Journal of Personality and Social Psychology
2001, Vol. 81, No. 2, 193–205

0022-3514/01/$5.00 DOI: 10.1037//0022-3514.81.2.193

Stereotype Distinctiveness: How Counterstereotypic Behavior Shapes the Self-Concept

William von Hippel and Chris Hawkins
Ohio State University

Jonathan W. Schooler
University of Pittsburgh

Three experiments examined the relationship between distinctiveness and self-schematicity. Experiment 1 revealed that people were more likely to be self-schematic in domains of strong performance when they felt distinct from family and peers in those domains. Experiments 2 and 3 extended this finding into the arena of stereotypes by demonstrating that people were more likely to be self-schematic in domains of strong performance when their performance was counterstereotypic rather than stereotypic. In particular, African Americans and women were more likely to be schematic for intelligence than Caucasians and men if they performed well academically, whereas Caucasians—especially men—were more likely than African Americans to be schematic for athletics if they performed well athletically. These results suggest that counterstereotypic behavior plays a uniquely powerful role in the development of the self-concept.

If the self-concept is developed in a looking glass, how do stereotypes shape the reflection? A common answer to this question, adopted from the perspectives of Mead (1934), Merton (1957), and others has been that people come to believe or behave as if the stereotypes about themselves are true. Thus, individuals will often endorse group stereotypes as self-descriptive (a behavior known as self-stereotyping; e.g., Hogg & Turner, 1987; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). This sort of confirmatory development of the self-concept is thought to be a constructive process, whereby a variety of factors in the environment and the individual conspire to create self-fulfilling prophecies and stereotype-congruent self-concepts (see Baumeister, 1998; Crocker, Major, & Steele, 1998; Steele, 1997). This does not mean that individuals do not actively distance themselves from their group stereotypes, as indeed they often do (e.g., Steele & Aronson, 1995). Rather, this research suggests that interactions with both in-group and out-group members push the individual in the general direction of internalizing group stereotypes and behaving in stereotype-congruent ways. With regard to racial stereotyping in the United States, the unfortunate consequence of these processes is the persistent academic underachievement of African Americans, who have long been stereotyped to be intellectually inferior (Jones, 1997; Katz & Braly, 1933).

There is, however, another possible answer to the question about how stereotypes influence the self-concept. Although stereotypes undoubtedly shape the opportunities and eventually the self-concepts of many individuals in confirmatory ways, it is also inevitable that there will be many other individuals who are so obviously counterstereotypic that those around them cannot help but see them as exceptions to the "rule." These counterstereotypic individuals are not only likely to be recognized as such (Jussim, Coleman, & Lerch, 1987; Kunda & Oleson, 1997; Locksley, Borgida, Brekke, & Hepburn, 1980), but are also likely to attract attention to their unexpected performance (Hilton, Klein, & von Hippel, 1991). One consequence of increased attention to counterstereotypic behavior is that it may be particularly likely to be represented in the individual's self-concept (McGuire, McGuire, & Winton, 1979). Thus, one possible outcome of this chain of events—initiated by the divergence between the cultural stereotype and the counterstereotypic individual—is that stereotypes might lead to reflected self-appraisals that are particularly likely to contain stereotype-disconfirming elements. Although the theory of a "looking-glass self" (Cooley, 1902) has been broadly understood to result in a self-concept that reflects societal stereotypes, it may for a large percentage of people lead to just the opposite, whereby the self-concept is particularly likely to reflect that which is counterstereotypic.

Stereotypes and the Development of Self-Schemas

People do not form self-schemas in all domains in which they perform well, but rather only in those domains that are important to the self (Markus, 1977). Of the many factors that contribute in causing a domain to be self-defining, one potentially important factor is attention to features that make one distinctive from others in appearance, traits, or abilities (McGuire et al., 1979; McGuire & Padawer-Singer, 1976; D. T. Miller, Turnbull, & McFarland, 1988). As McGuire and his colleagues have shown, aspects of the self that differentiate one from family and peers are more likely to receive attention, and be reflected in the spontaneous self-concept, than aspects of the self that are consistent with family and peers.

William von Hippel and Chris Hawkins, Department of Psychology, Ohio State University; Jonathan W. Schooler, Department of Psychology, University of Pittsburgh.

We thank Bob Arkin, Marilynn Brewer, and Steve Fein for helpful comments on a draft of this article.

Correspondence concerning this article should be addressed to William von Hippel, who is now at the School of Psychology, University of New South Wales, Sydney, 2052, Australia. Electronic mail may be sent to w.vonhippel@unsw.edu.au.

For example, children are more likely to describe themselves in ethnic terms when their ethnicity causes them to stand out from their classmates than when their ethnicity is consistent with their classmates (McGuire, McGuire, Child, & Fujioka, 1978). This focus on one's own distinctiveness is accompanied by increased attention from others as well, as people assume that the distinctive features of others are more diagnostic than their shared features, and hence place greater weight on distinctive qualities in making judgments (Nelson & Miller, 1995; cf. Tversky, 1977). Indeed, people also assume that their own distinctive qualities are more diagnostic of their personality than their shared qualities (D. T. Miller et al., 1988). As a consequence of these various processes, people should be more likely to develop self-schemas around traits and abilities that are distinctive from, rather than consistent with, others.

This logic suggests that good performance in a domain in which one's peers do not perform well may be more likely to attract attention, and thereby lead to self-schematicity, than good performance in a domain in which one's peers also perform well. The goal of Study 1 was to test this underlying hypothesis, that people in general are more likely to be self-schematic in domains in which their good performance is better than family and peers and thereby attracts attention. The goal of Studies 2 and 3 was to extend this logic into the arena of stereotypes by exploring the possibility that good performance in a domain in which one is not stereotyped to perform well may also be more likely to attract attention and lead to self-schematicity. That is, counterstereotypic performance should be more likely than stereotypic performance to lead to self-schematicity. Following McGuire, Miller, and their colleagues (McGuire et al., 1979; D. T. Miller et al., 1988), we term this the *stereotype distinctiveness* hypothesis, and suggest that it should describe the relationship between ability and the self-concept across a variety of domains and populations. Prior to examining the stereotype distinctiveness hypothesis, however, we first assess the underlying hypothesis that distinctiveness leads to self-schematicity in much the same manner that it leads to changes in the spontaneous self-concept.

Study 1

To assess whether distinctiveness is associated with self-schematicity, participants were asked to indicate the degree to which they were different from family, friends, and high school classmates in the domains of science, athletics, and art. Participants were also asked to provide an indication of how often they engage in scientific, athletic, and artistic behaviors. If it is distinctiveness itself, rather than the good performance that underlies distinctiveness, that leads to an increased probability of forming a self-schema in a domain, then being distinct should predict self-schematicity above and beyond the degree to which behaviors themselves predict schematicity. That is, being better than one's friends and being noticed for one's ability should predict schematicity independent of one's actual level of ability. The goal of Study 1 was to test this possibility.

One of the most reliable findings of the self-schema literature is that people who are self-schematic in a particular domain endorse domain-relevant traits more rapidly than people who are aschematic in that domain (for a review, see Markus & Sentis, 1982). For example, a person who is intelligence schematic would endorse the trait *intelligent* more rapidly than a person who is aschematic for intelligence, even if the two people have performed identically on academic or intellectual tasks. Both individuals may be equally likely to agree that they are intelligent, but by virtue of having already given the issue a lot of thought, the person who is schematic for intelligence should make the decision more quickly and easily (Bargh, 1982; Markus, 1977). Thus, although individuals who are schematic in a domain will not necessarily make self-judgments that are different from those of individuals who are aschematic in the domain, the speed with which they make these judgments is a hallmark of their schematicity. For this reason, the primary measure of self-schematicity in the current experiments was the speeded trait endorsement task of Markus (1977), in which participants respond *me* or *not me* as rapidly as possible to a series of trait words presented on a computer screen. Additionally, participants also provided self-ratings and ratings of importance on each trait, as the extremity of these self-report measures can also be used as indicators of self-schematicity (see Markus, 1977).

Method

Participants

One hundred sixty-five undergraduates at Ohio State University participated in the study in partial fulfillment of their introductory psychology course requirement.

Procedure

Participants were run in groups of up to 8 at a time. Each participant was shown to an individual cubicle equipped with a computer. The computer prompted the participant to enter his or her name and then presented the three main tasks of the study in the following order: me/not-me judgments, trait ratings, and a trait-relevant behavior questionnaire.

Me/not-me judgments. Participants were instructed by computer that they would be shown several words, one at a time, and they were to indicate whether each word described them by pushing a key labeled *me* or a key labeled *not me* on the computer keyboard. To facilitate both fast and accurate judgments, participants were instructed to keep their index fingers on the two labeled keys for the duration of the task. Participants were told that their decisions would be timed and that they should try to be both fast and accurate. They were then given two practice words—*dead* and *human*—for which an objectively correct answer was the same for everyone. If a practice word was incorrectly labeled, a message explaining the error was shown (e.g., "Sorry, that's incorrect. Because you are here doing this study, you can't be dead right now."), and the same word was repeated until a correct decision was made. This feedback about decision accuracy was given only for the two initial practice words; the purpose was to make sure that participants were using the designated keys and were oriented to making accurate (as well as fast) judgments. After the two practice words, 108 trait words were presented, of which 12 were related to each of the critical trait domains of art, science, and athletics. Six traits were associated with the positive aspect of each domain (e.g., artistic), and 6 traits were associated with the negative aspect of each domain (e.g., unartistic). The rest of the trait words were fillers, concerning traits such as religiousness, intelligence, and so forth, and again half of the words were positive and half were negative. The trait words for this task were from the appendix of von Hippel, Jonides, Hilton, and Narayan (1993) and were presented in a different random order for each participant. The decisions and decision latencies were recorded by the computer.

Trait ratings. Participants were instructed that for the second task they were to describe themselves and compare themselves with other people they know. Participants then rated themselves on each of the nine trait

dimensions from the me/not-me task on a 9-point scale ranging from 1 (e.g., *very unartistic*) to 9 (e.g., *very artistic*). Participants then rated how important the dimension was to them on a 5-point scale ranging from 1 (*not at all important*) to 5 (*very important*). For each dimension, participants were then asked, "How _____ are you compared to others in your family?" for which they chose one of seven responses from 1 (e.g., *much less artistic*) to 7 (e.g., *much more artistic*). The fourth and fifth questions used the same response options and asked participants to compare themselves with their close friends and the students in their high school class, respectively. The sixth question asked "How frequently do other people notice how _____ or un_____ you are?" For example, the seven response options for the artistic–unartistic dimension were

1 = People OFTEN notice how UNARTISTIC I am.

2 = People SOMETIMES notice how UNARTISTIC I am.

3 = People RARELY notice how UNARTISTIC I am.

4 = People NEVER notice how ARTISTIC or UNARTISTIC I am.

5 = People RARELY notice how ARTISTIC I am.

6 = People SOMETIMES notice how ARTISTIC I am.

7 = People OFTEN notice how ARTISTIC I am.

Trait-relevant behaviors. For the third task, participants were told that they would be asked about how often they engage in several activities. First, they were given 34 questions about behaviors related to the three critical dimensions. Each question began with the stem, "How often do you . . ." followed by a specific behavior. For example, in the domain of athletics people were asked, "How often do you do an athletic activity?" ". . . go running or jogging?" and ". . . use an exercise machine?" In the domain of art, people were asked, "How often do you go to an art museum or art exhibit?" ". . . practice singing or playing a musical instrument?" and ". . . draw?" In the domain of science, people were asked, "How often do you read a science magazine?" ". . . read a newspaper or magazine article on a scientific topic?" and ". . . watch a science or nature show on TV?" For each question, eleven response options were available:

N = never

1

2 = once per year

3

4 = once per 3 months

5

6 = once per month

7

8 = once per week

9

0 = every day

Participants were instructed that they could use any number on the scale or the letter *N*. They were told that the unlabeled numbers represented frequencies between the two labeled frequencies. For example, if someone goes to an art museum twice per week, *9* would be the appropriate response—more often than once per week but less often than every day.

In addition to the 34 questions described above, six additional questions about trait-relevant behaviors were given. These questions did not use the frequency scale shown above, but rather participants entered the raw number of occurrences for each behavior. For example, the questions, "How many varsity sports did you play in high school?" and "How many science courses did you take in high school?" would probably be answered with numbers between 0 and 6. After completing the behavior ratings, participants were debriefed, thanked, and dismissed.

Results

Behavioral indices in each domain were computed by standardizing the responses and averaging them within each domain. All three behavioral indices showed acceptable reliability (athletic $\alpha = .82$, scientific $\alpha = .77$, artistic $\alpha = .70$). Reaction times were computed as the average speed with which participants endorsed the positive traits within the three critical domains (athletic $\alpha = .81$, scientific $\alpha = .81$, artistic $\alpha = .55$).[1] Following guidelines for the analysis of reaction-time data laid out in Bargh and Chartrand (1999), we trimmed these reaction times to remove outliers, with values below 300 ms replaced by 300 and values above 3,000 ms replaced by 3,000 (see also Greenwald, McGhee, & Schwarz, 1998). This data trimming was adopted in all three studies, and it resulted in the alteration of less than 1.5% of all responses across each of the three experiments reported in this article. Reaction times were then subjected to a logarithmic transformation prior to analyses, although for ease of exposition the relevant results are presented in milliseconds.

To assess whether distinctiveness had an independent influence on self-schematicity, we needed to partial out the effects of behavior, as behavior could lead to both self-schematicity and distinctiveness (and hence a spurious relationship between the two). Thus, a series of regression equations were estimated, in which each self-schematicity variable (self-ratings, importance, and reaction time) in each of the domains of athletics, art, and science was regressed on the relevant behavioral index and one of the four distinctiveness variables. This resulted in a series of 36 individual regression equations (see Table 1).

As can be seen in Table 1, the results of the regression analyses were largely consistent with predictions. Distinctiveness, whether operationalized as social comparison with family, friends, or high school class or as being noticed, was an independent predictor of the two self-report measures of self-schematicity in all three domains. The only distinctiveness measures that reliably predicted reaction time were feeling better than one's high school class and feeling noticed; feeling better than one's family and close friends did not reliably predict reaction times across the three domains. Thus, these results suggest that distinctiveness, particularly distinctiveness from one's peers and feeling noticed, predicts independent variance in self-schematicity beyond that predicted by relevant behaviors.[2]

---

[1] Because self-schematicity manifests itself in increased speed to endorse schema-consistent traits, and not necessarily increased speed to reject schema-inconsistent traits (Markus, 1977), the reaction-time measure in the current research was operationalized only as endorsement speed of schema-consistent traits and not as rejection speed. Endorsement speed of schema-inconsistent traits (e.g., stupid, clumsy) was not computed, as many participants did not endorse any of these items, and thus had missing data on this variable.

[2] For those interested in the bivariate relationships, the correlations between the different measures of distinctiveness in each of the three domains ranged from $r = .43$ to $r = .77$, $ps < .001$. The correlations between self-ratings and the ratings of importance ranged from $r = .69$ to $r = .78$, $ps < .001$; the correlations between self-ratings and reaction time ranged from $r = -.26$ to $r = -.43$, $ps < .01$; and the correlations between ratings of importance and reaction time ranged from $r = -.21$ to $r = -.30$, $ps < .02$.

Table 1
Predicting Self-Schematicity With Distinctiveness and Domain-Relevant Behaviors

Self-schematicity measure	Equation Set 1		Equation Set 2		Equation Set 3		Equation Set 4	
	SC with family	Behav. index	SC with friends	Behav. index	SC with high school	Behav. index	Feeling noticed	Behav. index
Self-rating								
Athletic	.34***	.45***	.52***	.35***	.62***	.26***	.62***	.23***
Artistic	.44***	.41***	.55***	.37***	.58***	.30***	.65***	.28***
Scientific	.53***	.30***	.57***	.35***	.68***	.28***	.69***	.24***
Importance								
Athletic	.30***	.36**	.30***	.34***	.52***	.21**	.52***	.18*
Artistic	.33***	.42***	.41***	.39***	.59***	.26***	.52***	.30***
Scientific	.51***	.28***	.47***	.35***	.54***	.30***	.54***	.27***
Reaction time								
Athletic	−.10	−.23**	−.22*	−.17†	−.20*	−.16†	−.32***	−.09
Artistic	−.08	−.14	−.10	−.13	−.22*	−.06	−.26**	−.04
Scientific	−.16†	−.02	−.10	−.05	−.28**	−.01	−.17†	−.01

Note. Each pair of columns represents the predictor variables in a set of regression equations. The left column in each pair represents one of the distinctiveness measures, and the right column represents the behavioral index. Rows represent dependent variables. Coefficients are standardized beta weights. SC = social comparison; Behav. = behavioral.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

The results of Study 1 provide support for the underlying hypothesis that feeling distinctive in a particular domain is associated with self-schematicity. Participants who reported being better than their family and peers and being noticed for their abilities rated themselves more extremely on each trait, rated each trait as more important, and endorsed positive trait terms more rapidly than did participants who did not feel distinctive. This effect emerged independent of whether participants actually had any significant ability in the domain in question. Indeed, the relative importance of distinctiveness versus actual ability in determining self-schematicity can easily be seen in the following typical example from this experiment.

If it is distinctiveness per se that determines self-schematicity, then people who have relatively poor abilities but are better than family and peers should be more likely to be self-schematic than people who have relatively strong abilities but are no better than family and peers. Thus, an excellent high school athlete who is surrounded by other great athletes is less likely to be self-schematic for athletics than a mediocre athlete who is surrounded by even poorer athletes (cf. Festinger, 1954). To provide a demonstration of this possibility, we divided participants into those who played one or more varsity sports in high school (68%) and those who did not (32%) and also divided them by a median split on an index composed of the four athletic distinctiveness variables. Consistent with the centrality of distinctiveness, people who did not play a varsity sport but were above the median in distinctiveness claimed to be better athletes (6.92 vs. 6.18), rated athletics as more important (3.92 vs. 3.21), and were quicker to endorse athletic traits (915 ms vs. 1,014 ms) than people who played one or more varsity sports but were below the median in distinctiveness. These differences are only intended to be illustrative, as they were reliable only for the importance variable, $F(1, 38) = 5.32$, $p < .03$ (probably because of the small sample [$n = 12$] of individuals who played varsity sports but were below the median in distinctiveness). Nevertheless, this pattern of results provides additional evidence that distinctiveness is a particularly important variable in determining the centrality of a domain to the self-concept.

The goal of the next two studies was to extend these findings by examining stereotype distinctiveness. According to the stereotype distinctiveness hypothesis, people are more likely to develop self-schemas in domains in which their strong performance is counter-stereotypic rather than stereotypic, because counterstereotypicality attracts attention (Hilton et al., 1991). With regard to intellectual achievement, this hypothesis suggests that academically successful African Americans should be more likely than academically successful Caucasians to develop intelligence self-schemas, as academic success is counterstereotypic for African Americans but not for Caucasians (e.g., Devine & Elliot, 1995). In contrast, in the case of athletic achievement, the stereotype distinctiveness hypothesis suggests the opposite pattern, as athletic success is stereotypic for African Americans but not for Caucasians. Thus, athletically successful Caucasians should be more likely than athletically successful African Americans to develop athletic self-schemas.

The results of Study 1 indicated that distinctiveness leads to self-schematicity as measured by self-ratings, self-report ratings of domain importance, and reaction time. In contrast to this general case, however, it is likely that stereotype distinctiveness will only reliably lead to self-schematicity as measured by reaction time. As Steele and his colleagues (Spencer, Steele, & Quinn, 1999; Steele, 1997; Steele & Aronson, 1995) have shown, when stereotypes are as ubiquitous and demeaning as they are with African Americans, even the vanguard of the group can be threatened by the stereotype. Such individuals do not necessarily believe the stereotypes, but their recognition that others endorse them can induce anxiety and self-presentational concerns (see Steele, 1997). Whenever stereotypes are accessible or relevant, these self-presentational concerns have the potential to influence self-report in a manner

that is uncorrelated with ability or performance. Because of the chronic nature of stereotype threat, the mere mention of a domain in which African Americans are devalued—such as intellectual performance—can cause activation of the stereotype (Steele & Aronson, 1995). Thus, self-presentational concerns are likely to be chronically accessible for African Americans in the domain of academics.

How are these self-presentational concerns likely to manifest themselves on self-report measures of ability? Probably there is no single answer to this question, as there are a variety of strategies that a person might adopt to deal with stereotype activation and threat. One solution to this problem would be to overcompensate in the stereotyped domain and bolster claims to competence to deny the accuracy of the stereotype (see C. T. Miller, Rothblum, Felicio, & Brand, 1995). According to this strategy, African Americans should tend to self-report greater intelligence than Caucasians. Another possibility would be to tailor one's self-report to the presumed level of prejudice of the recipient, thereby attempting to counteract the stereotype by making more exaggerated claims only to recipients who are perceived as prejudiced. According to this strategy, African Americans should selectively bolster their self-report depending on the person or situation. Such a selective bolstering process need not be effortful or even conscious, as personal or situational cues could automatically trigger a bolstering goal among African Americans who are chronically confronted by those who doubt their intellectual ability (cf. Chartrand & Bargh, 1996).

If such strategies are adopted, or indeed if any other strategies are adopted that link self-report to factors other than actual performance or ability, the inevitable result will be a dissociation between self-reported ability and actual performance. As a consequence, even if stereotype distinctiveness leads reliably to self-schematicity, the evidence for this relationship might not emerge with self-report measures of schematicity. In contrast, reaction-time measures are relatively difficult to control, and thus are less sensitive to self-presentational concerns (e.g., Fazio, Jackson, Dunton, & Williams, 1995; Greenwald et al., 1998). For this reason, in the remaining studies the reaction time measure of self-schematicity was the primary dependent variable.

To summarize the stereotype distinctiveness hypothesis and the predictions of Study 2, if counterstereotypic performance is particularly likely to lead to self-schematicity, and if self-schematicity can be indexed by reaction time to endorse schema-consistent traits, then a stronger relationship should emerge between performance and reaction time when performance is counterstereotypic rather than stereotypic. To test this prediction, in Experiment 2 we examined the relationship between performance and reaction time in the domains of academics and athletics among African Americans and Caucasians. Because African Americans are stereotyped to perform worse at academics than Caucasians, the stereotype distinctiveness hypothesis suggests that academic performance is more likely to predict the speed with which individuals endorse intelligence traits when they are African American than when they are Caucasian. In contrast, because Caucasians are stereotyped to perform worse at athletics than African Americans, the stereotype distinctiveness hypothesis suggests that athletic performance is more likely to predict the speed with which individuals endorse athletic traits when they are Caucasian than when they are African American.

Study 2

Method

Participants

Forty-seven African Americans and 156 Caucasians participated in partial fulfillment of introductory psychology course requirements. Participants were recruited by telephone from a list that included approximately half of the students enrolled in introductory psychology during the autumn quarter. This list was composed of students who had completed a prescreening questionnaire that requested information concerning their race, as well as a large number of unrelated scales for other experiments. All African American students were recruited for participation, and a larger sample of Caucasian students was selected from the same group and run through the experiment during the same time period as the African American participants.

Procedure

As in Study 1, the speeded me/not-me task was the first measure collected in this experiment (although in this study the reaction time measures were collected on a computer response box).[3] The only substantive difference in this experiment was that the critical trait dimensions were those of intelligence and athletics. Eight other trait dimensions were included as fillers. After completing the me/not-me task, participants were asked to rate themselves on the 10 trait dimensions. The traits were presented as anchors on 9-point scales, with one trait on one end of the scale and its opposite on the other end of the scale. The participants' task was to type in the number that represented their self-evaluation on each scale. The trait pairs were presented in random order.

To measure academic and athletic performance, we then asked participants to report their high school grade point average (GPA) and how many varsity sports they played in high school. They were then debriefed, thanked, and dismissed.

Results

As in Study 1, participants' reaction times to endorse positive traits within the domains of academics and athletics were trimmed to 300 ms and 3,000 ms, averaged within each domain, and log transformed (academic $\alpha = .89$, athletic $\alpha = .89$). Means, standard deviations, and ranges for the performance measures are presented in Table 2. According to the stereotype distinctiveness hypothesis, the correlation between academic performance and reaction time should be greater (i.e., more strongly negative) among African Americans, whereas the correlation between athletic performance and reaction time should be greater among Caucasians. As can be seen in Table 3, the results were consistent with these predictions.[4]

[3] The response box was connected to a hardware clock attached directly to the computer motherboard. The resulting reaction time measures were accurate to ± 1 ms, although the screen refresh rate was not controlled, and thus presentation parameters introduced an average of ± 8 ms of error.

[4] Many of the analyses reported in Studies 2 and 3 compare samples of highly discrepant size. For example, all of the analyses contain more Caucasians than African Americans, and many analyses contain more schematics than aschematics, or vice versa. To ensure that the current results were not biased by such discrepancies in sample size, we also conducted these analyses with a randomly chosen subset (using the SPSS sample procedure; Gray & Kinnear, 1998) of whichever sample was larger to equate sample size within the analyses. The results of these alternative analyses were unchanged across all the findings reported in this article, and thus the analyses presented here always include the entire sample.

To assess whether these correlations differed significantly from one another, Fisher's z transformations were used to compare the individual rs. These comparisons revealed that although the correlations differed in the predicted direction, these differences were only marginally significant, academic $z = 1.65$, $p < .10$, athletic $z = -1.76$, $p < .08$.

These individual comparisons between rs represent a simple-effects approach to assessing whether the relationships between performance and reaction time were stronger among African Americans or Caucasians in the domains of academics and athletics. It is also worth assessing whether the overall pattern of correlations was as predicted. To examine the interaction from which these simple effects are derived, the differences between the rs (represented as zs above) can be compared with one another. That is, the prediction that one relationship will be stronger for Caucasians and one will be stronger for African Americans can be translated into the prediction that the two differences between correlations will themselves be different from one another (one being positive and one being negative). Following the procedures outlined in Rosenthal (1991), this comparison revealed that the predicted interaction across race and domain was reliable, $z = 2.41$, $p < .02$. The significance of this interaction term indicates that the overall pattern of correlations is reliable, and thus supports the claim that the relationship between performance and reaction time was stronger for Caucasians in the domain of athletics and stronger for African Americans in the domain of academics.[5]

Although we proposed that the relationship between reaction time and GPA among African Americans is caused by counterstereotypic performance leading to self-schematicity, it is also possible that the relationship is driven not by the high performers but rather by the low performers. That is, the relationship may not be driven by schematicity and the corresponding rapid responses of those with high GPAs, but rather by self-doubt and the corresponding slow responses of those with low GPAs. If this alternative explanation is accurate, then we would expect that low-performing African Americans would have particularly slow reaction times to endorse intelligence traits. On the other hand, if our hypothesis concerning schematicity is correct, then we would expect that high-performing African Americans would have particularly fast reaction times to endorse intelligence traits.

To test these competing explanations, we subjected participants' reaction times to endorse intelligence traits to separate analyses by race among high and low performers, with performance dichotomized through a median split (median high school GPA = 3.1 for African Americans and 3.3 for Caucasians). Among those whose GPA was above the median for their racial group, the predicted difference in reaction time emerged, with African Americans endorsing intelligence traits faster (796 ms) than Caucasians did (952 ms), $F(1, 86) = 5.63$, $p < .02$. Among those whose GPA was at or below the median, no reliable differences emerged in reaction time to endorse intelligence traits, (986 ms for African Americans, 1,010 ms for Caucasians), $F(1, 105) = .37$, $p > .50$. Thus, these results suggest that it is self-schematicity, and not self-doubt, that drives the stronger correlation between reaction time and GPA among African American than Caucasian participants.

Table 2
Means, Standard Deviations, and Ranges of the Performance Measures

Race	Grade point average	No. of varsity sports
African American		
M	3.16	1.04
SD	0.48	1.00
Range	1.5–4.2	0–3
Caucasian		
M	3.32	1.24
SD	0.55	1.05
Range	2.0–4.5	0–4

Table 3
Correlation Between Performance and Reaction Time

Race	Academics	Athletics
African American	−.43**	.00
Caucasian	−.18*	−.29***

*$p < .05$. **$p < .01$. ***$p < .001$.

Discussion

The results of Study 2 are consistent with the stereotype distinctiveness hypothesis. As predicted, performance was more strongly related to reaction time when performance was counterstereotypic rather than stereotypic. In the case of academics, for which African Americans are stereotyped to perform worse than Caucasians, high school GPA predicted reaction time to endorse intelligence traits for African Americans to a greater degree than for Caucasians. In the case of athletics, for which Caucasians are stereotyped to perform worse than African Americans, the number of varsity sports played in high school predicted reaction time to endorse athletic traits among Caucasians but not African Americans. These results suggest that people are more likely to develop self-schemas when their strong performance is counterstereotypic rather than stereotypic.

Although the findings of Study 2 are consistent with the stereotype distinctiveness hypothesis, there are several issues that this experiment did not address. First and foremost, because the findings are correlational in nature, there are inevitably alternative explanations that cannot be eliminated. Consequently, the first goal of Study 3 was to increase the confidence with which the stereotype distinctiveness hypothesis is held by replicating Study 2 with another group that is stereotyped not to perform well academically, but otherwise has little in common with African Americans. Specifically, in Study 3 gender and race were both assessed, and differences in academic performance and self-concept were also examined between men and women. Because female adoles-

[5] For those interested in the findings with self-report, self-reported intelligence was not correlated with performance among African Americans, $r = .09$, *ns*, but was correlated with performance among Caucasians, $r = .21$, $p < .05$. Self-reported athleticism was correlated with performance for both African Americans, $r = .51$, $p < .001$, and Caucasians, $r = .43$, $p < .001$ (more complete analyses of the self-report data are available on request).

cents are perceived to be less intelligent and less academically talented than male adolescents (often by both self and other; Eccles, Barber, Jozefowicz, Malenchuck, & Vida, 1999),[6] strong academic performance should be more likely to lead to self-schematicity among women than among men, and thus should be more highly correlated with reaction time to endorse intelligence traits among women than among men.

Second, up to this point the prediction that self-schemas emerge from counterstereotypic performance has been treated as a direct derivation of the McGuire et al. (1978, 1979) findings concerning the spontaneous self-concept. There is an important difference between the spontaneous self-concept and self-schemas, however, in that the spontaneous self-concept represents any aspects of the self that are momentarily available to awareness (Markus & Wurf, 1987), whereas self-schemas represent important issues regarding the self that tend to be chronically available to awareness (Markus & Sentis, 1982). For this reason, any feature of the individual that causes him or her to be noticeably distinct should emerge on a measure of the spontaneous self-concept, whereas not all distinctive features are likely to lead to self-schemas. Rather, only those features that are sufficiently psychologically meaningful to influence how others treat a person are likely to receive enough thought and attention over time to lead to self-schemas (cf. Higgins, 1996). Thus, self-schemas can be predicted to emerge for abilities that are chronically important to most people, such as intelligence, but are less likely to emerge for features that are not typically important, such as eye color (despite the fact that eye color did emerge in McGuire and Padawer-Singer's, 1976, spontaneous self-concept research).

This logic suggests that the findings that emerged in Study 2 concerning athletics might be moderated by gender. Although we did not collect information concerning gender in that study, it seems likely that the results concerning athletics might not generalize to both genders. Because athletics are regarded as more important by male adolescents than by female adolescents (Bybee, Glick, & Zigler, 1990; Williams & White, 1983), and because outstanding athletic performance has a larger influence on how male adolescents are treated (Holland & Andre, 1994; Williams & White, 1983; see also Kennedy, 1995), counterstereotypic performance in athletics should be more likely to lead to self-schematicity among men than among women. Thus, it seems that the relationship that emerged among Caucasians in Study 2 between athletic performance and schematicity might have been driven primarily by men, as women might not develop self-schemas in the domain of athletics even when their performance is counterstereotypic. Such a finding would delineate an important difference in how distinctiveness influences the spontaneous self-concept versus self-schemas. To test this possibility, participants were also asked how important athletics are to them, and the relationship between athletic performance and self-schematicity was assessed separately for men and women.

In contrast to the case of athletics, academics are the major life task of both male and female children and adolescents. Independent of whether students have an intrinsic interest in academics, they regularly encounter external markers of performance and a variety of rewards and punishments associated with achieving or failing to achieve. Additionally, because academic success is the most reliable route to economic success in this country, academics are often seen as important even by those who are not intrinsically interested in their schoolwork. Consequently, it is likely to be the case that some degree of attention is drawn to academic success whether it is stereotypic or not, and thus there is a relatively high baseline likelihood that academic success will lead to self-schematicity among all individuals. According to this reasoning, the domain of academics provides a stringent test of the stereotype distinctiveness hypothesis. Perhaps this is the reason why the correlation between academic performance and reaction time was reliable for both Caucasians and African Americans in Study 2. To confirm that all participants regarded academic pursuits as important, we asked participants in Study 3 how important academics are to them.

Third, it is unclear from the current research whether the individual's own sense of how much he or she is stereotyped, and how threatened he or she is by this stereotyping, are critical to the development of self-schemas in domains of counterstereotypic performance. On one hand, it may be the case that only when individuals feel stereotyped or stereotype threat in a domain are they likely to pay attention to their counterstereotypic qualities and thereby develop self-schemas around them. On the other hand, it is possible that an individual's own perceptions of stereotyping are less relevant than the perceptions of others, as it may be the case that attention from others toward counterstereotypic traits is sufficient to induce self-schematicity, even when the target is relatively oblivious to the cause of this extra attention. To provide an initial test of these competing explanations, in Study 3 we used measures of perceived stereotyping and stereotype threat. If it is attention from the self that initiates self-schematicity in domains of counterstereotypic performance, then stereotype threat or perceived stereotyping should moderate the performance–self-schematicity relationship. If it is attention from others that initiates self-schematicity in domains of counterstereotypic performance, then stereotype threat or perceived stereotyping may be irrelevant to the performance–self-schematicity relationship.

Finally, although Study 2 demonstrated that intellectual performance predicts reaction time among African Americans better than among Caucasians, this finding emerged only with a self-report measure of performance. It is possible that these results were caused by the fact that high school GPA was provided through self-report and not actual registrar records. According to this possibility, the findings of Study 2 might not be evidence that counterstereotypic performance leads to schematicity, but rather that stereotypes lead to some sort of selective self-reporting of performance that happens to be related to self-schemas. To rule out

[6] To confirm that our sample endorsed this stereotype, we conducted a pretest with 131 male and 128 female introductory psychology students, who were asked, "Do you think women are stereotyped to be less intelligent than men, more intelligent than men, or about the same as men?" Responses were given on a scale that ranged from −4 (*women are stereotyped as less intelligent than men*) to 0 (*women and men are stereotyped to be equally intelligent*) to 4 (*women are stereotyped as more intelligent than men*). Analyses revealed that men and women did not differ from each other in their beliefs about the stereotypes concerning women's intelligence (Ms = −.66 and −.84, respectively), $F(1, 257) = 1.20$, $p > .25$, and both felt that women are stereotyped as less intelligent than men, $ps < .01$.

this alternative explanation, in Study 3 we used actual performance measures from the university registrar's database.[7]

Study 3

Method

Participants

One hundred thirty-one African Americans (44 male and 87 female) and 204 Caucasians (124 male and 80 female) participated in partial fulfillment of their course requirements for introductory psychology. In a manner similar to Study 2, participants were recruited by telephone from a list of nearly all of the students enrolled in introductory psychology during the autumn quarter.

Procedure

The speeded trait-endorsement task and self-rating task were conducted as in Study 2. Participants were then asked to report their high school GPA and how many varsity sports they played in high school and were asked to sign a form releasing their high school records for the purpose of gathering additional data on their performance.[8]

After completing these measures, participants answered three questions from Steele and Aronson (1995) to assess stereotype threat. These items asked participants to respond to the following statements on 7-point scales anchored by 1 (*strongly disagree*) and 7 (*strongly agree*): "Some people feel that I have less academic ability because of my race." "Some of my teachers expect me not to do well in class because of my race." and "My race does not affect people's perceptions of my academic ability." (reverse scored). Three more items were then adapted from this scale to measure what might be called *athletic stereotype threat*, or the degree to which participants feel threatened by the stereotype that they are not good at athletics. These items asked participants to respond to the following statements on 7-point scales anchored by 1 (*strongly disagree*) and 7 (*strongly agree*): "Some people feel that I have less athletic ability because of my race." "Some people expect me not to do well in sports because of my race." and "My race does not affect people's perceptions of my athletic ability." (reverse scored).

Among a series of filler traits, participants then completed a measure that assessed the degree to which they believe people stereotyped their racial group as unintelligent and unathletic. The measure concerning intelligence was composed of two questions, the first of which asked, "How unintelligent is your racial/ethnic group *stereotyped* to be?" and the second of which asked, "How intelligent is your racial/ethnic group *stereotyped* to be?" (reverse scored). The measure concerning athletics was composed of the two questions, "How unathletic is your racial/ethnic group *stereotyped* to be?" and, "How athletic is your racial/ethnic group *stereotyped* to be?" (reverse scored). These questions were answered on 7-point scales ranging from 1 (*not at all*) to 7 (*very*). Participants were then debriefed, thanked, and dismissed.

Results

Self-Schematicity and Performance

As in Study 2, the primary goal of the analyses was to determine whether academic and athletic performance were differentially predictive of the reaction-time measure of schematicity for African Americans and Caucasians and, in this study, for men and women as well. To examine performance measures that did not rely on self-report, we accessed standardized test scores from the university registrar's database. Because some students took the American College Test and some the Scholastic Aptitude Test, z scores were computed within each test type to provide each participant with verbal and quantitative z scores. We then computed correlation matrices separately for African Americans and Caucasians, and men and women, between GPA, standardized math test scores, standardized verbal test scores, and reaction time to endorse intelligence traits ($\alpha = .80$). Additionally, correlations were also examined between number of varsity sports played in high school and reaction time to endorse athletic traits ($\alpha = .78$) among African American and Caucasian men and women. Means, standard deviations, and ranges for the performance variables are presented in Table 4.

As can be seen in Table 5, the differences in the magnitudes of the correlations were consistent with the stereotype distinctiveness hypothesis. African Americans and women showed larger relationships than Caucasians and men between academic performance measures and reaction time. In contrast to this pattern, Caucasian men were the only group to show a reliable relationship between athletic performance and reaction time, $r = -.36$, $p < .001$ (African American men, $r = -.14$, $p > .40$; African American women, $r = -.14$, $p > .20$; Caucasian women, $r = -.03$, $p > .80$). Although the differences between the academic correlations did not reach traditional levels of significance for race or gender ($zs \leq 1.55$, $ps > .10$), the predicted difference between the athletic correlations of Caucasian men and the other three groups was reliable, $z = -2.44$, $p < .02$. As in Study 2, the predicted difference between the average academic z scores and the athletic z score (i.e., the interaction between race or gender and domain) was reliable for both race, $z = 2.43$, $p < .02$, and gender, $z = 2.37$, $p < .02$. Additionally, in support of the accuracy of the self-report measure of high school GPA, standardized verbal and math scores were correlated with self-reported high school GPA among African Americans and Caucasians and men and women, $rs = .32$ to $.51$, $ps < .001$.

As in Study 2, reaction time was then analyzed separately by race and gender for high- and low-performing individuals. Consistent with predictions, these analyses revealed reaction time differences between high-performing African Americans and Caucasians (811 vs. 870 ms, respectively), $F(1, 148) = 4.58$, $p < .04$, and between high-performing women and men (816 vs. 888 ms, respectively), $F(1, 148) = 5.20$, $p < .03$. Also consistent with predictions, these analyses failed to reveal reliable differences in reaction time between low-performing African Americans and Caucasians (991 vs. 1,005 ms), $F(1, 145) = .18$, $p > .65$, or between low-performing women and men (990 vs. 1,008 ms), $F(1, 145) = .65$, $p > .40$. Thus, these

[7] Unfortunately, Ohio State University does not record high school GPA in its registrar database, so it was not possible to corroborate the current self-report GPA findings with actual GPA data. For this reason, standardized test scores were chosen as the next best alternative. Although it seemed unlikely that the relationship between standardized test performance and self-schematicity would be as strong as that between GPA and self-schematicity, the sample size available for Study 3 was sufficiently large to enable a test of the stereotype distinctiveness hypothesis with standardized test scores even under the assumption of a smaller effect size.

[8] Only 3 of the 335 participants chose not to sign the release form.

Table 4
Means, Standard Deviations, and Ranges of the Performance Measures

Participant characteristic	Grade point average	Math z	Verbal z	No. of varsity sports
African American				
M	3.22	−0.65	−0.50	0.98
SD	0.52	0.78	1.01	1.02
Range	1.8–4.3	−2.7–1.5	−2.9–1.8	0–3
Caucasian				
M	3.45	0.40	0.32	1.35
SD	0.44	0.89	0.83	1.22
Range	1.8–4.5	−1.6–2.5	−1.8–2.2	0–5
Female				
M	3.43	−0.30	−0.03	1.01
SD	0.47	0.88	1.04	1.08
Range	2.2–4.5	−2.7–2.1	−2.9–2.2	0–5
Male				
M	3.29	0.31	0.05	1.40
SD	0.49	1.01	0.93	1.20
Range	1.8–4.1	−2.3–2.5	−2.5–2.2	0–5

results implicate self-schematicity rather than self-doubt for both African Americans and women.[9]

Perceived Importance of Academics and Athletics

Recall that it was hypothesized that all groups were likely to perceive academics as important, because academics are the major life task of most children and adolescents (and certainly of almost all college students, who made up our sample). Athletics, in contrast, were expected to be more important to men than to women. To test these predictions, we analyzed perceived importance of these two domains by race and gender. The 2 (race) × 2 (gender) × 2 (domain) analysis of variance (ANOVA) revealed the predicted main effect for domain, such that academics were regarded as substantially more important (6.00) than athletics (4.08), $F(1, 329) = 316.03$, $p < .001$. Additionally, no three-way interaction emerged, $F(1, 329) = 2.03$, $p > .15$, but the two-way interactions between race and gender, race and domain, and gender and domain were all significant, $F(1, 329) = 5.84$, $p < .02$, $F(1, 329) = 16.20$, $p < .001$, $F(1, 329) = 29.66$, $p < .001$, respectively. As can be seen in Table 6, these two-way interactions were driven primarily by differences in the ratings of athletic importance, as there was strong consensus that academics are highly important among all groups of participants (indeed, with the academic importance variable, the only significant effect was a main effect for gender, $F[1, 329] = 7.09$, $p < .01$). Of particular relevance for interpreting the finding that the performance–schematicity relationship in athletics emerged only among Caucasian men is the fact that women rated athletics as less important than men did, $F(1, 329) = 22.59$, $p < .001$.

Table 5
Correlation Between Performance and Reaction Time

Participant characteristic	High school grade point average	Verbal z score	Math z score
African American	−.41***	−.14	−.23*
Caucasian	−.26***	−.12	−.06
Female	−.32***	−.13	−.18*
Male	−.24**	−.04	−.04

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6
Ratings of the Importance of Academics and Athletics

	Academics		Athletics	
Gender	Caucasian	African American	Caucasian	African American
Female				
M	6.14_a	6.20_a	4.16_a	3.01_a
SD	0.88	0.97	1.82	1.68
Male				
M	5.74_b	6.07_a	4.66_b	4.41_b
SD	0.97	1.19	1.63	1.87

Note. Different subscripts in a column indicate significant gender differences for the variable.

Perceived Stereotyping and Stereotype Threat

To ascertain whether African Americans perceived greater intelligence-related stereotyping directed toward their racial group, we averaged the two items assessing perceived stereotyping into a single index, $r = .63$, $p < .001$. Consistent with previous research, an ANOVA on this index revealed that African Americans thought their group was stereotyped as unintelligent (4.64) more than Caucasians thought their group was (2.56), $F(1, 329) = 273.99$, $p < .001$. No main effect emerged for gender, $F < 1$, and no interaction emerged between race and gender, $F < 1$.

The results with the stereotype-threat measure mirrored those of the perceived stereotyping measure. When the three items assessing academic stereotype threat were averaged into a single index ($\alpha = .72$), an ANOVA revealed that African Americans experienced more stereotype threat (3.34) than Caucasians did (1.48), $F(1, 330) = 123.58$, $p < .001$. No main effect emerged for gender, $F(1, 330) = 1.31$, $p > .25$, and no interaction emerged between race and gender, $F(1, 330) = 1.33$, $p > .20$. Thus, it seems that African Americans perceive greater intelligence-related stereotyping directed toward themselves as a group than Caucasians do, and are also more threatened by this stereotyping.

In contrast to this pattern, when the two items assessing perceived athletic stereotyping were averaged into a single index, $r = .85$, $p < .001$, an ANOVA revealed that Caucasians thought their racial group was stereotyped as unathletic (3.83) more than African Americans thought their group was (1.33), $F(1, 329) = 424.38$, $p < .001$. A main effect for gender also emerged, with men perceiving greater stereotyping toward their racial group (3.29) than women did (2.40), $F(1, 329) = 5.11$, $p < .03$. An interaction also emerged between gender and race, $F(1, 329) = 5.95$, $p < .02$,

[9] Again, for those interested in the self-report findings, none of the correlations between academic performance and self-report were significant among African Americans, $rs \leq .14$, $ps > .10$, whereas all of these correlations were significant for Caucasians, $rs \geq .30$, $ps < .001$. Additionally, athletic performance was correlated with self-report among African Americans and Caucasians and men and women, $rs \geq .46$, $ps < .001$.

such that Caucasian men felt that their group was stereotyped as unathletic (4.02) more than Caucasian women did (3.54), $F(1, 200) = 8.00$, $p < .01$, whereas no differences emerged in perceived athletic stereotyping among African American men (1.26) and women (1.36), $F < 1$. These analyses provide additional support for the finding that only Caucasian men show a performance–schematicity relationship in athletics, as not only did Caucasian men rate athletics as more important than any other group did, but they also perceived themselves to be stereotyped the most in this domain.

Although these analyses revealed that Caucasians—particularly Caucasian men—felt stereotyped as unathletic, analyses of the athletic stereotype-threat items indicated that they were not particularly threatened by this stereotype. Indeed, an ANOVA on the index of the athletic stereotype threat items ($\alpha = .63$) revealed a marginal main effect for race, $F(1, 330) = 3.29$, $p < .08$, such that African Americans reported slightly more stereotype threat (2.38) than Caucasians did (2.27). A main effect also emerged for gender, such that men reported greater racial stereotype threat (2.60) than women did (2.03), $F(1, 329) = 18.84$, $p < .001$. No interaction emerged between race and gender, $F(1, 330) = 1.21$, $p > .25$. Thus, it seems that Caucasians perceive greater athletic stereotyping directed toward themselves as a group than African Americans do, but do not feel particularly threatened by this stereotyping. This result is consistent with the finding that self-reported ability predicts athletic performance among both Caucasians and African Americans.

Stereotype Threat, Perceived Stereotyping, and the Schematicity–Performance Relationship

We performed moderated regression analyses to assess whether the relationships between academic and athletic performance and reaction time differed at high and low levels of stereotype threat and perceived stereotyping. These analyses failed to reveal any moderating effects for stereotype threat or perceived stereotyping on the relationships between academic or athletic performance and schematicity, $ts \leq 1$.

Discussion

The findings from Study 3 extend those of Study 2. Although the race and gender differences in the academic correlations were not reliable, GPA and standardized math scores were more highly correlated with reaction time among African Americans and women than among Caucasians and men. Standardized verbal scores, in contrast, failed to relate reliably to reaction time for any of the different subsets of participant. In support of the correlational differences, analyses also revealed that high academic performing African Americans and women were faster to endorse intelligence trait terms than high-performing Caucasians and men, whereas no race or gender differences emerged among low-performing individuals. Additionally, self-reported GPA correlated reliably with standardized test performance from the registrar database for all groups of participants, suggesting that the findings with the self-report measure of GPA in Studies 2 and 3 reflect an accurate indicator of academic performance.

The results of Study 3 also revealed that when performance was both counterstereotypic and important it was more likely to predict schematicity than when it was either stereotypic or unimportant. In particular, athletic performance did not predict reaction time among women or African Americans, but was a reliable predictor of reaction time among Caucasian men. Because athletics are more important to men than to women, and because negative athletic stereotyping was experienced most extremely by Caucasian men, these findings are consistent with the prediction that counterstereotypic performance leads reliably to self-schematicity only when the domain is sufficiently important to have an impact on how others treat the individual. Thus, in contrast to the case with the spontaneous self-concept (see McGuire et al., 1978, 1979), the development of self-schematicity seems to be sensitive to the importance of the domain in which one is distinctive.

Finally, the results of Study 3 suggest that individual perceptions of stereotype threat and perceived stereotyping do not moderate the performance–schematicity relationship. This lack of moderation suggests that the degree to which individuals feel stereotyped and threatened by the stereotype is not critical in determining whether self-schematicity emerges in domains of counterstereotypic performance. Rather, it may be sufficient for other individuals to be aware of the stereotype, regard the individual as an exception to it, and thereby pay more attention to counterstereotypic traits as a consequence. It should be kept in mind, however, that a single failure to find significant moderation is not a strong basis from which to draw conclusions, and thus it remains unclear whether it is attention from the self versus attention from others that leads to self-schematicity when people perform well counterstereotypically. In all likelihood, increased attention from either the self or other is likely to lead to self-schematicity. As McGuire et al. (1978) suggested, "distinctiveness probably affects the self-concept both directly and indirectly: directly, by our noticing our own distinctive features; indirectly, by others perceiving and responding to us in terms of our peculiarities and our adopting others' views of ourselves" (p. 512).

Meta-Analysis of Studies 2 and 3

The results of Studies 2 and 3 were largely consistent with the stereotype distinctiveness hypothesis, in that the relationship between performance and schematicity was larger when performance was counterstereotypic rather than stereotypic. With regard to academics, however, although the race and gender differences in reaction times of high performers were reliable in both studies, the race and gender differences in the reaction-time–performance correlations were not reliable in either of the studies. Thus, to assess whether the differences in the correlations emerged reliably for both academics and athletics across the two studies, we conducted a meta-analysis.[10]

Following the procedures outlined in Rosenthal (1991), the first step was to assess whether the relationships between performance

[10] To keep the academic analyses consistent across the two studies, we coded participants in Study 3 as African American or Caucasian to test the race hypothesis, and then separately as male or female to test the gender hypothesis. This procedure resulted in double counting the participants in Study 3 (once for race and once for gender), but had the advantage that the groupings were consistent across studies. It is important to note that when participants in Study 3 were coded by both race and gender, the results were functionally identical to those reported here.

and reaction time were homogenous within athletics and academics in the stereotypic and counterstereotypic domains. Homogeneity tests revealed that none of the relationships documented across the two experiments (and across the various measures of academic performance) were significantly heterogeneous; for academics: stereotypic $\chi^2(6, N = 1{,}251) = 8.31, p > .20$; counterstereotypic $\chi^2(6, N = 929) = 12.45, p > .05$; for athletics: stereotypic $\chi^2(1, N = 246) = 0.42, p > .50$; counterstereotypic $\chi^2(1, N = 274) = 0.44, p > .50$.[11]

The next step in the analysis was to average the various correlations across studies (and in the case of academics, across measures), and assess whether the averaged correlations differed from one another as a function of stereotypicality. As can be seen in Table 7, the differences in the average correlations between performance and reaction time in the counterstereotypic and stereotypic conditions were as predicted. Analyses revealed that the counterstereotypic correlations were stronger than the stereotypic ones for both academics, $z = 2.01, p < .05$, and athletics, $z = -2.21\ p < .03$ (and of course the interaction between the two was significant as well, $z = 2.98, p < .01$). Thus, averaging across the two studies, the relationship between academic performance and reaction time was significantly stronger for African Americans and women than it was for Caucasians and men, and the relationship between athletic performance and reaction time was significantly stronger for Caucasians, particularly Caucasian men, than it was for African Americans.

General Discussion

The results of these studies were consistent with the distinctiveness hypotheses. Study 1 provided evidence that people are more likely to form self-schemas around their distinctive abilities, regardless of the absolute level of the abilities themselves. Studies 2 and 3, as well as the meta-analysis of Studies 2 and 3, extended Study 1 by providing support for the stereotype distinctiveness hypothesis. In both academics and athletics, people were more likely to be self-schematic when their good performance was counterstereotypic rather than stereotypic. Additionally, the finding in Study 3 that good athletic performance led to self-schematicity among Caucasian men but not among Caucasian women suggests that the relationship between counterstereotypic performance and self-schematicity emerges only when the domain is regarded as important by members of the social category. This difference in perceived importance is presumably a function of the differences in treatment that result from good versus bad performance (cf. Higgins, 1996), as athletic performance has a greater impact on how male adolescents are treated by their peers than how female adolescents are (Douctre, Harris, & Watson, 1983; Holland & Andre, 1994; Williams & White, 1983; see also Adler, Kless, & Adler, 1992). Thus, these findings suggest that when people are treated differently for being stereotype distinctive, self-schematicity emerges; when stereotype distinctiveness does not have an impact on how people are treated, self-schematicity is less likely to follow from it.

These results provide evidence that counterstereotypic performance leads to schematicity, but they also suggest that other factors lead to schematicity as well. In the case of academics, even when good performance was stereotypic, a small but reliable relationship emerged between performance and reaction time. This finding highlights what common sense would suggest, that a variety of factors are likely to cause performance to be associated with schematicity. For example, if academic performance is important to one's parents, then good academic performance is likely to lead to self-schematicity in the domain of academics (cf. Frome & Eccles, 1998). To the degree that some cultural and ethnic groups in the United States tend to place a particularly high value on academic success (e.g., Jewish Americans and Asian Americans; Sowell, 1981), this possibility would suggest that members of such groups should show a schematicity–performance relationship even though strong academic performance may be stereotypic for their group.

Thus, it should be clear that counterstereotypicality is not the only factor that will cause performance to become linked to schematicity, as a variety of idiosyncratic, cultural, and situational factors are likely to come into play as well. Nevertheless, although it might be gratifying to believe that domains become central to the self-concept exclusively through volitional mechanisms (e.g., because they are related to important values or to parental socialization practices), the stereotype distinctiveness hypothesis suggests that an important source of self-schematicity lies in factors that reside outside of the individual.

Caveat

Despite the fact that the results were consistent with predictions, it is important to note that strong causal conclusions cannot be drawn from the correlational data collected in the current research. To establish more convincingly that counterstereotypic performance leads to self-schematicity, rather than self-schematicity leading to counterstereotypic performance, researchers should conduct longitudinal studies. In all likelihood, such research would demonstrate that there is a reciprocal relationship between performance and self-schematicity, with counterstereotypic performance initiating the development of self-schemas, which in turn facilitate and enhance the initially strong performance.

Conclusions

The results of these studies provided support for the hypothesis that counterstereotypic abilities are particularly likely to be re-

Table 7
Averaged Correlations Between Performance and Reaction Time Across Studies 2 and 3

Stereotypicality of good performance	Academics	Athletics
Stereotypic	−.13	−.07
Counterstereotypic	−.26	−.33

Note. All correlations differ significantly from zero except stereotypic athletic performance.

[11] For the athletic analyses, the stereotypic correlations were those among African Americans in Study 2 and African American men in Study 3, and the counterstereotypic relationships were those among Caucasians in Study 2 and Caucasian men in Study 3. The results were identical when African American women were included in the analysis of Study 3.

flected in the self-concept. Although intelligence stereotypes were perceived as threatening by African Americans, and appeared to disrupt the relationship between academic performance and self-report, they nevertheless enhanced the relationship between performance and self-schematicity. In contrast, athletic stereotypes were not perceived as very threatening by Caucasian men, and the stereotypes did not disrupt the men's self-reported athleticism, but they again enhanced the relationship between performance and self-schematicity. These results suggest that whether or not people feel threatened by cultural stereotypes, attention is drawn to their counterstereotypic attributes, and these attributes are thereby likely to become the basis for the development of self-schemas. Thus, the African American student who aces exams and is everyone's favorite study partner may be particularly likely to notice his or her academic abilities, have others draw attention to these abilities, and eventually form a self-schema around them. Similarly, the Caucasian man who is chosen first for athletic teams and is thrown the ball when time is running out is also likely to notice his athletic abilities, have others draw attention to them, and eventually form a self-schema around them. The athletic African American and academic Caucasian, in contrast, appear to be less likely to develop self-schemas around their abilities.

These results may lead some to wonder whether it matters if people form self-schemas in domains in which they already excel. The existence of a self-schema is important for continued outstanding performance, however, as only when performance becomes self-defining do people develop the necessary resources to persist in the face of difficulty and seek out opportunities to perform in the chosen domain (Crocker et al., 1998; Markus, Cross, & Wurf, 1990; Steele, 1997). Self-schemas also lead to the creation of possible selves, which play an important role in the development and implementation of plans and goals in schema-relevant domains (Markus et al., 1990; Oyserman, Grant, & Ager, 1995). Thus, the current results suggest that an ironic consequence of stereotypes is that although they are destructive when they devalue a person in a particular domain, they may actually facilitate the performance of those who somehow excel despite the stereotypes against them.

In the case of African Americans, the stereotype that they are intellectually inferior interferes with the vast majority as they attempt to succeed in academics (Osborne, 1995; Steele, 1997). Self-fulfilling prophecies, perceptual confirmation effects, disidentification, and a host of other factors combine to disrupt their academic performance (for reviews, see Fiske, 1998; Hilton & von Hippel, 1996). Those African Americans who continue to excel despite these impediments, however, appear particularly apt to form self-schemas in the domain of intelligence. Consequently, academically successful African Americans may be more likely than similar Caucasians to have the cognitive resources necessary to overcome difficulties and seek out academic opportunities (Markus et al., 1990; Oyserman et al., 1995). Obviously such a statement raises questions about cause and effect, as high-performing African Americans must have overcome numerous obstacles to get where they are in the first place. Additionally, Steele's (1997) work shows that new obstacles and challenges often reinvigorate stereotype threat, thereby dampening the performance of even the most successful African Americans and causing them to wonder whether they will ever conquer the doubts of those around them. Nevertheless, the logic of the current findings implies a Nietsche-like conclusion to this work, whereby those African Americans whose academic prospects are not destroyed by stereotypes are somehow made stronger by overcoming them.

References

Adler, P. A., Kless, S. J., & Adler, P. (1992). Socialization to gender roles: Popularity among elementary school boys and girls. *Sociology of Education, 65*, 169–187.

Bargh, J. A. (1982). Attention and automaticity in the processing of self-relevant information. *Journal of Personality and Social Psychology, 43*, 425–436.

Bargh, J. A., & Chartrand, T. L. (1999). Studying the mind in the middle: A practical guide to priming and automaticity research. In H. Reis & C. Judd (Eds.), *Handbook of research methods in social psychology* (pp. 253–285). New York: Cambridge University Press.

Baumeister, R. F. (1998). The self. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (4th ed., pp. 680–740). New York: McGraw-Hill.

Bybee, J., Glick, M., & Zigler, E. (1990). Differences across gender, grade level, and academic track in the content of the ideal self-image. *Sex Roles, 22*, 349–358.

Chartrand, T. L., & Bargh, J. A. (1996). Automatic activation of impression formation and memorization goals: Nonconscious goal priming reproduces effects of explicit task instructions. *Journal of Personality and Social Psychology, 71*, 464–478.

Cooley, C. H. (1902). *Human nature and the social order.* New York: Scribner.

Crocker, J., Major, B., & Steele, C. (1998). Social stigma. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (4th ed., pp. 504–553). New York: McGraw-Hill.

Devine, P. G., & Elliot, A. J. (1995). Are racial stereotypes *really* fading? The Princeton trilogy revisited. *Personality and Social Psychology Bulletin, 21*, 1139–1150.

Douctre, G. P., Harris, G. A., & Watson, K. E. (1983). An analysis of self-image differences of male and female athletes. *Journal of Sport Behavior, 6*, 77–83.

Eccles, J. S., Barber, B., Jozefowicz, D., Malenchuk, O., & Vida, M. (1999). Self-evaluations of competence, task values, and self-esteem. In N. G. Johnson, M. C. Roberts, & J. Worrell (Eds.), *Beyond appearance: A new look at adolescent girls* (pp. 53–83). Washington, DC: American Psychological Association.

Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology, 69*, 1013–1027.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117–140.

Fiske, S. (1998). Stereotypes, prejudice, and discrimination. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (4th ed., pp. 357–411). New York: McGraw-Hill.

Frome, P. M., & Eccles, J. S. (1998). Parents' influence on children's achievement-related perceptions. *Journal of Personality and Social Psychology, 74*, 435–452.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*, 1464–1480.

Gray, C. D., & Kinnear, P. R. (1998). *SPSS for Macintosh made simple.* Hove, England: Psychology Press.

Higgins, E. T. (1996). The self-digest: Self-knowledge serving self-regulatory functions. *Journal of Personality and Social Psychology, 71*, 1062–1083.

Hilton, J. L., Klein, J. G., & von Hippel, W. (1991). Attention allocation

and impression formation. *Personality and Social Psychology Bulletin, 17*, 548–559.

Hilton, J. L., & von Hippel, W. (1996). Stereotypes. In J. T. Spence, J. M. Darley, & D. J. Foss (Eds.), *Annual review of psychology* (Vol. 47, pp. 237–271). Palo Alto, CA: Annual Reviews.

Hogg., M. A., & Turner, J. C. (1987). Intergroup behavior, self-stereotyping and the salience of social categories. *British Journal of Social Psychology, 26*, 325–340.

Holland, A., & Andre, T. (1994). Athletic participation and the social status of adolescent males and females. *Youth & Society, 25*, 388–407.

Jones, J. M. (1997). *Prejudice and racism* (2nd ed.). New York: McGraw-Hill.

Jussim, L., Coleman, L. M., & Lerch, L. (1987). The nature of stereotypes: A comparison and integration of three theories. *Journal of Personality and Social Psychology, 52*, 536–546.

Katz, D., & Braly, K. (1933). Racial stereotypes in one hundred college students. *Journal of Abnormal and Social Psychology, 28*, 280–290.

Kennedy, E. (1995). Correlates of perceived popularity among peers: A study of race and gender differences among middle school students. *Journal of Negro Education, 64*, 186–195.

Kunda, Z., & Oleson, K. C. (1997). When exceptions prove the rule: How extremity of deviance determines the impact of deviant examples on stereotypes. *Journal of Personality and Social Psychology, 72*, 965–979.

Locksley, A., Borgida, E., Brekke, N., & Hepburn, C. (1980). Sex stereotypes and social judgment. *Journal of Personality and Social Psychology, 39*, 821–831.

Markus, H. (1977). Self-schemas and processing information about the self. *Journal of Personality and Social Psychology, 35*, 63–78.

Markus, H., Cross, S., & Wurf, E. (1990). The role of the self-system in competence. In R. J. Sternberg & J. Kolligian Jr. (Eds.), *Competence considered* (pp. 205–225). New Haven, CT: Yale University Press.

Markus, H., & Sentis, K. P. (1982). The self in social information processing. In J. Suls (Ed.), *Psychological perspectives on the self* (Vol. 1, pp. 41–70). Hillsdale, NJ: Erlbaum.

Markus, H., & Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. *Annual Review of Psychology, 38*, 299–337.

McGuire, W. J., McGuire, C. V., Child, P., & Fujioka, T. (1978). Salience of ethnicity in the spontaneous self-concept as a function of one's ethnic distinctiveness in the social environment. *Journal of Personality and Social Psychology, 36*, 511–520.

McGuire, W. J., McGuire, C. V., & Winton, W. (1979). Effects of household sex composition on the salience of one's gender in the spontaneous self-concept. *Journal of Experimental Social Psychology, 15*, 77–90.

McGuire, W. J., & Padawer-Singer, A. (1976). Trait salience in the spontaneous self-concept. *Journal of Personality and Social Psychology, 33*, 743–754.

Mead, G. H. (1934). *Mind, self, and society.* Chicago: Chicago University Press.

Merton, R. K. (1957). *Social theory and social structure.* New York: Free Press.

Miller, C. T., Rothblum, E. D., Felicio, D., & Brand, P. (1995). Compensating for stigma: Obese and nonobese women's reactions to being visible. *Personality and Social Psychology Bulletin, 21*, 1093–1106.

Miller, D. T., Turnbull, W., & McFarland, C. (1988). Particularistic and universalistic evaluation in the social comparison process. *Journal of Personality and Social Psychology, 55*, 908–917.

Nelson, L. J., & Miller, D. T. (1995). The distinctiveness effect in social categorization: You are what makes you unusual. *Psychological Science, 6*, 246–249.

Osborne, J. W. (1995). Academics, self-esteem, and race: A look at the underlying assumptions of the disidentification hypothesis. *Personality and Social Psychology Bulletin, 21*, 449–455.

Oyserman, D., Grant, L., & Ager, J. (1995). A socially contextualized model of African American identity: Possible selves and school persistence. *Journal of Personality and Social Psychology, 69*, 1216–1232.

Rosenthal, R. (1991). *Meta-analytic procedures for social research.* Newbury Park, CA: Sage.

Sowell, T. (1981). *Ethnic America: A history.* New York: Basic Books.

Spencer, S., Steele, C. M., & Quinn, D. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology, 35*, 4–28.

Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist, 52*, 613–629.

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology, 69*, 797–811.

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. (1987). *Rediscovering the social group: A self-categorization theory.* Oxford, England: Basil Blackwell.

Tversky, A. (1977). Features of similarity. *Psychological Review, 84*, 327–352.

von Hippel, W., Jonides, J., Hilton, J. L., & Narayan, S. (1993). Inhibitory effect of schematic processing on perceptual encoding. *Journal of Personality and Social Psychology, 64*, 921–935.

Williams, J. M., & White, K. A. (1983). Adolescent status systems for males and females at three age levels. *Adolescence, 18*, 381–389.

Received January 15, 2000
Revision received October 9, 2000
Accepted October 10, 2000 ■