is the norm or conversely that reduction is the norm. However, since both programs of research consisted of multiple studies, it is more likely that the differences reflect something systematic brought about by methodological differences.

One such difference involved the type of individuating information that was manipulated. Our research manipulated information about targets' academic achievements (suggesting high or low competence), whereas Cao & Banaji's individuating information manipulation involved targets' gender-stereotyped occupations. The importance of this distinction is twofold. First, while personal achievements are clearly individuating, occupation is often classified as category information in the impression formation literature (Brewer, 1988; Fiske & Neuberg, 1990; Kunda & Thagard, 1996). Thus, Cao and Banaji (2016) arguably

Table 9
Summary of Stereotype and Individuation Hypothesis (Dis)Confirmation.

	Study 1		Study 2		Study 3	
	Implicit	Explicit	Implicit	Explicit	Implicit	Explicit
Hypothesis:						
1a. Stereotype biases should decrease as diagnosticity of individuating information increases	Confirmed; support for propositional models of implicit social cognition and the APE[a] model	Confirmed; support for perspectives emphasizing power of individuating information	Not tested	Not tested	Not tested	Not tested
versus						
1b. Stereotype bias should be equal in magnitude, regardless of diagnosticity of individuating information	Disconfirmed; lack of support for slow implicit learning and Memory Systems Model[b]	Disconfirmed; lack of support for "ignore individual differences" perspective	Not tested	Not tested	Not Tested	Not tested
2a. Stereotype biases should be trivial[c] or nonexistent in the presence of highly diagnostic individuating information	Confirmed; support for propositional models of implicit social cognition and the APE model	Confirmed; support for perspectives emphasizing power of individuating information	Confirmed; support for propositional models of implicit social cognition and the APE model	Confirmed; support for perspectives emphasizing power of individuating information	Not Tested	Confirmed; support for perspectives emphasizing power of individuating information
versus						
2b. Stereotype biases should be substantial[d] despite highly diagnostic individuating information	Disconfirmed; lack of support for slow implicit learning and Memory Systems Model	Disconfirmed; lack of support for "ignore individual differences" perspective	Disconfirmed; lack of support for slow implicit learning and Memory Systems Model	Disconfirmed; lack of support for "ignore individual differences" perspective	Not tested	Disconfirmed; lack of support for "ignore individual differences" perspective
3a. Substantial individuating information effects	Not tested	Confirmed; support for perspectives emphasizing power of individuating information	Not tested	Confirmed; support for perspectives emphasizing power of individuating information	Confirmed; support for propositional models of implicit social cognition and the APE model	Confirmed; support for perspectives emphasizing power of individuating information
versus						
3b. No substantial individuating information effects	Not tested	Weak support; limited support for "ignore individual differences" perspective	Not tested	Disconfirmed; lack of support for "ignore individual differences" perspective	Disconfirmed; lack of support for slow implicit learning and Memory Systems Model	Disconfirmed; lack of support for "ignore individual differences" perspective

[a] Gawronski & Bodenhausen (2006, 2011).
[b] Amodio (2014); Amodio and Ratner (2011).
[c] An explicit stereotype bias effect size of $r < 0.10$ is considered "trivial" in this table and in the paper, as is $D < |0.15|$, the cutoff for "meaningful" implicit preferences (Nosek et al., 2007).
[d] An explicit stereotype bias effect size of $r \geq 0.10$ is considered "substantial" in this table and in the paper, as is a $D \geq |0.15|$.

presented participants with two social categories rather than category and individuating information. When two social categories that have conflicting associations with the judgment at hand are presented (as Cao & Banaji did when they provided counterstereotypic occupation information; for instance, “female” has a negative association with “doctor,” while “doctor” has a positive association with “doctor”), both sources of information are expected to influence evaluations, though to a reduced extent (Kunda & Thagard, 1996). On the other hand, if a social category and diagnostic individuating information are presented, the individuating information generally takes primacy (e.g., Jussim, 2012; Kunda & Thagard, 1996). The nature of the differences between Cao and Banaji's (2016) findings and ours is consistent with this explanation.

Second, occupations are a social role. According to the social role theory of stereotype content (e.g., Eagly, 1987), social roles function as foundational building blocks for group stereotypes; when targets enact behaviors associated with roles that are typical for their social group, this influences perceivers' inferences regarding which traits are typical for members of that group. Indeed, Koenig & Eagly (2014, Study 4) empirically demonstrated a causal effect of occupational roles in group stereotypes. Therefore, Cao and Banaji's (2016) occupational information may not have eliminated stereotype bias because of the particularly strong—indeed causal—part that occupational and other social roles play in stereotype content.

Another methodological difference between the two programs of research was the nature of the IAT stimuli. In our studies, the IAT stimuli were names that previously had been presented as specifically belonging to the target. In contrast, Cao and Banaji (2016) used nicknames for their targets that were never presented as belonging to the actual target. Thus, our IAT stimuli had greater specificity to the actual targets. This also may help to account for the greater persistence of stereotype biases in their studies.

13.4. Explicit social cognition

The present research provides further evidence that diagnostic individuating information, when available, is the primary basis for explicit person perception (e.g., Jussim, 1990; Jussim, Eccles, & Madon, 1996; Jussim, Cain, Crawford, Harber, & Cohen, 2009; Jussim, 2012; Krueger & Rothbart, 1988; Kunda & Thagard, 1996; Monroe et al., 2017). The average individuating information and stereotype effects found in the present research (r = 0.73 and r = 0.05, respectively) were similar to those found in past meta-analyses (r = 0.71 and r = 0.25, respectively) and reviews of the literature (r = 0.70 and r = 0.10, respectively; Jussim, 2012).

13.5. Implications

13.5.1. Implications for the elimination of implicit stereotype bias

The most novel contribution of this research is its finding that highly diagnostic individuating information effectively eliminated stereotype bias at the *implicit* level in addition to the explicit level (cf. Cao & Banaji, 2016). When considered in concert with Cao & Banaji's findings, the present research represents a preliminary step toward systematically identifying the conditions under which individuating information eliminates implicit stereotype bias versus simply reducing it. From consideration of similarities and differences between our research and Cao & Banaji's, we conclude that stereotype biases are likely to be eliminated when the individuating information meets three criteria. It should (a) be unambiguously individuating information rather than category information, (b) not involve social roles that are strongly linked to the stereotypes, and (c) be highly diagnostic.

Our finding that implicit and explicit stereotype bias were effectively eliminated by highly diagnostic individuating information is especially compelling because pilot data indicated that the stereotype manipulation was far stronger than the individuating information manipulation. Because past literature indicates that greater racial prototypicality results in increased explicit stereotype bias (e.g., Blair, Judd, Sadler, & Jenkins, 2002), one might expect an even greater influence of individuating information than we found when the strength of the two manipulations is equal.

13.5.2. Theoretical implications

Although the present research was not designed specifically to test the processes underlying implicit social cognition (for instance, by comparing the effects of associative versus propositional information; see Kurdi & Banaji, 2017), it tested predictions derived from several recent models of implicit and explicit social cognition. For instance, this research is capable of testing predictions derived from propositional models of implicit evaluation (e.g., DeHouwer, 2014a, 2014b) because previous literature posits that the critical distinction between associative and propositional information is whether there is an indication that the information is valid (Gawronski & Bodenhausen, 2006, 2011). Providing information from college applications arguably suggests that the information is valid and thus according to this perspective constitutes propositional information. Our finding that this individuating information took primacy in implicit person perception was consistent with the central tenet of propositional models of implicit evaluations that propositional processes typically underlie implicit evaluations.

In addition, the sensitivity of stereotype-relevant evaluations to propositional individuating information suggests that, in contrast with claims of some models that specifically address implicit stereotypes, implicit stereotypes are not exclusively (e.g., Amodio, 2014; Amodio & Ratner, 2011) or even mostly (e.g., Smith & DeCoster, 2000) associative in nature. If they were, then they probably would not have been able to be overcome by propositional information; associative information likely would be the only means by which they could have been overpowered.

Finally, our research provides evidence inconsistent with slow-learning perspectives (e.g., Rydell & McConnell, 2006; Smith & DeCoster, 2000) on implicit social cognition. First, implicit evaluations readily changed in response to individuating information. Second, patterns of reliance on individuating information and stereotypes in implicit and explicit evaluations overwhelmingly converged. The latter finding is consistent either with a single propositional process that underlies implicit (e.g., DeHouwer, 2014a, 2014b) and explicit evaluations or with the interaction of associative and propositional processes (e.g., Gawronski & Bodenhausen, 2006, 2011) instead of the separate implicit versus explicit processes described in slow-learning perspectives.

13.5.3. Implications for the evolution in understanding of implicit biases

The present findings might help explain why most studies and reviews show that the extent to which group-based implicit bias measures predict discrimination are often quite modest (Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Oswald, Mitchell, Blanton, Jaccard, & Tetlock, 2013), and that interventions that reduce implicit bias have little or no effect on explicit preferences (Forscher et al., 2017). People often have some and, sometimes, a great deal of individuating information about others with whom they interact. Indeed, physical appearance and even brief exposures to nonverbal cues can provide considerable valid individuating information about wealth, religiosity, personality, health, and more (e.g., Ambady & Rosenthal, 1992; Jussim et al., 1987; Naumann, Vazire, Rentfrow, & Gosling, 2009). If substantial amounts of individuating information are routinely available, and if people judge others primarily on the basis of such information, limited effects of implicit stereotypes and attitudes on person perception and discrimination may be the norm rather than the exception.

13.6. Limitations and future directions

We have presented evidence from three studies indicating that

highly diagnostic individuating information takes primacy over stereotypes in implicit and explicit person perception. However, we only used one implicit measure: the IAT. One limitation of the IAT is that, although it is currently one of the most popular implicit measures, there is some controversy regarding the interpretation of its effects. Some have suggested shifting the zero point to be larger than zero due to the "right-bias" of IAT scores (e.g., Blanton et al., 2015; Blanton & Jaccard, 2006), while others have retained the traditional "true zero" interpretation (i.e., relying on statistical significance; e.g., Stout et al., 2011). The approach to interpreting IAT scores that we used ($|D| \geq 0.15$ indicates substantial implicit preferences; Nosek et al., 2007) constitutes a middle ground between these two competing perspectives; it reduced the likelihood that bias was overestimated while simultaneously not straying far from the true zero interpretation. Nonetheless, future research should address the present research questions using an alternative measure.

Moreover, although our research is relevant to the debate regarding the processes underlying explicit versus implicit social cognition, it was not designed specifically as a test of these processes. To provide a purer test of underlying processes, the research would need to directly address factors such as the distinction between propositional and associative information.

In addition, we examined our research questions only in the domain of academic individuating information and academic target evaluations. Perhaps different patterns would emerge with different types of stereotypes. For example, backlash effects emerge in the context of prescriptive rather than descriptive gender stereotypes (Rudman & Glick, 2001). Future research should investigate whether these findings generalize to other types of individuating information and stereotypes.

Finally, this research draws conclusions exclusively based on the evaluations of college students that were made in a laboratory at a liberal northeastern university. It is possible that stereotype biases are more pervasive in other populations or in evaluative situations that are more consequential. However, consistent with the findings of the present experimental studies, an audit field study of Airbnb found that, much like our Study 1's racial group condition, hosts were less likely to accept guests with names that sounded Black (Cui, Li, & Zhang, 2016). Yet, consistent with all three of our studies, that bias was eliminated when positive or negative individuating information regarding the quality of the guest was provided.

14. Conclusion

Our findings are consistent with a slow-moving shift in the understanding of how implicit beliefs function. Approximately ten years ago, it was written:

…when we see a Black (or a White) person, the attitude and stereotypes associated with that racial category automatically activate. Further, these attitudes and stereotypes influence our judgments, as well as inhibit countertypical associations (Kang & Banaji, 2006, p. 1084).

The present studies have not "falsified" these claims. However, our three studies treated the declarative conclusion presented in the second sentence ("stereotypes influence our judgments and inhibit countertypical associations") as a hypothesis. Indeed, our studies identified conditions under which such claims are confirmed: when people lacked individuating information or when it was only somewhat diagnostic. Although this finding does not show any inhibition in counter-stereotypic associations, they were conditions under which stereotypes influenced judgments.

And our studies also identified conditions under which such claims were not confirmed—when people had highly diagnostic individuating information. As such, our results are consistent with a modern and slow-moving shift away from what were once the dominant perspectives in social psychology focusing exclusively on errors and biases (e.g., Fiske & Taylor, 1991; Nisbett & Ross, 1980), and a return toward views of social perception and implicit cognition that incorporate accuracy, limitations to the power of stereotypes to bias judgments and sensitivity of implicit beliefs to valid information in the environment (e.g., Cone & Ferguson, 2015; Jussim, 2012; Kunda & Thagard, 1996; Monroe et al., 2017; Reber, 1989). Although stereotypes (whether implicit or explicit) surely sometimes bias judgment, just as surely, beliefs about groups and individuals from those groups sometimes reflect perceivers making good use of the most relevant information available to them.

Open practices

Open data. The datasets for the three studies are available at the following URL: https://osf.io/hymkc, DOI: 10.17605/OSF.IO/HYMKC. Using the available information, an independent researcher can reproduce the reported results.

Open Materials. The college applications and all measures are available at the following URL: https://osf.io/hymkc, DOI: 10.17605/OSF.IO/HYMKC. Using the available information, an independent researcher can reproduce the reported methodology.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jesp.2017.11.009.

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