

CONTENDING WITH GROUP IMAGE: THE PSYCHOLOGY OF STEREOTYPE AND SOCIAL IDENTITY THREAT

Claude M. Steele
Steven J. Spencer
Joshua Aronson

I. Introduction

Our research on stereotype threat began with a practical question: Do social psychological processes play a significant role in the academic underperformance of certain minority groups, and if so, what is the nature of those processes? In our search for answers, we soon came upon an intriguing finding: Women at the University of Michigan seemed to perform lower than their tested skills would predict in difficult math classes yet at their predicted levels in other classes that we examined such as English or, as we later found, in entry-level math classes. By that time we had been long aware of what is known in the standardized testing literature as the “underperformance phenomenon”: At each level of academic skill as measured by prior tests, such as the Scholastic Assessment Test (SAT), and grades, a group of students sharing a given social identity gets lower subsequent grades than other students. Underperformance such as this characterizes the school and college performance of a number of American minority groups—African Americans, Native Americans, and many Latino groups (e.g., Bowen & Bok, 1998; Jensen, 1980; Ramist, Lewis, & McCamley-Jenkins, 1994). And this fact has a rather startling implication: Their poorer performance in school is not due entirely to their lack of skills or preparation. The underperformance phenomenon documents lower performance by these groups at each level of skill—that is, when skill and preparation as measured by tests are essentially held constant. Clearly, then, something beyond weaker skills and preparation undermines the school performance of these groups.

This is why it was so interesting that the degree of women's underperformance in college seemed to vary from one kind of course to the next. It suggested that something beyond lower skills burdened women in difficult math classes that did not burden them in other classes. There are, of course, many candidates for what that burden might be. But influenced by research and theory on stigma (Crocker & Major, 1989; Goffman, 1963), we reasoned that a situation-specific form of stigma might be involved, a form tied to specific negative stereotypes about women's abilities that "threatened" them with devaluation in one setting more than another. We came to a working hypothesis: The extra burden women bear in difficult math classes—a burden capable of causing their underperformance there—stemmed from some pressure that specific negative stereotypes about women's math ability put on them in these classes. It did not seem correct to follow our predilection and think of this pressure as stemming from a general stigmatized status. Women are not, in the typical meaning of that term, a broadly stigmatized group. And the pressure that impaired their math performance seemed rather precisely focused, causing underperformance in difficult math classes but not in other classes.

To pursue this hypothesis, we (Spencer, Steele, & Quinn, 1999) designed a series of experiments that attempted in various ways to vary whether the negative stereotype about women's math ability was relevant to their performance on difficult math problems. We recruited women and men students at the University of Michigan who were quite good at math—with entering math SAT scores in the top 15% of the Michigan student population—and who were identified with math in the sense of seeing it as very important to their personal and career goals. We brought them into the laboratory one at a time and, to mimic the condition that seemed to produce women's math underperformance in the real world, we gave all participants a very difficult math test—a 25-min section of the Graduate Record Exam subject exam in mathematics. The sheer difficulty of the test, we reasoned, would be enough to make the negative stereotype about women's math ability relevant to them personally and thus to threaten them with the possibility that they would be confirming the stereotype or be seen as confirming it. Following our real-world observations, we assumed that nothing more pointed than taking such a test would be required to evoke this threat, and in turn, this threat should depress women's performance relative to men's, even though we had selected men and women who were equally good at math and cared equally about it.

This is precisely what happened. In one early experiment, women underperformed in relation to men on a difficult math test but not on a difficult English test, and in another, women again underperformed in relation to men on a difficult math test but not on an easier math test that did not cause the same level of frustration.

With these findings, we had produced the same gendered pattern of behavior that we had observed in the real world of difficult math classes. But these findings did not establish that it was "stereotype threat"—as we eventually came to call

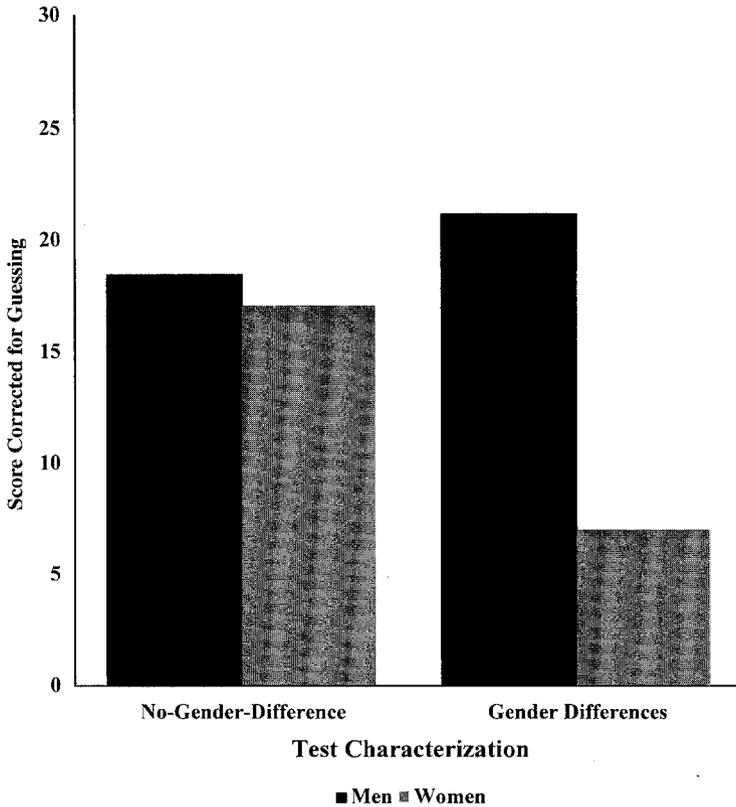


Fig. 1. Men's and women's mean score (controlled for guessing) on a difficult math test as a function of characterization of the test (Adapted from Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology*, 35, 4–28, with permission from Academic Press).

it—that was responsible for depressing women's performance on the difficult test. As was pointed out to us, it could reflect the fact that women have some lesser capacity specifically for math that only reveals itself when the math is very difficult (e.g., Benbow & Stanley, 1983). To distinguish between these explanations, we devised a condition in the next experiment that reduced stereotype threat by making the stereotype irrelevant to performance. The difficult test was presented to some participants as one that did not show sex differences, as a test in which women always did as well as men—thus making the stereotype about women's math ability irrelevant to interpreting their experience while taking this particular test. The results in this condition were dramatic. As Fig. 1 shows, women given this instruction performed just as well as equally skilled men and significantly better than women in the stereotype-still-relevant condition of this experiment, in which participants were told that the test did show gender differences.

The mere relevance of the negative stereotype to their own math performance, presumably occasioned by their performance frustration, was enough to undermine the test performance of strong female math students who cared a lot about math. We could not know, of course, how much this process contributed to the general underperformance of women in real-world advanced math classes. But such findings were suggestive. We also had evidence that stereotype relevance did not lower women's performance in these studies by lowering their performance expectations—that is, through an effect on expectancies. The stereotype threat condition—that the test showed gender differences—reliably lowered women's performance expectations expressed before the test, but those expectations were not correlated with their test performance. More important than the question of mediation at this point in the research, however, was the question of whether we had identified a general effect of stereotype relevance or one that was peculiar to a single group in a specific set of circumstances.

To take up this question, and to further address the problem of group underperformance that had launched this research, we (Steele & Aronson, 1995) turned to another group whose abilities are negatively stereotyped in intellectual domains—African Americans—and tested again whether varying the relevance of such a stereotype to their test performance would affect that performance. We brought White and Black Stanford students into the laboratory and, as in our study with women, gave them, one at a time, a very difficult 30-min section of a GRE subject exam in English literature. A significant part of the negative stereotype about African Americans concerns intellectual ability. Thus, in the stereotype threat conditions of the experiments in this series, we merely mentioned to participants that the test was a measure of verbal ability. This was enough, we felt, to make the negative stereotype about African Americans' abilities relevant to their performance on the test and thus to put them at risk of confirming, or being seen to confirm, the negative stereotype about their abilities. In the nonstereotype threat conditions, we presented the same test as an instrument for studying problem solving that was “nondiagnostic” of individual differences in ability—thus making the racial stereotype irrelevant to their performance.

If the pressure imposed by the relevance of a negative stereotype about one's group is enough to impair an important intellectual performance, then Black participants should perform worse than Whites in the “diagnostic” condition of this experiment but not in the “nondiagnostic” condition. As Fig. 2 depicts, this is precisely what happened: Blacks performed a full standard deviation lower than Whites under the stereotype threat of the test being “diagnostic” of their intellectual ability, yet matched the performance of Whites when the same test was presented as nondiagnostic of verbal ability. (SAT scores were used as a covariate in all analyses to equate groups for initial differences in relevant skills.) The detrimental effect of stereotype threat on intellectual performance as measured by important standardized tests seemed to generalize, then, to several groups.

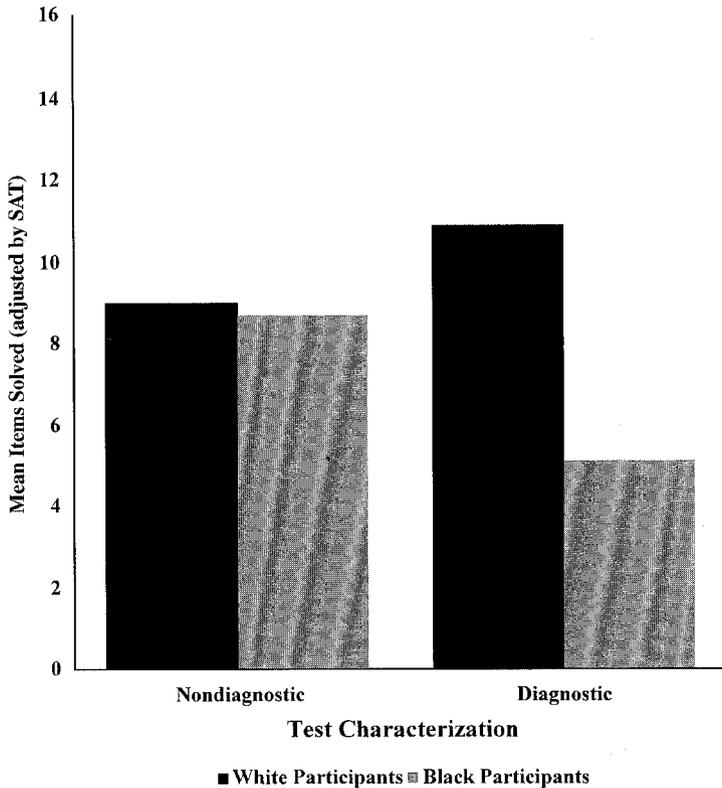


Fig. 2. White and Black participants' score (controlled for SAT) on a difficult English test as a function of characterization of the test (From Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69, 797-811. Copyright 1995 by the American Psychological Association. Adapted with permission).

The experiments in this series also provided mediational evidence. In one experiment, just after participants saw sample test items and learned that the test was either diagnostic or nondiagnostic of verbal ability, and just before they expected to actually take the test, they completed 80 incomplete words, 10 of which could be completed with stereotype-related words and 5 of which could be completed with self-doubt-related words. When Black participants expected to take the ability-diagnostic test, they completed significantly more of the stereotype-relevant word stems with stereotype-related and self-doubt-related words than Blacks in the non-diagnostic condition or than Whites in any condition. Simply expecting to take an ability-diagnostic test was enough to activate racial stereotypes about ability in the minds of Black participants. Moreover, in a measure of their activity preferences, they avoided expressing a preference for activities associated with African American imagery such as jazz, hip-hop, and basketball. In fact, they preferred

these things less than any other group in the experiment, showing a distinct desire, we reasoned, not to be seen through the lens of a racial stereotype.

By this point, then, we had accumulated considerable evidence that when a negative stereotype about one's group is relevant to a difficult, timed performance that is important to the person, it can undermine that performance. It was not clear that this effect of stereotypes was the sole cause of the academic underperformance we had set out to understand. Clearly it had to be part of the story. But in light of the other possible causes such as group differences in educational and other resources, in historical and ongoing access to schooling, even in the experience of discrimination in schooling, it is probably not the whole story.

Nonetheless, it seemed that we had unearthed a general social psychological process, one that is perhaps a fundamental part of the experience of being the target of negative group stereotypes or any negative judgment for that matter. Consider the following thought experiment: Imagine that, having arrived late to your family reunion and believing that everyone else had already eaten, you load your plate to the teetering hilt only to confront, as you leave the food line, a large group of newer arrivals who haven't yet eaten a bite. They look at the paltry remains on the food table and then at your heaping plate. You try to explain, but your effort is lost in the clamor of the crowd and the music. You hear them say as they go by, "Those Browns are so selfish."

Of course there is no group stereotype at play here. But based on this "mis-understanding" you might fear that a reputation about you would arise in the family and place you under suspicion in matters related to generosity and communal spirit over the weekend—dishwashing, tipping the pizza delivery man, babysitting, and the like. Such suspicion, and the unfair interpretation of your behavior that it might cause, can make you feel uncomfortable. It could distract you and interfere with your interactions. This experience, stemming from a relatively garden-variety reputational threat, is a close cousin to the experience of a threat stemming from a negative stereotype.

But imagine how, expanded along several dimensions, stereotype threat could get much worse. Suppose that the negative view of you had nothing to do with your own behavior but stemmed from what people thought about a group of which you are a part. Suppose that more people than your relatives knew this negative view, say everyone in society. Suppose that the negative views maligned not your table manners, but very important abilities that are critical to getting ahead, for example, your intelligence. And, accordingly, suppose that the new view applied to you in precisely those situations that were most critical to your success in school and in society.

In these, and other ways, the threat of judgment and treatment that stems from a negative and broadly held group stereotype can become a much more profound threat than the threat stemming from most personal reputations. It can constitute an everlasting predicament of one's life depending on how broadly held the negative

view is, how important the characteristics are that are impugned in the view, how difficult the view is to disprove, and so on.

Consider the experience that Brent Staples, now an editorialist for *The New York Times*, recounted in his autobiography, *Parallel Time*. When he arrived at the University of Chicago's Hyde Park campus to begin graduate school in psychology, he noticed that as an African American male dressed like a student, he seemed to make people apprehensive; on the street people seemed to avoid him, in shops security people followed him, and so on. After a while he realized that he was being seen through the lens of a negative stereotype about his race. It was not that he had done anything to warrant this view of him—as in taking too much food, for example. It was simply that he was an identifiable member of a group about whom existed a broadly held negative view of their proneness to violence. Moreover, walking the streets of Hyde Park, he was in a situation where this negative view was applicable to him—every time he was in the setting. Thus this stereotype confronted him with an engulfing predicament. It was relevant to a broad range of behaviors in the setting—just walking down the street or entering a store, for example, could be seen by others through the lens of the stereotype as foreshadowing danger. Also, everyone in his environment knows the stereotype. Thus it could influence and coordinate how he was judged and treated by many people. And it would be difficult for him to prove to people, on the spot, that this view of his group was not applicable to him as a person. In these ways, then, the threat posed by this group stereotype becomes a formidable predicament, one that could make it difficult for him to trust that he would be seen objectively and treated with good will in the setting. Such, then is the hypothesized nature of stereotype threat—not an abstract threat, not necessarily a belief or expectation about one's self, but the concrete, real-time threat of being judged and treated poorly in settings where a negative stereotype about one's group applies.

II. Generalizability of Stereotype Threat Effects

This reasoning implies, of course, that stereotype threat is a quite general effect. And by now a good number of tests of this generality have accumulated, showing that in addition to being a reliable experimental effect, it is a predicament that affects a broad array of groups and domains of activity and has effects in the real world.

The early studies showing that stereotype threat can affect the standardized test performance of African Americans have been replicated in a number of settings, ranging from elite private universities such as Stanford (Steele & Aronson, 1995) to public universities (Aronson, 1999; Blascovich, Spencer, Quinn, & Steele, 2001). Similar effects of stereotype threat have also been shown in samples of Latino

participants, again at large public universities (Aronson & Salinas, 1997) but also in a sample of public middle school students (Good & Aronson, 2001). The Spencer *et al.* (1999) demonstration that stereotype threat can impair women's performance on math tests has been replicated in many academic settings using a variety of manipulations to either induce or reduce stereotype threat (e.g., Brown & Josephs, 1999; Good, Aronson, & Harder, 1997; Inzlicht & Ben-Zeev, 2000; Shih, Pittinsky, & Ambady, 1999). Ambady, Shih, Kim, and Pittinsky (2001) have shown that this effect, sadly, generalizes to girls as young as 5 and 6 years of age. Croizet and Claire (1998) have shown that negative stereotypes linking poorer language skills to lower socioeconomic status in France impaired the verbal test performance of working-class French college students.

And finally, stereotype threat has even been shown to affect the standardized math test performance of White males with superior mathematical abilities—most had near-perfect scores on the Math SAT. Stereotype threat was induced in these test-takers by telling them in the critical condition that the purpose of this study was to understand the reasons for Asian mathematical superiority—thus creating stereotype threat in White male participants by putting them under the negative light of another group's positive stereotype. That this procedure would create enough threat to impair the performance of these participants makes an important point. It means that to experience stereotype threat, a group need not have prolonged exposure to the stereotype in real life (White males are not chronically stereotyped as having poor math ability in the larger society) or have any internalization of the stereotype as a low performance expectancy.

Its impairing effects also generalize to other performance domains. Stone and his colleagues (Stone, Lynch, Sjomeling, & Darley, 1998) have established an intriguing effect of stereotype threat on sports performance. They asked elite athletes at the University of Arizona, Black and White, to perform 10 holes of golf in a miniature, laboratory course. To invoke a stereotype that would put the performance of White athletes under threat, they introduced the task as a measure of "natural athletic ability." Under this representation, one that puts White athletes under the added risk of confirming or being seen to confirm a negative group stereotype, the White athletes significantly underperformed in comparison to the Black athletes. But Stone *et al.* were able to reverse this pattern of results—so that White athletes outperformed Black athletes on the same task—by representing the task as a measure of "sport strategic intelligence," a representation that now put the performance of Black athletes under the threat of confirming a negative group stereotype. These results show the group-by-situation variability of stereotype threat, but also suggest its generalizability in real life across groups, settings, and types of behavior. Leyen, Désert, Croizet, and Darcis (2000) reinforce this generalizability by showing that the lexical decision-making performance of men who wanted to become clinical psychologists could be impaired by representing the task as a measure of sensitivity to other people's emotion and then reminding

them of the stereotype that women are often better readers of other people's emotions than men. Wherever there is a negative group stereotype, a person to whom it could be applied, and a performance that can confirm the applicability of the one to other, one has the critical ingredients of a performance-impairing stereotype threat.

Is there evidence that these effects generalize to real-world test-taking situations? For several reasons, this question isn't as easy to answer as it might seem. First, of course, there is the logistical and ethical difficulty of manipulating stereotype threat in real-world test-taking situations. Doing something that might affect a person's performance on a real-life high stakes test is, in most imaginable situations, unacceptable without informed consent, and informed consent might be difficult to reliably get in these situations. Second, there is the problem that people taking a real high-stakes test such as the SAT or GRE have been so saturated with our culture's representations of the test, and are so clear about its importance, that they may not easily believe the kind of alternative representations of these tests that are used to manipulate stereotype threat in the laboratory—for example, that a test is nondiagnostic of ability or that a difficult math test is insensitive to gender differences. The laboratory allowed us to construct the meaning of tests—and thus their stereotype relevance—in ways that would be difficult to construct in real life.

Facing these challenges, however, researchers at the Educational Testing Service conducted a series of studies to see if stereotype threat depressed the performance of women and minorities on real tests, with real life consequences. In one study (Stricker, 1998), test administrators had students indicate their ethnicity and gender either before or after taking the Advanced Placement (AP) exam of calculus. This is an important test, one that determines whether students get college credit for their high school studies, and it can also affect their admission chances. They reasoned that for these groups, listing their group identity just before taking the test would remind them of the negative stereotype about their group and its relevance to their performance. This should increase the stereotype threat they are under and if stereotype threat is capable of impairing performance on a real high-stakes test, these test-takers should perform worse than those who recorded their gender or ethnicity after taking the test. For female test-takers, the results confirmed this reasoning. Those who were asked about their gender before the test scored significantly lower than those asked about their gender after the test. The results for the minority students followed this pattern as well, but did not reach statistical significance in these samples.

It is important to stress that this study represents a conservative test of the effects of stereotype threat on real-life test-taking. This is because the degree of stereotype threat that is likely to be experienced by these groups (whose abilities in this domain are negatively stereotyped) is likely to be so high already that having them list their group identity prior to the test is not likely to make it much worse.

In our laboratory research, we too had used a group-identity-listing procedure to manipulate stereotype threat (Steele & Aronson, 1995, Study 3). Black and

White participants either did or did not list their race just before taking a difficult test. And indeed, listing their race significantly undermined the performance of the Black participants. But for this to happen, for the amount of stereotype threat produced by this listing procedure to have a detectable effect on the performance of the participants, we had to remove all other sources of threat from the situation. Specifically, we presented the test as nondiagnostic of ability, an instruction that earlier research had shown would essentially eliminate stereotype threat and its effect on performance. Then, in this low stereotype threat condition, the amount of stereotype threat caused in Black participants by listing their race detectably impaired their performance. Had we had participants list their race prior to taking a test diagnostic of their ability—a test representation that would already cause enough stereotype threat among Black participants to impair their performance—it is doubtful that the listing procedure would have increased stereotype threat enough to further impair their performance.

Yet, this is essentially what the ETS study was forced to do—operating in the real-world of high-stakes tests. As a real-life test that was almost certainly understood as diagnostic of ability, and as having important consequences, it varied stereotype threat solely through the listing procedure. Going into such a study, one would not expect much of an effect of the listing procedure. And indeed, this may be why its effect was not significant for the minority students in the study. Nonetheless, the unavoidable insensitivity of this design makes it all the more impressive that even the modest increment in stereotype threat caused by the group identity listing procedure could significantly worsen performance on a real-life standardized test. Extrapolating further from this data set, social psychologist Christian Crandall reasoned that if gender and ethnicity were routinely recorded after, rather than before, this AP exam, as many as 2,837 additional young women (out of 17,000) would start college each year with calculus credit and have better admissions prospects.

Does this mean that stereotype threat always undermines the performance of stereotype-threatened test-takers? No. As is shown shortly, there are many moderators of the stereotype threat effect. But these data do provide an existence proof that this threat can have important impairing effects on real-life, high-stakes testing.

A last question of real-world generalizability on which we have evidence is whether a program aimed at reducing stereotype threat in a real-world school situation could improve the performance of stereotype-threatened groups. In the early 1990s we (Steele, Spencer, Davies, Harber, & Nisbett, 2001) developed a dormitory-based program at the University of Michigan in which freshmen participated in a seminar series and late-night discussion groups aimed at reducing stereotype threat and a workshop aimed at accelerating their study in one of their classes. The program was able to achieve a significant minority representation: 20% African American, 20% other minorities, and 60% White.

Although the program had little effect on Whites' grades, Blacks in the program significantly outperformed Blacks in the general population at Michigan and

outperformed Blacks in a randomized control group to an even greater degree, although the comparison was only marginally significant ($p < .10$) due to a very small N in the control group ($n = 6$). Blacks in the program were also less likely to drop out of school in subsequent years. Importantly, these results were most strongly mediated among the Black students by the degree to which they participated in the late-night discussion sessions. The more of these they attended, the less stereotype threat they rated themselves as experiencing in the university environment. And in turn, the level of stereotype threat they reported experiencing predicted their grades. As with most such intervention programs, its effects weakened over time. Nonetheless, that such changes in the academic environment of these students had meaningful effects on their early success suggests that stereotype threat is a part of their real-life experience and that reducing it is an effective and feasible way of bettering their outcomes.

III. The Nature of Stereotype Threat

A. A DEFINITION

We offer the following definition of stereotype threat: When a negative stereotype about a group that one is part of becomes personally relevant, usually as an interpretation of one's behavior or an experience one is having, stereotype threat is the resulting sense that one can then be judged or treated in terms of the stereotype or that one might do something that would inadvertently confirm it. Most often stereotypes are seen to affect their targets through the discriminatory behavior and judgment of people who hold the stereotype. An implication of this definition, however, is that stereotypes can affect their targets even before they are translated into behavior or judgments. The mere threat of discrimination and devaluation implied by the perceived relevance of a negative group stereotype—like the threat of a snake loose in the house—can have effects of its own.

From this definition we derive several general features of stereotype threat and a few parameters of its strength.

B. GENERAL FEATURES

1. Stereotype threat is a situational threat. It arises from situational cues signaling that a negative stereotype about one of one's social identities is now relevant as a possible interpretation for one's behavior and self in the setting. The experience of this threat is not seen to depend on a particular state or trait of the target such as believing in the stereotype or holding low expectations that might result from chronic exposure to the stereotype (e.g., Allport, 1954). Although these traits, or

states, or beliefs may exist in some stereotype targets, they are seen as neither necessary or sufficient to the experience of stereotype threat.

2. This means that stereotype threat is a general threat in the sense of its being experienced in some setting or another and at some time or another by virtually everyone. All people have some group or social identity for which negative stereotypes exist—the elderly, the young, Methodists, Blacks, Whites, athletes, artists, and so on. And when they are doing things in situations where those stereotypes might apply, they can experience this threat.

3. The nature of the threat—the kind of devaluation and mistreatment that is threatened—depends importantly on the specific content of the negative stereotype. For present purposes, a negative stereotype can be likened to a spotlight that projects a beam of devaluation threat onto targets (e.g., Cross, 1991). It is the specific meaning of the stereotype that determines the situations, the people, and the activities to which the stereotype is relevant and, thus, determines on which behaviors, on which people, and in which settings this beam is projected. For example, the type of stereotype threat experienced by men, women, and teenagers would vary considerably, focusing on sensitivity in the first group, math skills in the second, and maturity and self-control in the third. And for each group, the threat, the spotlight, would be felt in those situations to which their group stereotype applies, but not in other situations (Allport, 1954; Kleck & Strenta, 1980; C. M. Steele, 1975, 1997; C. M. Steele & Aronson, 1995; S. Steele, 1990; Sartre, 1948). For example, a woman could feel stereotype threat in a math class, where a negative group stereotype applies, but not in an English class, where it does not apply.

C. THE STRENGTH OF A STEREOTYPE THREAT

1. The degree of stereotype threat that a person experiences in a setting should also depend, in part, on the meaning of the stereotype involved. Some stereotypes simply have more negative meanings than others. For example, a stereotype that demeans a group's integrity should pose a stronger threat than a stereotype that demeans a group's sense of humor.

2. The strength of stereotype threat should also depend on how much the person identifies with the domain of activity to which the stereotype applies. The term "identification" refers here to the degree to which one's self-regard, or some component of it, depends on the outcomes one experiences in the domain. The more one cares about a domain in this way, the more important one's fate in the domain is likely to be and the more upset one is likely to be over the prospect of being negatively stereotyped in the domain.

[This reasoning has an interesting obverse: The more a person has internalized the negative group stereotype, the less stereotype threat he or she may experience. This is because the act of internalizing a negative group stereotype is likely to

be accompanied by the person's disidentification with the domains in which the stereotype applies (e.g., Steele, 1997). Then, caring less about the domain, one is likely to care less about being stereotyped in it.]

3. In general, the more one is identified with the group about whom the negative stereotype exists, or the more one expects to be perceived as a member of that group, the more stereotype threat one should feel in situations where the stereotype applies.

4. The degree of stereotype threat may also vary with how much one feels capable of coping with the threat. Lazarus's theory of emotion (e.g., Lazarus, 1968; Folkman, Lazarus, Gruen, & DeLongis, 1986) makes a distinction between "primary appraisal," which is the initial assessment of how threatening a stimulus is, and "secondary appraisal," which, after one recognizes the threat, is the assessment of how well one can cope with it. This principle should extend to the experience of stereotype threat as well. Its impact should be reduced, for example, by the perception that one has personal features, or counterstereotypic capacities, that will deflect the application of the stereotype to oneself, or that should the stereotype be applied, one can respond effectively to dispel its negative effects. One might know, for example, that one's public identity as a clinical psychologist makes it less likely that one will be stereotyped as an insensitive male. And this belief, in turn, may lessen the impact of the threat caused by this particular male stereotype.

IV. Moderation of Stereotype Threat Effects

Stereotype threat is a person-situation predicament: a person contending with the possibility of being negatively stereotyped. As such, the strength of the threat, and its influence on behavior, is likely to be moderated by features of both the situation and the person. To further clarify the way in which stereotype threat is a construction of this interaction, we briefly review its most documented moderators; three situational factors (task difficulty, test diagnosticity, and stereotype relevance) and three individual difference factors (domain identification, group identification, and stigma consciousness). Following the literature to date, most of this research has examined the effect of stereotype threat on standardized test performance.

A. SITUATIONAL MODERATORS

1. Task Difficulty and Frustration

Short of a task being overwhelmingly difficult, stereotype threat effects have consistently been greatest for more difficult tasks. For example, Spencer et al.

(1999) found that talented men and women performed equally well on a test that, for them, was easier (the math section of the general GRE), but that women underperformed in relation to men on a more difficult test (taken from the GRE subject test in mathematics). Spencer, Iserman, Davies, and Quinn (2001) recently replicated these results and showed further that when the easier test was taken under cognitive load, women again underperformed in relation to equally skilled men. These findings suggest that, as a moderator of stereotype threat effects, test difficulty may have two components: The difficulty of the test items and the degree to which other demands make test performance frustrating. Of course task difficulty will most commonly be a critical component of any frustrating test. But even when a test is easier, the testing situation can still involve other pressures on performance—time pressure, distracting cognitive load, high importance to one's future, complexly formatted questions such as "story problems," and so on—that by frustrating performance may arouse enough stereotype threat in stereotype-threatened test-takers to downgrade their performance.

This could happen in two ways: First, the experience of frustration with the test gives credibility to the limitation alleged in the stereotype. For this reason, frustration can be especially stinging and disruptive for test-takers to whom the stereotype is relevant. Second, it is on a demanding test that one can least afford to be bothered by the thoughts that likely accompany stereotype threat. Concerns about how one will be perceived, doubts about one's ability, thoughts about the stereotype, and so on are most likely to impair performance on a difficult and frustrating test.

With this reasoning in mind, we have striven to make the tests in all of our stereotype threat research difficult and frustrating. We assume that the stereotype may not even come to mind on easier tests, or if it does, one's good performance can refute its relevance. Given what we know at this point, it is perhaps fairest to say that the ingredient most critical to producing a stereotype threat effect on test performance is frustration on the test. If it is not a sufficient ingredient, it is very likely a necessary one.

Several practical implications of this moderator should not be lost. Many important tests in real life—aptitude tests, admission tests, final exams—are likely to have frustrating features, from difficult items to distractingly important consequences. Thus it is precisely these tests on which the differential pressure of stereotype threat on some test-takers is likely to be greatest. Also, this reasoning suggests that stereotype threat may be greatest when people face increments in curriculum difficulty, for example, when women begin more difficult geometry courses or calculus. New and more difficult material at the frontier of one's skills can be exasperating for almost all students. And it is in these situations that members of ability-stereotyped groups are most likely to experience the extra burden of stereotype threat.

2. Test Diagnosticity

A number of studies have manipulated stereotype threat by varying the supposed diagnosticity of the tests participants were taking (Aronson & Salinas, 1997; Croizet & Claire, 1998; Davies, Spencer, Quinn, & Gerhardtstein, in press; Steele & Aronson, 1995). Generally, stereotype threat effects emerge when the tests are characterized as diagnostic and are less strong or absent when they are characterized as nondiagnostic. For groups whose abilities are negatively stereotyped in the domain of the test, we assume that merely portraying the test as diagnostic of that ability is enough to bring the stereotype to mind and along with it the possibility of confirming it or being seen to confirm it—thus, the threat. For example, Steele and Aronson (1995) found that, for African Americans, the mere act of sitting down to take a test portrayed as diagnostic of their intellectual ability was enough to activate stereotypes about their group. But when the same test was portrayed as nondiagnostic of ability, these stereotypes were not activated. Thus test diagnosticity appears to be a moderator of stereotype threat effects, most especially those that involve intellectual ability.

But it is not clear that stereotype threat effects can be eliminated solely by making a test nondiagnostic of ability. For example, Davies et al. (in press) had men and women take a difficult math test that was characterized just that way, as nondiagnostic. But before the test, half of the participants watched TV commercials that included several women in stereotypically unintelligent roles, whereas the other half watched TV commercials with women in more neutral roles. They reasoned that even though the test was nondiagnostic, the negative commercials would activate negative stereotypes about women's ability, including their math ability, and that once activated, these stereotypes would undermine their math performance and pressure them to disengage from the domain. This is exactly what they found. Women who had seen the stereotypic commercials performed more poorly on subsequent math items and, when given the choice, chose more verbal items to work on, presumably in pursuit of a domain where the negative stereotype did not apply.

Similarly, Steele and Aronson (1995) found that when Black students indicated their race as the last item on a demographic questionnaire just before they took a difficult verbal test (and presumably activated stereotypes about their group) they performed more poorly on the test than White students, even though the test was portrayed as nondiagnostic of ability.

Taken together, the research so far makes it clear that test diagnosticity is a moderator of stereotype threat effects, at least in the domain of intellectual tests. And this fact might tempt one to believe that a practical gain might be achieved by characterizing tests as nondiagnostic of ability. Of course, the first problem with this strategy is that such a characterization may simply not be believable in a culture like ours where people generally regard these tests as related to a person's underlying ability. But even if such a characterization were believable in real-world test-taking

situations, it is important to realize that group stereotypes could still be activated in ways unrelated to the test and, once activated, could undermine performance even on a nondiagnostic test. That said, the strategy of reducing stereotype threat by diminishing the extent to which a test is seen as diagnostic of ability may be worth trying when credible alternative test characterizations are possible (for example, portraying the test as tapping learned skills rather than innate abilities) and where one can diminish the presence of other stereotype-evoking cues.

3. Stereotype Relevance

Another manipulation of stereotype threat has been to vary whether a negative stereotype about a group's ability is made relevant to the performance at hand (Aronson *et al.*, 1999; Blascovich, *et al.*, 2000; Brown & Steele, 1999; Spencer *et al.*, 1999). Generally, when this relevance is established either explicitly or implicitly, stereotyped group members perform worse than nonstereotyped group members. But when the performance is defined so that the negative stereotype is not relevant to it, the performance of the stereotyped group matches that of the nonstereotyped group. For example, the Spencer *et al.* (1999) study found that when women took a difficult math test that was characterized as showing gender differences—allowing the gender stereotype about math to be seen as relevant to their performance on this particular test—they underperformed in relation to equally skilled men. But when the same test was characterized as not showing gender differences—making the gender stereotype irrelevant to their performance on this particular test—they performed as well as equally skilled men.

These studies provide perhaps the strongest direct evidence that stereotype threat effects stem from stereotypes about groups. By varying the stereotype's relevance to the particular performance at hand, dramatic differences in test performance result. Clearly, then, the perceived relevance of the group stereotype to the performance is an important moderator of stereotype threat's effect on that performance.

This variable might yield a practical strategy for reducing stereotype threat in real testing and intellectual performance settings. As prescribed in the last section, representing a test as more about learnable skills than about limitations of ability should be especially helpful to the stereotype-threatened. It makes the stereotype about their limited ability less relevant to their performance. This, in turn, may have the further effect of enabling them to have greater trust in the setting—a point to which we return later.

B. INDIVIDUAL DIFFERENCE MODERATORS

1. Domain Identification

In most of our research, we have selected people who were identified with the domain in which we were testing and, among these people, we have found robust

stereotype threat effects. However, a few studies (Aronson et al., 1999; Aronson & Good, 2001; Brown & Steele, 2001; Stone et al., 1998) have included domain identification as a factor in the design. These studies generally find that stereotype threat effects occur only, or at least most strongly, among those people who are identified with the intellectual domain in which they are being tested.

For example, in Aronson et al. (1999) the finding reported earlier, that European American males did not perform as well on a difficult math test when they were threatened by the Asians' positive stereotype, was significant only for the European American participants who were highly identified with math. Aronson and Good (2001) reported the same pattern in a study of women's math performance: Stereotype threat-driven underperformance occurred only among the women most identified with math. This is not to say the unidentified women performed well; they did not. But their low performance was not made lower by stereotype threat, whereas the higher performance of math-identified women *was* made lower by stereotype threat.

These results fit the general reasoning of our theory: That to experience stereotype threat in a domain one has to care about it. Domain disidentification—ceasing to care about a domain in the sense of its being connected to one's sense of self—is assumed to be a defense against stereotype threat. Thus it makes sense that people in these studies who do not identify with the domain of the test are not much affected by the prospect of being negatively stereotyped in the domain.

But we do raise a complexity. We are discussing domain identification as an individual difference variable that is relatively traitlike and stable. Generally this is so. The sense that one's self-regard depends, to some degree, on one's outcomes in a domain is not likely to be easily or quickly changed. We note, however, that identification with a performance may be situationally created, even in someone not chronically identified with the domain. What is required is that the performance somehow be made personally relevant to the person—as bearing on their future, their integrity, their general intelligence, and so on. Conceivably, then, even the less domain-identified participants in these experiments could be brought to experience stereotype threat—if the tests were made more personally meaningful to them.

2. Identification with the Stereotyped Group

In the early days of stereotype threat research some people were confused about our use of the term “disidentification.” We meant it to refer to the defense of disidentifying with the domain of activity where one experienced a stereotype threat. People often took the term to refer to disidentifying with the social group to which the negative stereotype was directed.

This latter meaning, though not what we intended, did bring to light an interesting aspect of stereotype threat that we had neglected. What role does identification with the stereotyped group play in creating stereotype threat? One might assume, for example, that if stereotype threat stems from a concern that one will be judged

based on a negative stereotype about one's group that those most highly identified with the group would experience the most stereotype threat.

Schmader (in press) recently tested precisely this reasoning. Using the standard paradigm of women taking a difficult math test, she found that under high stereotype threat (i.e., when the researchers were purportedly examining gender differences on the math test) women whose gender was an important part of their identity did worse than women whose gender was a less important part of their identity. Identification with the negatively stereotyped group may, then, moderate stereotype threat effects.

Other investigators, however, have made the opposite argument: That identifying with the stereotyped group might buffer a person from stereotype threat effects. Oyserman, Harrison, and Bybee (2001), for example, found that among African American adolescents girls, those who were most strongly identified with being African American in the sense of believing that being African American is associated with achievement showed the greatest sense of achievement efficacy.

Thus, from the data that is available so far it is difficult to call the question of whether identification with the negatively stereotyped group increases, decreases, or has no effect on the experience of stereotype threat and its disruptive effects. We do have a hunch, however, that may be worth mentioning. Some groups have considerable experience dealing with negative stereotypes about them. This is certainly the case, for example, of African Americans. As a result, they may have evolved rather effective individual and collective strategies for deflecting this threat—for example, as is shown in a later section, disidentification from the assessments of others in the domains where the stereotype applies. Conceivably, then, the more one identifies with such a group, the more one may have available to them, and be supported in, the use of these strategies. In contrast, other groups may not have evoked such strategies, or any collective capacity to use them, so that among their members, those who identify more with the group gain a bit more susceptibility to the negative stereotype without gaining much in the way of defenses to combat it. Such an account at least fits the pattern of contradictory results on this question, but along with the question itself, it clearly awaits further research.

3. Stigma Consciousness

Are there individual differences in how much stereotype threat people perceive in their environment? Pinel (1999) has developed an individual difference measure of what she calls "stigma consciousness" that may capture, among other things, differences in perceived stereotype threat. Specifically, her measure asks members of negatively stereotyped groups how much discrimination they encounter and how much they are affected by it.

Do these habitual perceptions of discrimination deepen the experience of stereotype threat and increase its effects? Pinel (1999) found that in a laboratory game

of jeopardy in which participants could choose the categories of questions they would answer, women high in stigma consciousness avoided male question categories when playing against a male more than women low in stigma consciousness. This avoidance could reflect a greater experience of stereotype threat among the women high in stigma consciousness. But it could also reflect a stronger presumption on their part that men would be tougher competition on the male questions. Further evidence that individual differences in stigma consciousness may moderate the experience of stereotype threat comes from a subsequent study (Brown, Pinel, Renfrow, & Lee, 2001) showing that remedial students perform worse on standardized tests the more stigma conscious they are—the more they have experienced discrimination and the more they expect to experience it in the future. Though this evidence has to be regarded as more suggestive than definitive, it does raise the possibility that there are individual differences in sensitivity to stereotype threat and that these differences may be among the moderators of stereotype threat effects.

V. Mediators of Stereotype Threat

As noted, stereotype threat is best thought of as a predicament of a person in a situation. Thus the experience of threat that arises, and its effect on behavior, are likely to be mediated in multiple ways—cognitively, affectively, and motivationally. And across situations, people, and types of stereotype threat experiences, the relative weight or involvement of these mediational processes could change significantly.

Despite these complexities, progress has been made in understanding the mediation of stereotype threat effects, again primarily in relation to their effect on standardized test performance. We review next the available evidence relevant to the most likely of these mediators: Effort, expectancies, anxiety, biological processes, stereotype activation, and stereotype suppression.

A. EFFORT

It might be expected that the experience of stereotype threat in the midst of taking a difficult test would cause one to give up or at least reduce one's effort, and through that mediation, perform worse. By now the effort people expend while experiencing stereotype threat on a standardized test has been measured in several ways: how long people work on the test, how many problems they attempt, how much effort they report putting in, and so on. But none of these has yielded evidence, in the samples studied, that stereotype threat reduces test effort.

For example, Aronson and Salinas (2001) had participants complete a difficult math test with electrodes on their wrists that purportedly monitored the effort they expended on a constant basis. Participants also understood that they would have to take the test over if they did not put enough effort into it. Despite this elaborate ruse, stereotype threat effects still emerged, suggesting, at least, that reduced effort is not a necessary mediator of stereotype threat effects.

This is not to say that decreased effort could never mediate these effects. Note that the stereotype threat conditions of most studies involve highly identified people who take a test that is portrayed as an important indicator of their ability. And they work on the test for a relatively short time (usually 20–30 min). These may be exactly the conditions where decreased effort is least likely to occur. Perhaps for people with weaker domain identification, or for people taking less personally relevant tests, or for people taking longer tests decreased effort might be more of a mediator of stereotype threat's effect on performance.

B. PERFORMANCE EXPECTANCIES

There is one possible mediator of stereotype threat effects on performance that, as people learn about the effects, comes easily to mind—performance expectations. Perhaps the stereotypes activated by the experimental manipulations affect performance by affecting participants' performance expectations, lowering them in the stereotype threat conditions and either raising them or not lowering them in the conditions that remove stereotype threat. The results of studies that have looked at this question, however, present a mixed picture.

Stangor, Carr, and Kiang (1998) attacked the question directly by examining the effect of a stereotype threat manipulation on women's expectations for their performance on a test of spatial abilities. In the first step of the procedure, participants took another test and were given either positive or ambiguous feedback on it. Next, stereotype threat was manipulated by telling participants that the upcoming spatial abilities test either had or had not shown gender differences in the past. Expectations for performance on the spatial test were then measured, although participants never actually took the test. In the no stereotype threat condition, where the test was presented as not producing gender differences, women's performance expectancies reflected their performance on the first test: If they had gotten positive feedback on that test, they expected to do well on the spatial abilities test; if they had gotten ambiguous feedback on that test, their expectations for the spatial test were more modest. In the stereotype threat condition (i.e., when the test was characterized as producing gender differences), however, women's previous performance had no effect on their performance expectations. In particular, the gain in their performance expectations that they should have gotten from their success on the first test was canceled out in the stereotype threat condition. Clearly then, stereotype threat can undermine positive expectations, but it is not as clear that

lowering stereotype threat can increase expectations. In addition, this study did not measure performance on the spatial test, which meant that the role of these expectancies in mediating performance could not be examined.

The Spencer et al. (1999) study reported earlier tested the mediational role of performance expectancies in stereotype threat effects more directly. Immediately after the stereotype threat manipulation—gender differences versus no gender differences—and just before the difficult math test, they measured participants' test performance expectancies. Nothing happened. The stereotype threat manipulation did not affect women's performance expectancies, and their performance expectancies did not relate to their actual performance.

The Stone et al. (1999) studies found that manipulations of stereotype threat reliably affected the athletic performance (golf putting) of White and Black athletes. But in their first study, a measure of performance expectancies taken before the putting task was unaffected by the stereotype threat manipulation. In a second study they measured performance expectancies before each hole of the miniature course, 10 holes in all. They again found no effect of the stereotype threat manipulation on participants' expectations for the first hole. But for the subsequent holes, when expectations for a next hole could reflect performance on a prior hole, a relationship began to emerge; performance expectancies became related to both performance and stereotype threat. The causal relationship among the variables in this study are obviously complex—perhaps involving reciprocal influences on one another. But it is at least possible that stereotype threat had its effect on performance expectancies in the data through its effects on performance.

These early studies, then, provide no clear and consistent evidence of the role of performance expectancies in mediating stereotype threat effects. But this is not to say that expectancies could never play such a role. For example, expectancies might play a greater role in mediating stereotype threat effects when the test is only moderately difficult. It is imaginable that performance on such a test would be more influenced by a person's expectations. Thus it would be stereotype threat's influence on expectations, rather than its influence on other mediational processes, that might mediate its effect on this kind of test.

C. ANXIETY: SELF-REPORT AND BIOLOGICAL MEASURES

1. Self-Report

When people feel that others might negatively evaluate them based on a stereotype about their group, they could experience increased anxiety and evaluation apprehension which, in turn, might undermine their performance on difficult tasks—another plausible mediating mechanism of stereotype threat effects on performance.

Most typically, stereotype threat studies measure anxiety through self-reports. And sometimes these measures find what they are looking for. Spencer et al. (1999), for example, found that women who believed they were taking a difficult math test that was insensitive to gender differences were less anxious before the test than women who believed the same test could show gender differences—and performed better. Such a result suggests a mediational role of stereotype threat-driven anxiety. But perhaps reflecting the statistical insensitivity of mediational analyses for small sample sizes, the last leg of the full mediational analysis—showing that self-reported anxiety correlated with performance in the cells of the design—did not reach significance. Better evidence of anxiety as a mediator of stereotype threat effects on real-life testing was found by Osborne (2001). In a nationally representative sample of high school seniors, he found that anxiety was a partial mediator of African Americans' academic performance and women's math performance, but did not mediate the academic performance of groups who were presumably less stereotype-threatened.

Despite these findings, a number of other studies have measured anxiety and failed to find what they were looking for (Stone et al., 1999; Leyens et al., 2000; Stangor et al., 1998). Null effects can, of course, have several causes: The timing of measurement might have missed actual increases in anxiety; study participants may have been unaware of their increased anxiety, and anxiety may mediate stereotype threat effects only under specific conditions.

2. Biological Measures

But also, people may not always be able to report the anxiety that accompanies stereotype threat. If so, a measure of the physiological indicators of anxiety might reveal an anxiety reaction to stereotype threat even when the participants themselves were unable or unwilling to report it. Blascovich et al. (2001) examined precisely this possibility. They had Black and White college students take a difficult verbal test described as either a carefully constructed culture-fair test that did not show racial differences in performance (and thus should produce little stereotype threat) or a regular diagnostic test of verbal ability (an instruction known to produce stereotype threat). Participants' blood pressure was monitored throughout the test in all conditions. The study yielded a typical pattern of stereotype threat effects on performance: Whites outperformed Blacks when the test was represented as diagnostic of verbal ability, but not when the test was represented as racially fair.

Interestingly, though Blacks reported no more anxiety than Whites during the diagnostic test, their blood pressure in that condition increased dramatically from its baseline level and was higher than that of participants in all of the other conditions, all of whom experienced blood pressure drops from baseline. These findings have implications for understanding racial differences in hypertension. But they

also make it clear that people may not always be able or willing to report the distress of stereotype threat.

We doubt that blood pressure *per se* is a direct mediator of the stereotype threat effects observed in the Blascovich et al. study. It is a possibility. But the route of its influence on behavior is not very clear. Rather, it is likely to be a concomitant—albeit a dangerous concomitant—of the state of anxiety and vigilance that we presume is the more likely mediator of stereotype threat effects in this study.

Conceivably, though, other physiological processes may play a more direct role in moderating or mediating stereotype threat effects. Josephs, Newman, Brown, and Beer (2001), for example, have produced evidence of one such possibility, testosterone. They found that the women who experienced the strongest stereotype threat effects on a difficult math test were those who began the experiment with the highest levels of testosterone. Being women who might have a strong need for social dominance, Josephs et al. reasoned that they might become the most upset by the prospect of being negatively stereotyped. And this greater state of upset might have impaired their performance. In this way, the level of testosterone circulating in the women's blood may have been a moderator of stereotype threat effects; when it was high these effects were large, and when it was low these effects were small. Still, of course, testosterone may be just a concomitant of stereotype threat effects, like blood pressure. Perhaps women who are especially responsive to stereotype threat develop higher testosterone levels. If so, then heightened testosterone, like heightened blood pressure, may be an important physiological consequence of stereotype threat, but not itself a moderator or mediator. This is clearly an important question for future research.

D. STEREOTYPE ACTIVATION

Steele and Aronson (1995) found that Blacks who were about to take a test that was diagnostic of their verbal ability completed more word fragments with words that were consistent with Black stereotypes than Blacks who were about to take a test that was nondiagnostic of their verbal ability or than Whites in any condition. Here was direct evidence that activation of the relevant group stereotype was somehow part of the experience of stereotype threat. This should be so, we reasoned, because stereotype threat is aroused by the perception, conscious or unconscious, that a negative group stereotype is relevant to one's behavior or situation. It is this perception that alerts one to the threatening possibility of being stereotyped. Thus in the midst of this threat, the stereotype should be demonstrably activated.

The Davies et al. study (in press) described above tested this reasoning. Recall that they had men and women watch television commercials with negative stereotypic images of women or commercials absent these images. Women who watched the stereotypic commercials performed worse on a subsequent math test than

women who watched the neutral commercials. Moreover, the stereotypic commercials caused greater activation of the gender stereotype. And to the point we are making here, this activation mediated (correlated with) their performance on the math test.

Wheeler and Petty (2001) recently reviewed the available evidence on the role of stereotype activation in mediating stereotype threat and behavioral priming effects. Following Dijksterhuis and Bargh (2001), they raised another possible route through which stereotype activation might mediate stereotype threat effects. Rather than serving to cue the possibility of a stereotype-based threat, the activated stereotype might automatically—through an “ideomotor” pathway—lead to behaviors that are associated with the stereotype. Compelling evidence for this comes from studies showing that when people are primed with stereotypes, even about groups to which they do not belong, their behavior may assimilate to those stereotypes. For example, Bargh, Chen, and Burrows (1996) found that when Whites were subliminally primed with an African American face, they actually conformed to a negative stereotype of African Americans by behaving more aggressively on a subsequent task.

We find this a fascinating and important route of environmental influence on behavior and assume that it contributes to stereotype threat effects in some situations. For several reasons, however, it may not be the most typical mediation of these effects. First, it does not seem to provide a complete explanation for all the relevant data. For example, Blascovich *et al.* (2001) found that Black participants who were told that a test showed no racial differences performed better than Black participants simply told that the test was diagnostic of ability. Spencer *et al.* (1999) found the same thing for women taking a difficult math test; when the test was reputed to show no gender differences women performed better than when it was presented as a test of ability. We know that presenting a test as diagnostic of ability can activate the relevant group stereotypes. But we doubt that it does this more than explicitly reminding participants of the group stereotype in order to tell them that it does not apply in this situation. In these conditions, then, what was most likely an explicit activating of the group stereotype did not lead automatically to behavior, to lower performance.

In addition, the Davies *et al.* study (in press) found that negative stereotypes about women were activated in both men and women participants while watching the stereotypic TV commercials. But this activation affected only women’s math performance. As important, Davies and Spencer (2001) found that activation of these stereotypes had no effect on even women’s math test performance when they believed that the test showed no gender differences. Activation of the stereotype, absent its signaling any threat, did not produce stereotype threat effects in these studies.

A second reason for doubting that the direct, ideomotor effect of stereotype activation is a common means through which stereotype threat effects occur, comes

from thinking about these effects in real life. Among the many factors that affect behavior in real life, the “suggestibility” or ideomotor effects of cognitively activated stereotypes would not seem to be a strong one. Real-life settings are capable of activating many negative stereotypes about various groups. And yet it seems clear that this activation does not often cause people who are not members of the group in question to behave in ways associated with the activated stereotype. For example, it does not seem plausible that a male math student who has the stereotype about women’s math ability activated by encountering women test-takers in the testing room is likely to underperform by assimilating to the female stereotype. Whatever “suggestiveness” the activated stereotype has is probably not enough to override his other motives to perform well in this situation.

We might make a similar argument for women taking a real-life math test. Activation of the same stereotype (by merely knowing that the test is diagnostic) could well cause her underperformance. But this underperformance would not likely be mediated by suggestive power of the activated stereotype. Like men, her other motives to perform well in this situation should override this suggestive influence. It seems more plausible that the activated stereotype would affect women’s performance in this real-life situation through stereotype threat, through signaling to women the disturbing possibility that they could be negatively stereotyped (or confirm a negative stereotype) in a domain that is important to them and their future. Our point here is that in the real-life experience of stereotype threat, the ideomotor effects of activated stereotypes, generally speaking, may not be strong enough to play a major role. Taken together with the evidence reported above, this point may hold for much of the laboratory research as well.

But, when might the behavioral effects in stereotype threat research be mediated by the direct, ideomotor effects of the activated stereotype? Not to beg this difficult-to-answer question, we offer a conjecture: This mediation should be most likely when the stereotype is activated subtly or subliminally—beneath awareness—and when there are no other strong influences on the behavior in question. Under these conditions, people could be primed by the stereotype and, not recognizing that it does not apply to them, begin to automatically enact stereotypic behaviors—unless other motivations and pressures on the behavior override this influence. But when a person is aware that a group image has been evoked, this unknowing enactment should be less likely. For people who are not in the stereotyped group, they should then know that the stereotype is not relevant to them and be unaffected by it. We suspect that this was the case for the non-stereotype-relevant groups in the studies reported above by Blascovich et al. (2001), Spencer et al. (1999), and Davies et al. (in press). They were not subject to the suggestibility of group stereotypes that may have gotten activated because, to the extent that they were activated, they were activated in a context that enabled participants to know that they were not about them. For the people who are in the stereotyped group, the effect of stereotype activation is likely to be mediated not by an unknowing enactment of

stereotypic behaviors but by a real predicament caused by the recognized relevance of a negative group stereotype to their behavior and future. We take this as a plausible argument at this point and as an empirical question for future research.

As is often the case, however, no sooner does one arrive at a seemingly tidy account of some body of evidence than a complicating exception arises, this time in a study by Wheeler, Jarvis, and Petty (2001) that had participants write about a day in the life of either Tyrone (presupposedly an African American) or Erik (presupposedly a European American). They found that regardless of their own ethnicity, participants who wrote about Tyrone performed worse on a subsequent standardized test than participants who wrote about Erik. Importantly, with regard to our conjecture about when automatic effects might mediate stereotype activation effects, the participants in this study were presumably consciously envisioning a Tyrone who was African American. Perhaps they were not aware of this image. And perhaps the test was perceived as low enough in relevance that other motives strong enough to override the automatic effects of this unconscious stereotype were not aroused in these participants. Then, according to our conjecture, these effects could have been mediated by an automatic, unknowing enactment of the African American stereotype.

But it is at least possible that White participants in the Tyrone condition were fairly aware of African American stereotypes when they wrote about Tyrone. Thus they would very likely know that the African American stereotype did not apply to them. And yet their test performance assimilated to that stereotype anyway. How could this happen if, following our conjecture, they were aware enough of the stereotype to avoid unknowingly fulfilling it?

This is clearly a question for future research, but we want to raise a possibility: This effect may have stemmed from an unknowing, automatic fulfillment of the African American stereotype that did not arise from an unconscious priming of the stereotype—as in the typical behavior priming study—but from an ironic priming of this stereotype by these participants' conscious attempt to suppress its use in writing about Tyrone (cf. MaCrae, Bodenhausen, Milne, & Jetten, 1994). That is, the White participants in the Tyrone condition may have been trying not to use African American stereotypes in describing Tyrone. And this suppression may have had the ironic effect of both priming African American stereotypes—because they have to be monitored not to be used (Wegner, 1994)—and keeping these stereotypes beneath their acknowledged awareness. If this reasoning is correct, then the automatic effect of the stereotype in this study among participants who were seemingly aware of it—a finding that would appear to contradict our conjecture—in fact meets the conditions of the conjecture rather precisely: The stereotype was activated beneath participants' experienced awareness in a situation with few other influences on the behavior strong enough to override this automatic effect. For the time being, then, we hold to our conjecture about when stereotype threat effects are mediated by automatic stereotype effects, knowing that much about this process will come to light in future research.

E. STEREOTYPE SUPPRESSION

As noted, our best understanding of how stereotype threat affects test performance is that frustration with the test alerts the person to the further upsetting possibility that they could confirm, or be seen to confirm, a negative group stereotype. Thus one of the things a person under this pressure might be doing in the midst of the test is trying to suppress the stereotype and the concerns it raises. But as research by Wegner and his colleagues (e.g., Wegner, 1994; Wenzlaff & Wegner, 2000) has shown, the effort to suppress a thought has the ironic effect of keeping the thought activated. The thought stays activated so that, in the effort to suppress it, one can monitor whether one is having the thought. This is a lot to have going on while one is trying to focus on a test. Thus the fitful effort to suppress stereotype concerns while one is trying to focus on a test might well be one process through which stereotype threat interferes with test performance.

A series of experiments by Spencer et al. (2001) examined this possibility. The first question they asked is whether the mere effort to keep one's attention on a challenging test causes one to suppress the relevant group stereotype and the concerns it raises. If this kind of suppression happens, it would be demonstrated—following the Wegner argument—by evidence that the suppressed stereotype was ironically activated. To test this, Spencer et al. had men and women take a moderately difficult math test with either an additional cognitive load or no load. If the challenge of taking a moderately difficult math test under cognitive load causes women to try to suppress the negative stereotype about women's math ability, then compared to men in either condition or women in the no load condition, these women should perform worse and show greater activation of the stereotype. This is precisely what happened, giving some evidence that in order to cope with the demands of the test, these women were trying to suppress their stereotype concern—which, ironically, kept them activated.

A second experiment reinforced this interpretation. Its reasoning was this: If it was women's attempts to suppress the relevant stereotype that impaired their performance in the test-plus-cognitive load condition of the first experiment, then making the test unrelated to the stereotype—by presenting it as showing no gender difference—should improve their performance and preempt activation of the stereotype. Again, the results fit the reasoning. When the test was made unrelated to the gender stereotype by representing it as showing no gender differences, women in the cognitive load condition, apparently undistracted by any effort to suppress, showed no underperformance or ironic activation of the stereotype.

A third experiment came at the question of whether stereotype suppression undermines test performance from a different angle. It compared the test performance of people for whom the work of stereotype suppression was either aided, and made easy, or not aided. If it is the work of stereotype suppression that interferes with performance, then doing something that makes that work easier should improve performance.

Wegner's research (Wegner, 1994) offered a strategy for doing this. He has shown that thought suppression is easier when a person substitutes another thought for the to-be-avoided thought. It reduces the frustration of trying to find a substitute thought and makes suppression more effective.

In the third study then, women and men were given, this time, a difficult math exam. A third of the test-takers were instructed to think of a valued identity every time they had stereotype-related thoughts (i.e., doubts and concerns about others' judgments). This substitution was presumed to make suppression easier. Another third were asked to think of a valued identity but only at the beginning of the experiment, and a last third were asked to write about something irrelevant.

If the effort to suppress the relevant stereotype contributes to women's underperformance on difficult math tests, then women given the means of making suppression easier and more effective should perform better than women not given these means and as well as equally skilled men. This is what happened; women given the suppression strategy performed as well as the men in all conditions and better than the women in the two remaining control conditions.

These studies, then, provide suggestive evidence that stereotype suppression may be a mediator of stereotype threat effects on test performance. Spencer *et al.* (2001) assume that these results are not mediated through an ideomotor effect of activated stereotypes. In the second study, the relevant stereotype was likely activated in the "no-gender-differences" control condition in the process of discouraging its relevance. And in the third study, it was likely activated in the process of being suppressed. If stereotype activation was sufficient to affect performance alone, through an ideomotor effect, than participants in these conditions should have underperformed. At this point, however, Spencer *et al.* do not take their data to be definitive on this point. Further research on this and other questions of interpretation is clearly important. But in the meantime, these beginning studies raise the clear possibility that stereotype suppression may be a significant mediator of stereotype threat effects on all kinds of performance and perhaps on academic test performance in particular.

We end this section by sounding the same note with which we began it. The predicament of stereotype threat is a multifaceted phenomenon shaped by a host of features of the person, the context, and the transactions between them: Features such as the nature of the stereotype involved, the importance of the behaviors to which it applies, the number of people in the environment who know the stereotype, the group's collective capacity to resist the stereotypes, the extent to which the stereotype can be avoided or disproved, and so on. Thus the experience of stereotype threat, as we have noted, is likely to vary considerably from stereotype to stereotype, setting to setting, and person to person. It is almost unimaginable that an experience as variable as this could be mediated consistently through a single psychological process within the person—always through anxiety, performance

expectations, or stereotype activation, for example. It just seems that depending on the sensitivity of the measures used, different multiples of these processes will be found to mediate different occurrences of this threat in the laboratory. And in real life, multiple and varied mediation of this threat will almost certainly be the rule, not the exception.

Thus, we expect that research tracking the mediation of stereotype threat effects will, of necessity, come to focus more on particular cases or types of this threat: the type that women may experience during math tests, the types that Whites and Blacks may experience interacting in academic settings, and so on. Admittedly, this is not a fully satisfying resolution. Our kingdom for a single, "silver bullet" mediator. But some important forms of the stereotype threat predicament are so stable that it is clearly worthwhile delving into their mediation. The case of poor standardized test performance among ability-stigmatized groups is a good example. At the core of this stable occurrence of stereotype threat may be a stable form of mediation that when addressed could have salutary effects on the performance of these groups.

Having said this, we point to a type of mediation that has, so far, been neglected. In tracking the cognitions that mediate stereotype threat effects, researchers have perhaps attended to the person's cognitions about his ability to cope with the threat—performance expectancies, activation of negative self images, self confidence, and so on—at the expense of his cognitions about the nature and extent of the threat itself—assessments of the likely consequences of being stereotyped and perceptions of how broadly disseminated the stereotype is, how likely one is to be judged or treated in terms of the stereotype, how difficult the stereotype is to disprove or avoid, and so on. Using the language of stress and coping, we have perhaps focused on the processes of secondary appraisal at the expense of focusing on processes of primary appraisal. So in this closing section, we suggest that the next wave of mediation seeking be directed less inward, toward the person's self assessments, and more outward toward his or her assessment of his or her predicament.

VI. Acute Reactions and Chronic Adaptations to Stereotype Threat

Early on in our research program (Aronson, Quinn, & Spencer, 1998; Steele, 1992, 1997) we emphasized how stereotype threat can lead people to disidentify with the domains in which they experience the threat. As research on this question has progressed, two things have become clear: First, people's reactions to stereotype threat include both acute protective reactions and chronic identity adaptations; and second, these reactions are remarkably nuanced in the sense of taking many concrete forms. We review here the relevant evidence.

A. QUICK DEFENSES: ACUTE REACTIONS TO STEREOTYPE THREAT

1. Domain Avoidance

One response to stereotype threat is to simply avoid domains where the stereotype applies. Steele and Aronson (1995) found that Black participants on the brink of taking a stereotype-threatening diagnostic test seemed to disassociate themselves from activities that might link them to the stereotype, such as listening to rap music and playing basketball. More recently, the Davies *et al.* (2001) study found that women who incidentally watched TV commercials with negatively stereotyped women in them, compared to women who watched neutral commercials, reported less interest in quantitatively based college majors and subsequent careers. People seem to sense when they come under the possibility of being negatively stereotyped and, other things being equal, respond by avoiding the premises. This certainly preempts the trouble of later having to disengage and disidentify. But when group interaction holds, for the groups involved, the possibility of being negatively stereotyped by each other—an all too common state of affairs—this simple, acute reaction to stereotype threat can become a major barrier in intergroup relations.

2. Self-Handicapping

This is another acute strategy preempting the negative evaluative consequences of performing poorly in a stereotype-threatening domain—or any important domain for that matter, but especially in a stereotype threatening one. Evidence of this strategy again comes from Steele and Aronson (1995). Blacks who expected to take a diagnostic test reported that they had slept less the night before and had a harder time concentrating than Blacks who expected to take a nondiagnostic test. Presumably, the reporting of factors that could impede performance, such as lack of sleep and inability to concentrate, preexcused any poor performance in this domain where poor performance, in addition to its own bad consequences, could confirm the negative stereotype.

3. Counterstereotypic Behavior: Disproving the Stereotype

A common response to stereotype threat is to try to disprove the relevance of the negative stereotype to oneself through counterstereotypic behavior and self-presentation. Brent Staples' provides a prime example of this strategy. He would often whistle Vivaldi as a way to counteract the negative stereotypes that others had about him as a Black male. Through one's behavior, one tries to show that one is a subtype of the negatively stereotyped group to whom the stereotype does not apply. Likewise, the high-achieving female math student may win a "subtyped" exemption from the stereotype in the settings where she performs well.

Counterstereotypic behavior, however, has several limitations. First, it offers a situation-bound solution, one that probably works better in the short run, in a single setting, than over the long run across settings. This limitation stems from the fact that stereotypes are by definition broadly disseminated in society (e.g., Jost & Banaji, 1994, Devine, 1989). Thus an exemption from being stereotyped that is won in one stereotype-relevant setting does not generalize to a new stereotype-relevant setting where one's counterstereotypic reputation is not known or where that reputation has to be tested against a new standard. Unless her reputation precedes her, as our strong female math student moves up the ladder of math courses, she may reencounter the stereotype and have to rewin her exemption from it against a new standard.

Second, counterstereotypic behavior is a Sisyphean effort. Trying to win and rewin one's exemption from the stereotype in each new setting where it applies is never-ending and thus becomes a pressure against complete identification with the domain. It is also a pressure that likely gets worse as one moves up in the domain. As more and more members of the negatively stereotyped group leave the domain, their smaller numbers reinforce the stereotype and its pressure, as in the case of the female math student. Moreover, in domains that involve increasingly difficult performance levels, such as all forms of schooling and most athletic and musical performance, past success in the domain does not refute the relevance of the stereotype at each new "frontier" of performance. There, frustration can always be taken as confirmation of the stereotype.

4. Disengagement

The first phase of full-blown disidentification or alienation is the acute reaction that Crocker and Major and their colleagues (Crocker, Major, & Steele, 1998; Major, Spencer, Schmader, Wolfe, & Crocker, 1998) have called "disengagement"—an early weakening of the connection between how one views oneself and one's skills in a domain from how one performs in the domain. For example, Major et al. found that after the possibility of racial bias was primed, Black participants were unaffected by negative feedback they received on an intelligence test. They disengaged their view of themselves and of their skills from their performance on the test. It was not simply that Blacks were unaffected by feedback. When the possibility of bias had not been raised, their self-esteem was made substantially lower by the feedback. But when they were at risk of confirming a negative stereotype on a possibly biased test, they disengaged their self view from their performance.

The Davies et al. (in press) study also illustrates disengagement. Women exposed to the stereotypic TV commercials avoided the math domain by choosing fewer math test items and distancing themselves from math-related majors and careers. This avoidance could well have involved disengagement, but not necessarily.

And this is where a conceptual distinction between domain avoidance and disengagement, as early defense against stereotype threat, is useful. Disengagement is a short-term psychological adjustment to stereotype threat that involves weakening the dependence of one's self views and views of one's abilities on one's performance. Domain avoidance is the more logistical defense of simply staying away from the domain where the threat exists. Such avoidance may involve disengagement. We suspect that they are often correlated. But one can clearly avoid a domain with which one is still ego-engaged. Avoidance may even help to maintain domain identification in some instances. And one can disengage from a domain that one cannot avoid. In fact, it is the unavoidable stereotype-threatening domain that may push one to disengage as the only remaining means of protection. Our larger point, though, is that although these two early responses to stereotype threat are often related—as was probably the case for the women avoiding math in the Davies *et al.* study—they can be quite different.

We end with a conjecture that illustrates how important this difference can be: When a stereotype impugns a broadly important ability such as intelligence (as in the case of the African American stereotype), the sheer difficulty of avoiding domains where the stereotype is relevant may make disengagement a more likely defensive response. Whereas when the stereotype impugns a more specific ability (as in the case of women in math), the greater availability of alternative domains without stereotype threat may make domain avoidance a more likely defense strategy. This conjecture points to an interesting direction for future research. But for our purposes here, it also illustrates how these subtly different defensive strategies, held in place by different group stereotypes that are “in the air,” can create quite dramatic differences in group experience, group outcomes, and even group cultures.

B. LONG-TERM DEFENSE: CHRONIC ADAPTATIONS TO STEREOTYPE THREAT

1. Disidentification

No matter one's success at fending off stereotype threat in the short run, we assume that as this threat persists in a domain, it is likely to drive people to some more chronic adaptation, most likely an adaptation of identity. One such adaptation that we have proposed from the beginning of our work is disidentification. We see this as differing from disengagement primarily in its being a chronic rather than an acute response to stereotype threat. What we have in mind is a change such that one's evaluations of self and domain-relevant abilities become chronically, not just acutely, independent of one's performance in the domain. People who disengage from a domain quite likely remain identified with it. To be disidentified,

however, one has to meet the higher standard of distancing one's self views from one's performance over the long run.

Its purpose, of course, is to protect the person's self-regard against stereotype threat in the domain. In achieving this end, it can take several forms. Perhaps the most blunt, the one we stressed in our earlier work, is to simply drop the domain where the stereotype applies as a personal identity, as a basis of one's self-esteem. In many domains of life, this is likely to be the form that disidentification takes. This is because many domains—like skiing or piano playing—are not so universally valued as important for everyone that one could not just drop them with few recriminations.

But this form of disidentification should be more difficult in a domain like schooling, a domain that is near universally valued as important for everyone. As research has brought to light, it is very difficult for anyone in school, including those whose abilities are negatively stereotyped, to develop a self-esteem that is impervious to how well one is doing there. If for no other reason, one's performance in school is tied to how well one is regarded by others, inside and outside of school. This social contingency of school performance alone may be enough to make one's self-esteem somewhat dependent on it. But how then, does one protect oneself against stereotype threat in such a domain? Against this situation, disidentification may have to take a different form.

One such form is nicely illustrated in a series of studies by Major and her colleagues (1995; Major et al., 1998). In a survey of Black and White college students, Major (1995) measured two components of academic identification: their investment in school and test performance, in the sense of basing their self-esteem on it, and their "disidentification," or the extent to which their self-appraisals of ability were based on their intelligence test performance and school feedback. In line with the above point, Black and White students did not differ in the degree to which their self-esteem was invested in school. As went the school and test performance of these groups, so went their self-esteem—to about the same degree in both groups. As Major noted, this makes sense in a domain that is so highly valued by the larger society. It would be very difficult to remain in school—especially college—and achieve a complete self-esteem imperviousness to one's performance there, if for no other reason than that it would affect how others regard one.

But disidentification did occur among her Black respondents. The form it took was for them to see their test performance and academic feedback as invalid assessments of their true intellectual ability. That is, they just severed the connection between their school performance and their self-appraisals of ability. Doing this—which allowed their academic self-concept to remain impervious to their performance—almost certainly provided them with some self-esteem protection. This disidentification did not work perfectly, however. They still retained some connection between their performance and their overall self-esteem, perhaps because of the social consequences of poor performance in the college environment or

because they themselves just continued to value achievement in the larger scheme of things. But it did help their self-feelings somewhat; it avoided the further esteem blow that would come from believing that their often poorer performance reflected the lower intelligence alleged of them by the stereotype.

In an experimental validation of this performance disidentification, Major *et al.* (1998) found that the ability self appraisals of students who were chronically disidentified with school-based performance assessments were virtually unphased by negative feedback on an intelligence test.

Thus, with regard to self-esteem protection, performance disidentification seems to have at least a buffering, if not a boosting, effect. But as with any form of disidentification it has the added costly effect of undermining performance itself. Though the data are correlational and the direction of causality unclear, Major (1995) found that for Black students only, the stronger their performance disidentification, the lower their grades even after controlling for their SAT scores.

Osborne (1997) has found results suggesting a more global form of disidentification among Blacks in a nationally representative sample. He found that the correlation between academic performance and self-esteem was weaker among Blacks (presumably due to their greater stereotype threat in the domain) than among Whites. This was especially so for Black males. Importantly, Osborne (1997) found this disidentification effect using a measure of overall self-esteem. That is, the disidentification in this high school age sample was of the bluntest form: A lack of connection between their school performance and their overall self-esteem, not just between their performance and academic self esteem or ability appraisal. But we suspect that this effect would have been even stronger with a measure of ability self appraisal had he been able to include one.

This beginning literature on disengagement/disidentification suggests several broadened ways of thinking about the process. First, disengagement and disidentification can be thought of as end points on a continuum of self-protective, ego withdrawal from a domain and its standards. At the disengagement end, the withdrawal is a more immediate reaction to the experience of stereotype threat and other stressors. If the person does not leave the domain because of it, their disengagement might well be reversible. Further along the continuum, however, the ego withdrawal becomes more habitual and difficult to reverse until, at the other end of the continuum, a complete disidentification is realized in which the person has no ego dependence on the domain and may resist any encouragement to develop one.

We note, however, that even being firmly disidentified with a domain does not mean that one devalues the domain. When a domain is generally valued in society, the disidentified, like everyone else, may share in that valuing. They just do not regard it as personally relevant, as something to which their own self regard is held accountable. We all have this relationship to countless domains; one could love watching Wimbledon tennis, for example, but care less about one's own complete incompetence at the game.

Also gleanable from the evidence to date is the idea that the disengagement/disidentification process can take different forms and that the form it takes depends substantially on the particular dimensions of the stereotype threat predicament involved—the nature of the stereotype, the general importance of the domain, the availability of equally suitable alternative domains, and so on.

To illustrate, we compare a few different stereotype threat predicaments. The one for African American college students seems especially challenging: The relevant group stereotype impugns the full range of abilities needed for success in school, there are few alternative domains that have the same instrumental value, and these students, like many people, understand that school achievement is virtually indispensable to a successful life. What to do? Because the domain is so important, complete disidentification is very costly and, if it happens, would surely take a long time and be painful. More likely, these dimensions of the predicament would pressure them toward an adaptation that is intermediate on the continuum—for example, chronically disengaging their self-concept of intelligence from the conventional measures of intelligence in the domain, as much of the relevant data suggest. This form of disidentification is esteem-protective and, as such, may even enable persistence in the domain. But unfortunately, like complete disidentification, it also undermines performance.

The stereotype threat predicament of women in advanced math is an interesting contrast. The relevant stereotype bears primarily on math. Thus, there are often alternative academic domains available that are less stereotype-threatening, just as instrumental to future success, and still broadly valued by society. Interestingly, this kind of predicament may be more likely to produce complete disidentification with the stereotype-threatening domain. As the woman encounters more stereotype threat moving up the math ladder, for example, the availability of viable alternatives may allow her to disidentify with math more quickly and more completely—though it must be said that the process could never be easy. A similar story might be told of White males contending with the stereotype threat they might encounter in elite basketball. The availability of viable alternative domains of instrumental value may make disidentification with playing the sport a quicker and more complete process.

Our aim here has been to suggest some of the contingencies that likely shape the process of disengagement/disidentification. But we must also stress that in the important domain of school achievement on which most of the relevant research has focused, virtually every form this process takes has had the unfortunate effect of worsening performance.

2. Revisiting the “Vanguard” Hypothesis

With respect to school performance, a few years ago we developed what might be called the “vanguard” hypothesis (Steele, 1997, 1999). Its purpose was to explain how underperformance in a negatively stereotyped group such as African

Americans might be mediated differently in different sectors of the group and, accordingly, how effective remediation of the problem might involve delivering different remedies to different sectors. The distinction we made was between the achievement-identified and the achievement-unidentified members of such a group—or as we called them, the academic “vanguard” and “rearguard” of the group.

Thinking in particular about the case of African American students, we reasoned that the strongly school-identified vanguard of the group, still aspiring and holding high expectations, would be more frustrated by stereotype threat in the domain, and thus their underperformance might be mediated more by this particular pressure. In contrast, the unidentified or disidentified rearguard of the group, not seeing the domain as self-relevant, might care little about stereotype threat in the domain. Instead, their underperformance might be mediated more by the psychology of low expectations and low motivation that accompanies a lack of achievement identification. This, we might note, is perhaps the most commonly held understanding of minority student achievement problems.

But the above discussion, and the emerging evidence, suggests that this distinction between a school-identified vanguard and a school-unidentified rearguard may be too sharp. Rather than falling into distinct types, stereotype-threatened students probably fall along a continuum varying from identification to disidentification with, along most of the continuum, intermittent episodes of disengagement and reengagement. And also all along this continuum, both psychological causes of underperformance—frustration and interference due to stereotype threat and the low expectations and motivation that accompany disidentification—could play a mediating role in some mix or another. It is likely that for the more strongly identified, the bigger part of their underperformance is mediated by the pressure of stereotype threat. (Interestingly, much of the evidence of Black student academic disidentification suggests that it happens precisely in relation to that part of the school domain where stereotype threat pressure is probably the worst—test and grade performance.) But as the forms of disengagement/disidentification become broader and more chronic, the pressure of stereotype threat may begin to play less of a performance-mediating role relative to that of low expectations and motivation.

Thus, while recognizing that a different mix of processes may mediate the underperformance of different sectors of a stereotype-threatened group, and while still stressing the importance of this fact in guiding remediation (cf. Steele, 1997), we recognize that the mediational differences between group sectors are probably more overlapping and gradual than categorical and that remedial efforts may have to meet these realities in kind.

3. Identity Bifurcation

Clearly stereotype threat can drive disidentification with a domain. But just as clearly, disidentification can be a very slow process. What happens in the

meantime? Does stereotype threat cause other identity adaptations among people trying to remain identified with a domain? Pronin, Steele, and Ross (2001) reasoned that during a person's struggle to remain domain-identified, stereotype threat might affect the nature of one's identification with the negatively stereotyped group. Looking at this question in relation to women trying to remain math-identified, they developed a specific hypothesis: To stay identified with math, women might "bifurcate" their identity as women by reducing identification with those aspects of being a woman they perceived as being negatively stereotyped in the math domain, while remaining identified with aspects of being a woman they perceived as unproblematic in math.

To test this idea, they first used a prestudy to identify traits that female math students saw as stereotype-relevant (e.g., wearing makeup, showing emotion, and having children) and those they saw as not stereotype-relevant (e.g., being a good listener, nurturing, and sensitive). They then administered these traits to women math students who had taken either more or less than 10 math courses. They found that compared to those who had taken fewer math courses, those who had taken more showed significantly more evidence of "bifurcation," endorsing the non-stereotype-relevant female traits while eschewing the stereotype-relevant ones.

Greater experience in the domain seemed to foster a more bifurcated female identity, but this study was correlational, leaving open the possibility that female math students with more "bifurcated" identities had selected themselves into the math domain, and thus taken more courses, because they felt more comfortable there. The domain itself may not have pressured this adaptation. A series of subsequent experiments, however, showed that even a one-time exposure to a stereotype-threatening message—a *Science* article suggesting a biological limit to women's math ability—produced the same bifurcated profile of identity endorsements in women math students who were randomly assigned to conditions.

Clearly then, the possibility of a stereotype-based evaluation in a domain with which one is trying to remain identified can affect the nature of one's identification with the group that is stereotyped. In these studies it caused a form of group identification that tried to avoid the pattern of devaluation anticipated in the domain. Something like this surely happens as one moves into any new, valued domain of life. We shape our identities to fit our valued whereabouts. But note that in these studies, the identity shaping pressure was imposed by a demonstrably irrelevant societal stereotype.

4. Schematicity in a Counterstereotypic Domain

Finally, some chronic identity adaptations to stereotype threat may not be intended but may occur as a result of coping with stereotype threat in a domain. Recently von Hippel, Hawkins, and Schooler (2001) compared the academic achievement, self-reported ability, and degree of self-schematicity for intelligence (as measured by their reaction time to intelligence related words) in a sample of

Black and White college students. Some of their results square with the findings reported in this section: Blacks' self-reports of their academic ability bore no relationship to their grades and standardized test scores (replicating this form of disidentification), whereas for Whites, this relationship was strong. Yet they also found something else: Blacks with stronger academic achievement had faster reaction times to intelligence-related words, but this was not so for Whites. Blacks who were better students were more schematic for intelligence than Whites who were better students. In explanation, von Hippel *et al.* argued that attention drawn to a person's counterstereotypic traits pressures the person to think more about the area, which eventually elaborates their self-concept in the area. In support of this theory, they later found that White students who were good athletes—and thus succeeding in a counterstereotypic domain—had more developed self-schemas for athletics than Blacks who were good athletes. Here then may be another identity adaptation to stereotype threat in a domain—among those who persist in the domain, a more elaborate self-concept about the area in which the stereotype applies.

VII. Toward a General Theory of Social Identity Threat

Perhaps inevitably, as we explored the nature of stereotype threat, a certain realization began to reoccur: that although stereotype threat is a quite pervasive form of social identity threat, it is not the only form. One's group can have low status, be culturally and structurally marginalized, be in an unfavorable comparative relationship to other groups (e.g., Branscombe & Ellemers, 1998), and so on. Thus, to extend our work and its focus on the perspective of the potential target of social threat, it is important to develop a broadened conception of how one's social identity can place one under threat. In this section, we outline a more general model, one that includes the experience of stereotype threat, but also the experience of other identity-based threats such as that the setting simply holds an animus toward one's group or that one's group has low or marginalized status in the setting (see also Purdie, Steele, Davies, & Crosby, 2001). Importantly, this model attempts to identify a broader set of contextual cues that can cause such threat. And as is shown, an understanding of how these cues mediate social identity threat may help in figuring out how to remedy it. The reasoning of this model is best summarized in four parts:

A. FOUR THEORETICAL ASSUMPTIONS

1. Social Identity and Vigilance to Threat

As noted, all people have multiple social identities: their sex, age, race, ethnicity, social class, religion, professional identity, etc. In particular settings or domains

of activity, a person can come to realize that they could be devalued, marginalized or discriminated against, based on one of these identities (e.g., Brewer & Brown, 1998; Abrams & Hogg, 1999). This realization could derive from a person's general cultural knowledge of how people with given social identities are regarded in given settings and domains of activity (cf. Goffman, 1963). Or it could be prompted by a cue in the setting that raises the possibility of such a devaluation. Once this realization happens, however, we assume that the person becomes vigilant to the possibility of identity threat in the setting (as a default reaction) until it proves no longer necessary.

2. "Theory of Context"

We suggest that this vigilance exists in a person's mind as a "theory of context," that is, a hypothesis about the setting and the likelihood that it will deliver devaluation. As a working hypothesis, and as a hypothesis about threat, it is likely to pressure the person to evaluate a broad set of cues in the setting, even when their relevance to the specific hypothesis might seem only marginal. For example, in addition to cues that bear on the possibility of animus toward one's identity in the setting, one may attend to a variety of other cues, such as those that signal the status of that identity in the setting, whether or not it lives under a "glass ceiling" in the setting, whether it compares negatively to other identities in the setting, and, of course, whether it is negatively stereotyped in the setting. In general, cues that seem to support the hypothesis of identity threat should increase a person's vigilance and decrease trust in the setting. Whereas cues that seem to refute the hypothesis should reduce this vigilance and mistrust. Trust can be thought of here as the lack of vigilance or, more fundamentally, as a lack of any perceived reason for vigilance.

Also, whatever the specific cues, people may differ in their tendency to interpret them as either refuting or confirming a hypothesis of social identity threat. Many dimensions of individual difference could imaginably influence this tendency: General traits such as optimism or self-esteem; ideologies and beliefs that affect how much credence one gives to devaluing opinions and evaluations in the setting; the degree to which one is identified with the social identity under question; and so on. But we stress here that the hypothesis about the possibility of this threat in a setting is not borne of particular individual or group orientations. These orientations may affect the likelihood of a threat being believed. But what brings the hypothesis into being and essentially forces it into the concerns of all potential targets, is the assumptive knowledge, shared by virtually all members of the culture, of how different groups of people are perceived and valued in the various settings of society (Goffman, 1963). It is this knowledge that makes the hypothesis, for all relevant parties, essentially unavoidable.

In light of this knowledge, the hypothesis is usually occasioned by the occurrence of group heterogeneity in a setting; that is, settings that include people whose social identities raise the possibility of social identity threat for each other. In homogeneous, single-group settings, the hypothesis that one could be devalued on the basis of that in-group identity is simply not very plausible. Thus it is group heterogeneity, or single-group settings in which segregation is not very secure, that raise the possibility of social identity threat and thus intensify the hypothesis testing aimed at detecting it. (This is not an argument for group segregation. Rather, it is an attempt to specify the challenges of integration.)

3. Resistance to Seeing Discrimination

In addition to the vigilant search for evidence of social identity threat, people may have—in heterogeneous settings with which they are strongly identified such as school or the workplace—an equally strong and opposing motivation not to confirm this hypothesis, not to conclude that either such threat is probable or that, if it is, that it will likely affect them personally.

In response to the general question, “Do people who are potential targets of discrimination accentuate or diminish the amount of prejudicial threat they are under?” there is ample evidence on both sides of the ledger. For example, Crocker and Major (1989; Major & Schmader, 1998; Crocker, Voehl, Testa, & Major, 1991) have demonstrated that members of stigmatized groups can attribute both negative and positive outcomes to prejudice when such an attribution is situationally plausible and when it is protective of self-esteem. And on the other side of the ledger, Crosby and her colleagues (Crosby, 1984; Crosby, Cordova, & Jaskar, 1993) showed that women in the workplace often resist acknowledging that they have been discriminated against—yielding to this perception only when presented with evidence aggregated over multiple instances of unequal outcomes. Taylor, Wright, Moghaddam, and Lalonde (1990) documented a general tendency for stigmatized group members to acknowledge prejudice against their group while resisting the perception that they themselves have been discriminated against. They labeled this phenomenon the “personal/group discrimination discrepancy.”

Clearly, then, people can both accentuate and diminish the perception of how much prejudice is directed at them—depending on the circumstances. Our proposal in this part of the theory is that one set of circumstances that would lead a person to resist the perception of prejudice is the circumstance of being identified with, and therefore wanting to belong to, the domain in which it might occur. Under this circumstance, a quite common one, we suggest that the person will experience at least some motivation to resist the perception that their belonging to and outcomes in the domain could be frustrated by prejudice based on their group identity. Admitting to such, after all, would have the daunting implication that one can be

affected by this bias on an indefinite basis in the setting—something that one is not likely to concede easily.

4. The Psychic Cost of Social Identity Threat

Having a social identity that can elicit devaluation in a setting that one wants to belong to causes conflicting motivations of the sort that W. E. B. Dubois may have had in mind when he described the “double consciousness” inherent in the African American experience. One is motivated to detect cues signaling identity-based devaluation, and yet one is motivated not to detect them. One becomes sensitive to the very things one least wants to see. The resulting ruminative conflict, coupled with the threat of devaluation in the setting, we suggest, can cause enough distraction to undermine a person’s performance in the setting (cf. Steele & Aronson, 1995; Steele, 1997) and, over time, pressure the person to disengage or disidentify with the setting (Crocker, Major, & Steele, 1998; Steele, 1997). This is not to say that time in the setting and familiarity do not help. Time and positive experiences may clear up ambiguities of interpretation that would otherwise cause rumination and distress (cf. Crocker & Major, 1989; Crocker et al., 1998). Yet the potential for this conflicted frame of mind to be reevoked in the setting is always there. It stands as an ongoing pressure against, at the very least, a full engagement in the setting and, at the most, the ability to endure it at all.

B. SOURCES OF SOCIAL IDENTITY THREAT

A chief implication of this model is that social identity threat can be aroused by more cues than just those signaling the relevance of a negative group stereotype. It can be aroused by any cue relevant to the evaluative jeopardy of people with a given social identity. More in the interest of illustration than of describing a definitive set of such cues, we offer the following examples.

1. The Number and Percentage of People in a Setting Who Share a Given Social Identity

The degree to which a social identity has minority status in a setting is a cue that can be relevant to how that identity is valued in the setting. This reasoning is expressed in the following quote from the famous African American tennis player Arthur Ashe: “Like many other blacks, when I find myself in a new public situation, I will count. I always count. I count the number of black and brown faces present, especially to see how many, if any, are employed by the host” (Ashe, 1993, p. 131).

2. Cues That Signal an Exclusionary Cultural “Centeredness” of a Setting

The more a setting such as a school, classroom, or workplace holds that the culture or subculture associated with a particular social identity is indispensable to the best functioning of that setting, the more “culturally centered” that setting is in our use of this term. Such centeredness, and the many cues that could possibly signal it, can cause social identity threat among those in the setting who do not share the favored identity by signaling to them that they may have marginal value or that they are invisible in the setting in the sense of not being projected as valued participants. Cultural centeredness can clearly occur in important settings where we would not want it to occur; for example, in a computer science class, where 98% of the students and the professors are male, and in the National Basketball Association, where over 85% of the players are African American. Intentions notwithstanding, cultural centeredness of these sorts can be off-putting to people who do not share the central identity.

Such settings can “decenter.” That is, they can make the setting less exclusionary by positioning the dominant social identity as not the only identity valued in the setting. And, of course, actual identity diversity in the setting helps to make this point. We take up decentering tactics later on in this chapter. Our point here is that through their ability to signal the cultural centeredness of settings, a quite broad range of otherwise innocuous cues can cause social identity threat. These would include the quite incidental features of a setting, such as styles of dress, music, and humor, that the setting values; the intellectual skills and styles that it recognizes and values; the styles of being a person that it values; the stores that people in the setting shop at; and the places where they spend their vacations. Also, to the cue-appraising person, cues of omission—the absence of varied social identities in valued images of the setting—are as important as cues of commission. These could all be incidental features, but they have the capacity to signal a cultural centeredness that can marginalize those social identities not associated with that centeredness.

3. Cues Suggesting That Social Identity Plays an Organizational Role in the Setting

Social identities such as race, ethnicity, age, gender, language groups, religious groups, and so on can have powerful organizational effects in a setting, influencing patterns of friendship, who participates in which social activities, who joins which social and work organizations, who dates and marries whom, who sits together in the cafeteria, and so on. In fact, it is, in significant part, the organizational role that an identity has in a setting that conveys its importance in the setting, its meaning. For people with a social identity that disadvantages them in a setting, for example,

the disadvantaging identity is likely to remain salient to them, influencing their perceptions, behavior, and trust in the setting.

Other cues that signal the importance of social identity in a setting are signs that the aspirations and areas of specialization in the setting are organized by social identity. In many schools and workplaces there is considerable ethnic and gender specialization with, for example, women having less presence in quantitative fields, Asian students pursuing these fields, African American students focusing on sports, and so on. And beyond such normative preferences, social identity can also seem to be linked to such outcomes in a setting as who is in the higher and lower tracks of a school or who becomes partner in the law firm. Again, the association of these organizational features of a setting with social identity constructs the meaning of those identities. This organization can convey to a person that the kind of person they can be in the setting, in the sense of the walks of life, styles of being, and interests that are available to them, will be limited by their social identity. And when one has an identity unfavored by the organization of a setting, it raises the probability of a direct, identity-based devaluation.

4. The Social Identity Ideology in a Setting

In recent decades, our society has had considerable discourse about the appropriate ideology or values with which to manage our increasing social identity diversity (e.g., Markus, Steele, & Steele, 2000; Plaut, in press; Wolsko, Judd, Park, & Wittenbrink, 1999). A continuum of positions has emerged with what might be called a strict colorblind ideology on one end and the stronger versions of multiculturalism such as “identity politics” on the other end. Now, of course, down on the ground in any particular school, classroom, or workplace, multiple ideologies are almost certainly at play and there may be considerable variation in the extent to which there is explicit discussion of these orientations. Our point here is that these ideologies, through their implicit and explicit effects on a setting and through the nature of the discourse about them in a setting, can affect the social identity threat of people in the setting.

Our sense is that these ideologies are not likely to have main effects on this threat, with one generally being better or worse than others. Rather, interactions with other factors seem more likely. For example, a colorblind ideology may be comforting to all students in a classroom when it comes to grading practices, but less comforting to minority students in situations where there seem to be existing group inequalities in representation. The degree of identity safety or threat that an ideology confers in a setting should depend on the meaning it conveys, in conjunction with other cues, about the valuation of their social identity. Thus, among the cues that can influence the experience of social identity threat, this category of cues cannot be ignored.

5. Cues about Norms of Intergroup Sensitivity

Perhaps reflecting the irritation and dislocation that can be involved when a society, in response to its increasing diversity, adopts norms that inhibit insensitive intergroup conduct and speech, the term “political correctness” has arisen to describe this aspect of a setting. Still, cues that signal the absence of such a norm in an important setting may cause a sense of identity threat among people whose social identities have been traditionally devalued in the setting and larger society. Of course any prescription can go too far. For example, if this prescription is applied too sternly and inflexibly, it can create a social identity threat of its own—that based on one’s social identity one is more likely to be held under suspicion of insensitivity and prejudice. And this threat may cause enough reactance to defeat the overall value of the prescription. All of this said, cues that an appropriate norm of intergroup sensitivity is in place in a setting may be indispensable to keeping social identity threat to a minimum.

6. Cues as to the Clarity of a Setting’s Evaluative Criteria

When the criteria for evaluation and upward progression in a setting are vague and possibly subjective, then people in the setting whose social identities have been traditionally devalued or negatively stereotyped may feel an extra degree of social identity threat. They may worry that their devalued identity has an opportunity to influence a subjective evaluation. Thus cues signaling the unstructured and subjective nature of evaluation in a setting, cues that might seem innocuous and only reflective of the larger purpose of the setting, may cause some in the setting to experience social identity threat.

C. EVIDENCE OF THE EFFECT OF CIRCUMSTANTIAL CUES ON SOCIAL IDENTITY THREAT

Our research has not yet tested, in a precise way, the ability of the cues described above to arouse social identity threat. An implication of this theorizing, however, is that this threat can be aroused by relatively small, seemingly innocuous cues that either directly or indirectly signal some basis of identity threat in the environment. Several studies in the stereotype threat literature do test this broad implication—that stereotype threat, as a form of social identity threat, can be caused by small, seemingly incidental, situational cues.

Knowing that stereotype threat can result from manipulations that make the relevant stereotype explicit, Inzlicht and Ben-Zeev (2000) set out to test whether it could also be caused by subtler situational cues—in the case of women taking a difficult math test, the proportion of other women in the group of test-takers.

Following arguments by Deaux and Major (1987) and McGuire's distinctiveness theory (e.g., McGuire, McGuire, Child, & Fujoko, 1978) they reasoned that for women, the mere distinctiveness of being in the minority—one of three test-takers as it was operationalized in their research—would activate her gender identity and, along with it, the relevant negative stereotype about women and math. In contrast, being a woman among two other women should make one's gender identity less distinct, less activated, and thus less likely to coactivate the relevant gender stereotype. Inversely, women in all woman groups should feel less distinctive as women and thus experience less activation of their gender identities and related stereotypes. If being a single woman in a small group of test-takers is enough to cause stereotype threat, then women in the minority status condition (with two other male test-takers) should generally perform worse than equally skilled women in the majority status condition (with two other female test-takers) on a difficult math test, but not on a difficult verbal test. This is just what happened. A second experiment showed that the degree of women's underperformance on the math test varied with the strength of this situational cue: When the number of fellow female test-takers in the setting was reduced in single steps from two to zero, women's math performance dropped in matching statistically significant steps. Thus a seemingly innocuous situational cue—the number of men in the test-taking room—affected women's performance on a standardized math test, presumably through its ability to convey the degree to which their identity as women could put them under judgmental risk. Sekaquaptewa and Thompson (in press) have found similar findings among Blacks. When they were the only Black trying to remember a verbal presentation, they remembered less of the presentation than when the majority of participants were Black.

The series of experiments by Davies et al. (in press) reported earlier show that the effect of such cues, mediated by the identity threat they arouse, can extend beyond performance to affect a person's ability to identify with activities and domains associated with the stereotype. Recall that in those experiments, the incidental embedding of negative stereotypic images of women in several of the TV commercials that women participants watched was enough to lower their subsequent math test performance and also to make them less willing to work on the math test items in comparison to verbal items as well as less interested in quantitative majors and professions.

A recent study (Cole & Barber, 2000) examining the fate of minority college students yielded a pattern of results that, though subject to multiple explanations, fits the present line of argument: That, seemingly incidental cues in a setting that, in some way, signal social identity threat may influence the performance and identifications of groups whose identities they threaten. The study found that achievement outcomes of African American college students in the sample of some 35 top American colleges and universities—their grades, graduation rates, dropout rates, and so on—varied across college types such that they were worse at smaller

liberal arts colleges than at the “Ivies,” large public universities, or historically Black colleges and universities. If this finding proves reliable, clearly a multitude of causes may be involved.

But our reasoning here suggests a possibility: The concentration of social identity threatening cues that African American students may face on smaller campuses could influence their outcomes there. Compared to the other kinds of schools, smaller liberal arts campuses may be more often geographically isolated from minority communities, have smaller minority populations, have few minorities in positions of influence, have a less diverse campus culture, and generally be more frustrating to the cultural and social interests of minority students. This configuration of cues may establish a social identity threat for African American students, one that, in addition to making their racial identity salient to them in the setting, may impede their achievement and persistence in the setting. We lack the evidence from this study to even provide a tentative test of this interpretation. But in light of our larger program of research, we suggest that it is an important question for future research.

VIII. Remediating the Detrimental Effects of Stereotype and Social Identity Threats

You may recall that this research began with a practical problem: To better understand the school achievement and test performance gaps that continue to afflict several minority groups and women in quantitative fields and to at least point in the direction of possible remedies. We note, perhaps a bit rhetorically, that grappling with this practical problem has been a source of basic social psychological theory—a yield that, we believe, can often follow from “applied” research. But it is time to return to the problem that prompted our work.

In so doing, we fear that the recent sections of this chapter could be taken to convey rather bleak prospects for remediating this problem. If social identity threat and its negative effects on performance are so easily caused by even incidental aspects of a setting, then how feasible is it to establish settings that would not have this threat?

To this concern, the evidence and reasoning of this chapter offers two understandings, one of diagnosis and one of prescription. The diagnosis is this: that these underachievement problems are caused, in some part, by threat—by persistent patterns of social identity and stereotype threat that, as something tied to a person’s social identity in school and workplace settings, can become a chronic feature of his or her experience in those settings. The second understanding, following from the first, is one of prescription: that despite the many cues in a setting that can evoke a sense of threat, a remedial strategy has to somehow refute that threat or its

relevance to the target. We have called this goal “identity safety” (Markus, Steele, & Steele, 2000; Plaut, in press; Purdie et al., 2001). To the extent that it is achieved in an academic setting, it should weaken the sequelae of identity vigilance, mistrust, disidentification, and underperformance. And as we hope will become clear, though not easy, we believe that identity safety may be easier to achieve than it might seem at first glance.

To illustrate this idea and to provide evidence of its utility as a guide to improving the academic outcomes of students who can experience social identity threat in school settings, we review next a number of relevant research findings and intervention programs. We organize this work into three categories: That which focuses on the role of relationships in achieving identity safety; that which addresses the contextual cues that cause stereotype and social identity threat; and that which examines strategies that individuals can use to cope with these threats. [We have made the point elsewhere (Steele, 1997, 1999) that while reducing stereotype and social identity threat may be necessary to reliably better the outcomes of minority students, it may not be sufficient for the thoroughly disidentified among them. For these students, as has been reviewed, other strategies may be needed to help them forge an identification with school that has either been dropped or never formed in the first place.]

A. RELATIONAL STRATEGIES

The logic of these approaches is that both the relationships a person has, and the ways in which people relate to each other in a setting can affect the sense of identity safety a potentially identity-threatened person experiences in the setting. To be effective, we suggest, these relational experiences must signal to potential targets that despite cues to the contrary, they can function in the setting without fear that their social identity will evoke devaluation and interference. Several findings are consistent with this argument.

1. Friendships

In the literature on minority student achievements, several studies have reported a curious finding: Among the strongest predictors of college GPA for African American students is the number of White friends they have, even when a variety of possibly confounding variables is statistically controlled, variables such as the socioeconomic status of the students and the degree of integration in their schooling background and neighborhood (e.g., Graham, Baker, & Wapner, 1984). This relationship is difficult to interpret definitively (and easy to interpret rather absurdly—how many White friends would equal one grade point?). But its recurrence in several samples suggests its reliability and, among several plausible

interpretations, our framework offers one: As a potentially devalued member of one group in a setting, the more friends one has in a potentially devaluating out-group, the more one is likely to have experiences that refute an otherwise rational sense of social identity threat in the setting.

For African American college students there are usually many cues in integrated college settings that could signal social identity threat: their minority status, cues signaling the racial organization of important aspects of social life, a group history of devalued status in these settings, their underrepresentation in prestigious curriculum and positions in the setting, and so on. For these students, then, the rational hypothesis that their racial identity may elicit devaluation or constrain or frustrate them in the setting is, to at least some degree, disarmed by the experiences that are part of these out-group friendships. And feeling more comfortable in the setting, they perform better. Inversely, when these students have fewer such relationships, they have fewer experiences with which to allay the rational sense of identity threat. And feeling less comfortable, for all of the reasons outlined, they perform less well.

Clearly our interpretation of this relationship cannot be definitive. Nonetheless, the finding can be seen to suggest an interesting principle of remedy: safety in relationships, especially those that reveal the environment to be less threatening than it might rationally be expected to be.

2. Expert Tutors

Research by Lepper and his colleagues (e.g., Lepper, Woolverton, Mumme, & Gurtner, 1993) has identified a relational teaching strategy that expert tutors (those nominated by other teachers as especially effective) use with very poor students. Such students often arrive in tutoring labeled as having less ability. And the minority students among this set may also be under the weight of negative stereotypes about their group. The strategy involves Socratic direction of the student's work, nonjudgmental but implicitly directing questions with minimal attention to right and wrong answers. The tutors, it would seem from excerpts of these sessions, understand that to enable instruction they have to win the trust of these students, that is, disarm their concerns about being under judgmental threat. The patience and focus on responsive but nonjudgmental instruction enables these students, in time, to feel safe from the prospect of being judged and to then engage the material despite the many other reasons they could feel threatened in the setting.

These findings have the important implication that apparently intractable learning problems may sometimes be due as much to the dynamics of social identity threat as to deeper inabilities. And they bring to light a technique for disarming those dynamics.

3. Mentoring with High Standards and Ability Affirmation

A different approach to the instructional relationship is illustrated in the research of Cohen, Steele, and Ross (1999). They reasoned that the social identity threat African American students may feel in instructional settings, based on many of the cues described earlier, could be enough to undermine their trust of the feedback they get from White instructors. Their research question was, "Can feedback be given in a way that bridges this racial divide?" To examine this question, they devised a simple experimental paradigm. Ostensibly for possible publication in a teaching journal, Black and White Stanford students wrote an essay about their favorite teacher. A Polaroid snapshot of them was attached to their essay, ostensibly for inclusion in the journal should their essay be selected, but in fact to let participants know that their race was known by the essay evaluators. They returned 2 days later for feedback on the essay, from a White experimenter, the effectiveness of which was measured in terms of how biased participants saw the feedback to be and how motivated they were to improve their essay. It was the variation across conditions in the way the feedback was given that addressed the central question of the research.

Interestingly, giving participants the critical feedback about their essay straightforwardly with no cushioning statement or including a cushioning statement ("There were many good things about your essay") did not bridge the racial divide. Compared to White participants, Black participants saw the feedback as more biased, and seeing it that way, they were less motivated to improve their essays. In light of our reasoning, this is a telling finding. These participants were talented, motivated students at a prestigious university who were given completely unbiased (graded blind) feedback. And yet the Black students were less trusting of it. This finding gives some proof to the idea that the social identity of these students and the stereotypes attached to it can ambiguate simple instructional experiences. Is the feedback fairly based on their essay or is it affected by images and stereotypes about their group? This is a question the White students do not have in this setting. They can and do take the feedback more at face value. But for the Black students, in light of the cues in the larger schooling context that might raise the hypothesis of social identity threat in the setting, this question is rational, even unavoidable perhaps. And it is apparently sufficient to undermine trust in valuable feedback. Here then is how social identity, and the "threats in the air" that are attached to it, can isolate a group from valuable information and cultural capital.

But one form of feedback did bridge the racial divide: telling students that the teaching journal used very high standards for publication and that having evaluated their essays, the experimenter believed that the student could meet those standards. Under this form of feedback, Black students saw the feedback as unbiased, and seeing it that way were highly motivated to improve their essays. More students in this condition took the essay home to improve it than did students in any other condition.

This strategy worked, we argue, because it conveyed to the Black participants that they were not being seen in terms of the negative stereotypes about their group's abilities. Neither the use of high standards or the affirmation of their ability are consistent with this stereotype. The hopeful implication of this finding is that in a situation that would otherwise cause a trust-breaking social identity threat among Black students—as evidenced by the results in the other feedback conditions—this simple relational strategy of using high standards and ability affirmation was sufficient to completely overcome the mistrust. The entire context did not have to change for trust to be achieved; one stereotype-refuting relational act was enough.

Urie Triesman's (1985) workshops in math for college-aged women and minorities have used the principle of challenge coupled with affirmation of students' potential to great effect for over 20 years. In the context of supportive adult-student relationships, these workshops determine where students are skillwise and give them work at as challenging a pace as they can bear. This relational strategy, like the effective feedback in the Cohen *et al.* (1999) laboratory studies, punctures the students' perception that they are being seen stereotypically which, while challenging their skills, accords them a sense of identity safety in the setting.

4. Success-Affirming Role Models and Mentors

The mere presence of another person in a setting who is succeeding there, and who shares the social identity that is negatively stereotyped there, should reduce the threat that other people with the same identity feel in the setting. Such a person stands as an existence proof that the social identity in question is not an insurmountable obstacle to success in the setting. In this way, identity-sharing role models should diminish the social identity threat arising from other cues in a setting. And these positive effects should be strengthened by an ongoing relationship with the role model that continually affirms the possibility of success in the setting as well as offers modeling and instruction in how to achieve it—that is, by a mentoring relationship with the role model.

Often people worry that out-group members will not be effective role models or mentors for people whose social identities they do not share. But our reasoning suggests that out-group members can still send a powerful threat-reducing message: specifically, that despite what cues in a setting may imply, people in the setting are capable of being fully accepting and inclusive. Jonides, von Hippel, Lerner, and Nagda (1992) made these relationships the centerpiece of their student-faculty mentoring program at the University of Michigan. Although the program was beneficial to all participants, it had its strongest effect on improving the retention of minority students. Clearly, the relationship with faculty mentors, despite many of them not sharing a minority identity themselves and despite other threat-arousing cues in the setting, extended a sense of identity safety to these students that fostered their persistence.

B. CONTEXTUAL STRATEGIES

These approaches assume that social identity threat often comes from incidental, contextual cues that point to certain social identities as possibly devalued or negatively stereotyped in the setting. If this is so, then a prime strategy of remedy ought to be eliminating or neutralizing these cues, that is, changing the context or its meanings so as to preempt its instigation of threat.

1. Directly Refuting the Possibility of Identity Threat in the Setting

One way of doing this is to directly represent the setting as not predisposed or able to devalue people on the basis of social identity. When this can be done convincingly in a setting, then whatever cues would ordinarily arouse stereotype and social identity threat—for example, ambiguous events, group differences in outcomes, misstatements by people in the setting, and so on—would have their threatening meaning mollified, even neutralized altogether.

Several findings in the stereotype threat literature encourage this strategy. Taking a difficult test in an area where the abilities of one's group are negatively stereotyped sets up a situation in which frustration with the test, or even an ambiguous expression by the test-giver, can arouse stereotype or social identity threat. Several studies have shown, however, that representing the test as insensitive to group differences in ability and thus as having no implications for social identity renders the same cues less able to cause performance-interfering threat. The Spencer et al. (1999) experiments, for example, showed that presenting the difficult math test as insensitive to gender differences apparently neutralized the threatening social identity implications of the cues in the setting enough to preempt stereotype threat and its effect on women's test performance. Similarly, Brown and Steele (2001) found that presenting a difficult verbal test as "racially fair" (interestingly, doing this convincingly took more than the usual doing) apparently dampened the threatening social identity implications of the testing situation enough to preempt the stereotype threat and underperformance that otherwise beset African Americans in this situation. Clearly, then, the nature and representation of the setting, as a prime source of the cues and meanings that can arouse social identity threat, is a prime place at which to intervene to reduce this threat. Several studies have begun to examine this strategy.

2. The Representation of Diversity Philosophy and Minority Presence

Testing this possibility is precisely what Purdie et al. (2001) had in mind in their examination of how the numbers of minorities in a setting and the representation of the setting's approach to diversity affected African Americans' trust of the setting. Their experiment did not examine academic performance. But by examining

contextual strategies for producing identity safety, it provides both a test of our general theory of social identity threat and some suggestion about what factors might be expected to foster academic performance when this threat is the primary barrier.

In this experiment, a sample of African American students at Stanford responded to a description of a Silicon Valley company—presented in the form of a newsletter from the company—in terms of how comfortable they would feel in the company and how much they would trust the company’s fairness and supportiveness. The independent variables in this experiment were manipulated by the description of the company provided in the newsletter. The first variable was the company’s stated philosophy about group diversity. In one condition, the newsletter presented the company as committed to a “color-blind” philosophy of fairness in which the goal was to treat all people the same regardless of their background. In another condition, the company was presented as being committed to a philosophy of valuing group differences as a basis of mutual respect and as a source of different perspectives. We also included a control condition in which no mention was made of the company’s diversity philosophy. The second variable was the proportion of minorities in the company as represented by the number of minority faces (from several minority groups) included in six newsletter photographs that ostensibly represented the company’s employees. In the nondiverse condition all of these photos, except for one ethnically ambiguous person, were of Whites. In the diverse condition, three of the six photos were of minority employees. The primary dependent variable was the respondent’s trust of the company’s culture—the fairness of its management, how its values matched those of the respondent, and so on.

It was predicted that a higher proportion of minorities depicted in the company would generally improve Black respondents’ rated comfort and trust in the company. But more importantly, this main effect for the proportion of minorities factor was expected to interact with the diversity philosophy factor. When the proportion of minorities was low, we expected the valuing-difference philosophy to be more inspiring of trust than the color-blind philosophy because it shows greater sensitivity to the experience of being a small minority in the company; that is, it recognized and then explicitly valued their group identity as a basis of respect and belonging in the company.

The results were consistent with our predictions. Black respondents generally trusted and felt more comfortable in the company when there were more minorities depicted in its newsletter than when there were fewer. But when minority representation was low, the trust of Black participants was greatly affected by the company’s diversity philosophy such that Blacks in the value-difference condition felt more trusting of, and comfortable in, the company than Black participants in either the color-blind or control conditions. Clearly, Black participants were using all of the cues available to them to set their level of trust and comfort in

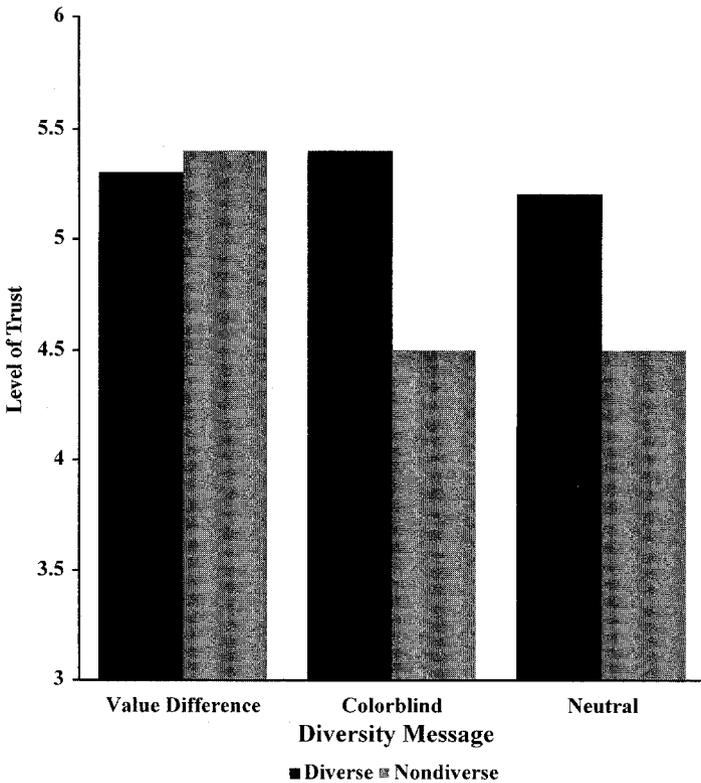


Fig. 3. Black participants' mean level of trust in the organization as a function of diversity policy and absence or presence of diversity (adapted from Purdie et al., 2001).

this company setting. And when that trust could not be rested on a high proportion of minorities in the company, having the company either say nothing about diversity or appeal to color blindness did little to help matters, whereas acknowledging and valuing group differences did seem to provide a sense of safety (see Fig. 3). Where there is little safety in numbers, some identity safety can apparently be gained through a setting philosophy that explicitly values identity differences.

3. Procedural Justice and Minority Trust

Procedural justice—that is, evidence that the authorities in a setting treat people with fairness, impartiality, and respect—has been shown by Tyler and his colleagues to be a powerful enough feature of a setting (such as an organization) to

build constituents' trust in the setting even when the setting does not deliver them the outcomes they want. This general result has been replicated in an extensive program of research over the past decade (cf. Tyler, Smith, & Huo, 1996; Tyler, Degoe, & Smith, 1996). Thus when a setting (such as a school, classroom, or business organization) has to build trust across group differences in social identity that might occasion mistrust, one might look to an emphasis on procedural justice in the setting as being especially important—as a cue signaling some degree of identity safety.

But its effectiveness in this respect may have limits. For example, Tyler *et al.* (1996) report that in evaluating the fairness with which disputes with their supervisors had been resolved, people weighted procedural fairness as more important than their specific outcomes, but only when their supervisors were in their own racial or ethnic in-group. When the supervisor was an out-group member, they weighted their outcomes more in evaluating whether they got a fair deal in the resolution. This emphasis on outcomes over procedure in assessing fairness was found to be substantially reduced, however, in later research when all of the parties in a setting were strongly identified with a superordinate goal (Tyler *et al.*, 1996).

We note, however, that in settings where authority and power tend to be centered in people of one social identity, achieving trust across social identity lines may be challenging. People with different social identities in the setting may be distrusting even when the exercise of authority appears to be fair. This is because the concentration of authority in people of one social identity raises the possibility that authority itself, even when it appears to be fair, could be protective of the dominant group's advantage. And this view may be especially preferred by the less powerful identities when their own outcomes are disappointing. Thus, procedural justice may be necessary to achieve identity safety in a setting, but it may not always be sufficient. To fully achieve it, procedural justice may have to be supplemented by strategies that specifically address the social identity threats at play in the setting.

Still, in many school and organizational settings, procedural justice may go a long way in achieving trust across identity divides and therefore, following the logic of our theory, it should improve intergroup relations and actual performance in these settings as well.

C. INDIVIDUAL STRATEGIES FOR COPING WITH SOCIAL IDENTITY THREAT

Almost invariably when the authors give talks about stereotype threat and how to reduce it in school or organizational settings, a question arises: "You have a lot to say about how situations and relationships can be changed to preempt or reduce this threat. But what can individuals, the potential targets, do to cope with this threat, to reduce its effect on them?" The answer to this question, from the standpoint

of our theory, begins with the same assumption as the other strategies of remedy: To reduce this threat, individuals have to do something that disarms the appraisal hypothesis that they are under threat or that, if they are, it will significantly affect them. We consider several possibilities.

1. Believing in the Malleability of Intelligence

Influenced by the research of Dweck and her colleagues (cf. Dweck, Chiu, & Hong 1995), Aronson, Fried, and Good (2002) tested the hypothesis that a personal theory of intelligence as incremental—the view that one’s intelligence is expandable through effort and experience—could reduce the impact of stereotype threat on people whose intellectual abilities are negatively stereotyped. Dweck has distinguished two personal theories about the nature of intelligence, one that assumes intelligence is essentially a fixed entity and the other that assumes it is expandable. Aronson et al. reasoned that if the characteristic impugned in a negative stereotype is seen as improvable rather than fixed, then the threat of the stereotype is not as great. Thus, holding the theory that one’s intelligence is malleable could be an effective strategy to cope with the threat posed by negative ability stereotypes.

Aronson et al. examined whether this strategy could reduce the effect on academic performance of the negative ability stereotypes that African American students face. To do this, they developed a clever way of manipulating the theory of intelligence held in a sample of Black and White college students. They cast study participants in the role of “long-distance” mentors to individual elementary school students who were ostensibly from disadvantaged backgrounds. The job of the college-aged mentors—done in a single session—was to write letters to the younger mentees urging them to apply themselves to their school work and, in the critical condition, to think of their intelligence as something that was expandable. Ostensibly to make these letters convincing, the college mentors were supplied compelling descriptions of how intelligence, even the brain itself, could be modified and expanded by effort and learning.

Of course the focus of this study was not on the young mentees, but on how the experience of having advocated a malleable theory of intelligence affected the mentors themselves. For the Black college-aged mentors, the group whose abilities are presumably under the threat of negative stereotypes about their group, the effect of this manipulation was dramatic. Compared to Black students who did not write a letter, or who wrote a letter without the “malleability” content, Black students who wrote the “malleable” letter believed that intelligence was more malleable; reported enjoying academics more; saw academics as more important; and most dramatically, at the end of the academic quarter, got significantly higher grades.

Here, then, is clear evidence of something an individual can do to reduce the threat posed by negative ability stereotypes: Adopt a self theory of intelligence

as expandable. Such a theory may foster achievement through multiple effects. But over the long run, we suggest that one of its ingredients is its ability to dampen the threatening meaning of negative stereotypes about intellectual ability.

2. The "Stay in One Place" Strategy

Another individual strategy for coping with social identity threat has not been researched to our knowledge, but it is worth mentioning because it probably constitutes a common means by which stereotype threat is overcome: Stay in one place; that is, develop life contexts in which one is a stable, known entity. The logic is this: The better known a person is in a given setting, the more people in the setting are likely to know about the person, and the more people know about the person, the less likely they are to use stereotypes in perceiving and evaluating the person. As this becomes understood by the person, the hypothesis that he is being seen and treated stereotypically should simply become less plausible. And as this plausibility weakens, so should the felt pressure of stereotype and social identity threat.

This strategy has its limits. New people can enter the setting about whom, for a while at least, one cannot be sure that they will not use the stereotype. And this form of safety is confined to the setting. Moving across the hall to a different unit of an organization where one is not known, for example, punctures the whole bubble of stereotype exemption one has achieved in one's own unit. Nonetheless, this adaptation of a context to a person, and of a person to a context, creates, in time, a niche in which a person who might ordinarily experience considerable stereotype and social identity threat experiences very little of it. This may be one of the most common means by which potential targets of negative group stereotypes come to achieve a sense of identity safety.

There are other imaginable strategies that people may use in overcoming stereotype and social identity threat: Self-effacing humor that confesses to, but spoofs, the allegation in the stereotype; distancing oneself from the negatively stereotyped identity; working doubly hard to achieve a level of performance in a domain that refutes the relevant negative stereotypes (this has the downside of requiring a difficult-to-sustain level of motivation and still not always being effective for performance at the frontier of one's skills); learning to hold oneself accountable for not trying hard while, at the same time, learning to accept failure without self-condemnation in the stereotype-relevant domain; and perhaps some version of the stereotype suppression strategy described earlier could be generally useful. These are examples of strategies that people who have to contend with social identity threat in an important domain tell us about. They have the appeal of being usable in many situations and over the course of a lifetime—the sadness of their being notwithstanding.

IX. Conclusions

As we often stress in wrapping up our research reports, the chief theoretical device of this research is the actor's perspective, that is, trying to understand social devaluation from the standpoint of the target. It was this approach, in the service of trying to understand the achievement problems of various groups, that brought to light the life-encompassing conditions of stereotype and social identity threat. Now at the end of the chapter, to put these conditions in sharp focus, we briefly summarize our most general research conclusions.

1. Stereotypes about a person's group, through the threat of judgment, treatment, and stereotype confirmation they pose, can have profound effects on a person's behavior, ranging from standardized test performance to golf putting, and, beyond that, to the very nature of his personal and social identity.

2. Whether or not a person experiences this stereotype threat in a situation depends on there being a negative stereotype about their group that applies in the situation. The intensity of the experience then varies with such person and situation factors as the strength of the person's desire to belong in the situation and the contextual cues that suggest stereotyping is probable there.

3. The effect of stereotype threat on any particular behavior is likely to be mediated through multiple processes that, from one experience of the threat to the next, will vary in their degree of involvement.

4. The sense of being threatened based on one's social identity can be evoked by a broad variety of cues, including quite incidental environmental cues that signal the possibility of identity-based devaluation.

5. These threats and their undesirable consequences can be reduced by strategies that render the fact of the situation, and one's representation of the situation, as less likely to deliver social identity-based devaluation.

Hopefully this list makes it clear how taking the target's perspective brings into view the environment in which that person functions and thus allows its life-shaping role to be conceptualized. This is not to say that the operative explanatory paradigms of social psychology ignore environmental influences. We pride ourselves as a field on recognizing the power of the situation in determining social behavior. Yet it can be fairly said that a certain drift has occurred in the nature of our explanations, one that gives center stage to internal processes while allowing the environment to drift into a subsidiary role of prompting and priming the action on center stage. Once it has done its job, it isn't seen as having much of an ongoing role in constituting behavior.

And, of course, this would be fine if there were not an explanatory price to pay. Our hope is that the research reviewed in this chapter helps to make clear what that price is—at least as regards our understanding of the group achievement

problems that prompted this research. In trying to explain these problems, the dominant paradigms of psychology put a great deal of weight on relatively decontextualized internal processes and traits such as low self-esteem, low performance expectancies, oppositional attitudes toward mainstream achievement, and the like. Our view, as we have stressed throughout, is not that these internal characteristics do not contribute to the problems. They do.

But the broadened explanatory framework developed in this research brings other contributing factors into view. In particular, it adds to the internal influences, an understanding of group differences in the intersubjective experience of the school, classroom, and test settings. By “intersubjective” we mean the capacity to represent what other people are thinking and likely to do and to incorporate that representation into the regulation of one’s own behavior. It is through this capacity that different groups of students come to understand that, based on their social identity and the stereotypes about it, they may be at risk of devaluation or obstruction in a school setting. And it is through this capacity that a host of external, life context influences—influences that have less to do with their internal psychology and more to do with their appraisals of how other people, structures, arrangements, practices, norms and so on are predisposed toward their social identity—come to influence their sense of belonging and performance in these settings. We hope that by exploring and documenting this intersubjective influence in academic performance, that we have both learned something useful about the problem we set out to understand and perhaps made a case for the value of an explanatory paradigm in social psychology that better incorporates the ongoing, intersubjective dimensions of social experience.

References

- Abrams, D., & Hogg, M. A. (1999). *Social identity and social cognition*. Malden, MA: Blackwell.
- Allport, G. (1954). *The nature of prejudice*. New York: Addison-Wesley.
- Ambady, N., Shih, M., Kim, A., & Pittinsky, T. L. (2001). Stereotype susceptibility in children: Effects of identity activation on quantitative performance. *Psychological Science, 12*, 385–390.
- Aronson, J. (1997). *The effects of conceptions of ability on task valuation*. Unpublished manuscript, New York Univ.
- Aronson, J. (1999). *The effects of conceiving ability as fixed or improvable on responses to stereotype threat*. Unpublished manuscript, New York Univ.
- Aronson, J., Fried, C., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology, 38*, 113–125.
- Aronson, J., & Good, C. (2001). *Personal versus situational stakes and stereotype threat: A test of the vanguard hypothesis*. Manuscript in preparation, New York Univ.
- Aronson, J., Lustina, M., Good, C., Keough, K., Steele, C., & Brown, J. (1999). When white men can’t do math: Necessary and sufficient factors in stereotype threat. *Journal of Experimental Social Psychology, 35*, 29–46.

- Aronson, J., Quinn, D. M., & Spencer, S. J. (1998). Stereotype threat and the academic performance of women and minorities. In J. K. Swim & C. Stangor (Eds.), *Prejudice: The target's perspective* (pp. 83–103). San Diego: Academic Press.
- Aronson, J., & Salinas, M. F. (2001). *Stereotype threat, attributional ambiguity, and Latino underperformance*. Unpublished manuscript, New York Univ.
- Ashe, A. (1993). *Days of grace*. New York: Alfred A. Knopf.
- Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology*, *71*, 230–244.
- Benbow, C. P., & Stanley, J. C. (1983). Sex differences in mathematical reasoning ability: More facts. *Science*, *222*, 1029–1031.
- Bowen, W. G., & Bok, D. C. (1998). *The shape of the river: Long-term consequences of considering race in college and university admissions*. Princeton, NJ: Princeton Univ. Press.
- Blascovich, J., Spencer, S. J., Quinn, D. M., & Steele, C. M. (2001). Stereotype threat and the cardiovascular reactivity of African-Americans. *Psychological Science*, *12*, 225–229.
- Branscombe, N. R., & Ellemers, N. (1998). Coping with group-based discrimination: Individualistic versus group-level strategies. In J. K. Swim & C. Stangor (Eds.), *Prejudice: The target's perspective* (pp. 243–266). San Diego: Academic Press.
- Brewer, M. B., & Brown, R. B. (1998). Intergroup relations. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 2, 4th ed., pp. 554–594). Boston: McGraw–Hill.
- Brown, J. L., & Steele, C. M. (2001). *Performance expectations are not a necessary mediator of stereotype threat in African American verbal test performance*. Unpublished manuscript, Stanford Univ.
- Brown, R. P., & Josephs, R. A. (1999). A burden of proof: Stereotype relevance and gender differences in math performance. *Journal of Personality and Social Psychology*, *76*, 246–257.
- Brown, R. P., Pintel, E. C., Rentfrow, P., & Lee, M. (2001). *Stigma on my mind: Individual differences in the experience of stereotype threat*. Unpublished manuscript, Univ. of Oklahoma.
- Cohen, G. L., Steele, C. M., & Ross, L. D. (1999). The mentors' dilemma: Providing critical feedback across the racial divide. *Personality and Social Psychology Bulletin*, *25*, 1302–1318.
- Cole, S., & Barber, E. (2000). *Increasing faculty diversity: The occupational choices of high achieving minority students*. A report prepared for the Council of Ivy Group Presidents.
- Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective properties of stigma. *Psychological Review*, *96*, 608–630.
- Crocker, J., Major, B., & Steele, C. (1998). Social stigma. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 2, 4th ed., pp. 504–553). Boston: McGraw–Hill.
- Crocker, J., Voelkl, K., Testa, M., & Major, B. (1991). Social stigma: The affective consequences of attributional ambiguity. *Journal of Personality and Social Psychology*, *60*, 218–228.
- Croizet, J. C., & Claire, T. (1998). Extending the concept of stereotype threat to social class: The intellectual underperformance of students from low socioeconomic backgrounds. *Personality and Social Psychology Bulletin*, *24*, 588–594.
- Crosby, F. J. (1984). The denial of personal discrimination. *American Behavioral Scientist*, *27*, 371–386.
- Crosby, F. J., Cordova, D. I., & Jaskar, K. (1993). On the failure to see oneself as disadvantaged: Cognitive and emotional components. In M. A. Hogg & D. Abrams (Eds.), *Group motivation: Social psychological perspectives* (pp. 87–104). Hertfordshire, UK: Harvester Wheatsheaf.
- Cross, W. E., Jr. (1991). *Shades of black: Diversity in African-American identity*. Philadelphia: Temple Univ. Press.
- Davies, P. G., Spencer, S. J., Quinn, D. M., & Gerhardtstein, R. (in press). Consuming images: How television commercials that elicit stereotype threat can restrain women academically and professionally. *Personality and Social Psychology Bulletin*.

- Davies, P. G., & Spencer, S. J. (2001). *Stereotype threat and taking charge: The effect of demeaning commercials on women's leadership aspirations*. Unpublished manuscript, Univ. of Waterloo.
- Davies, P. G., & Spencer, S. J. (1999, August). *Selling stereotypes: How viewing commercials can undermine women's math performance*. Presented at the annual meeting of the American Psychological Association, Boston, MA.
- Deaux, K., & Major, B. (1987). Putting gender into context: An interactive model of gender-related behavior. *Psychological Review*, *94*, 369–389.
- Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology*, *56*, 5–18.
- Dijksterhuis, A., & Baugh, J. A. (2001). The perception-behavior expressway: Automatic effects of social perception on social behavior. In M. P. Zanna (Ed.) *Advances in experimental social psychology* (Vol. 33, pp. 1–40). San Diego: Academic Press.
- Dweck, C. S., Chiu, C., & Hong, Y. (1995). Implicit theories and their role in judgments and reactions: A world from two perspectives. *Psychological Inquiry*, *6*, 267–285.
- Folkman, S., Lazarus, R. S., Gruen, R. J., & DeLongis, A. (1986). Appraisal, coping, health status, and psychological symptoms. *Journal of Personality and Social Psychology*, *50*, 571–579.
- Goffman, I. (1963). *Stigma*. New York: Simon & Shuster.
- Good, C., & Aronson, J. (in press). The development and consequences of stereotype vulnerability in adolescents. In F. Pajares & T. Urdan (Eds.), *Adolescence and education: Vol. 2. Academic motivation of adolescents*. Greenwich, CT: Information Age.
- Good, C., Aronson, J., & Harder, J. A. (2001). *Stereotype threat in the absence of a kernel of truth: Unfounded stereotypes can depress women's calculus performance*. Unpublished manuscript, Columbia Univ.
- Graham, C., Baker, R. W., & Wapner, S. (1984). Prior interracial experience and Black student transition into predominantly White colleges. *Journal of Personality and Social Psychology*, *47*, 1146–1154.
- Inzlicht, M., & Ben-Zeev, T. (2000). A threatening intellectual environment: Why females are susceptible to experiencing problem-solving deficits in the presence of males. *Psychological Science*, *11*, 365–371.
- Jensen, A. R. (1980). *Bias in mental testing*. New York: Free Press.
- Jonides, J., von Hippel, W., Lerner, J. S., & Nagda, B. (1992, August). *Evaluation of minority retention programs: The undergraduate research opportunities program at the University of Michigan*. Presented at the annual meeting of the American Psychological Association, Washington, DC.
- Josephs, R. A., Newman, M. L., Brown, R. P., & Beer, J. M. (2001). *Using the relationship between status and testosterone to explain stereotype-based sex differences in cognitive performance*. Unpublished manuscript, Univ. of Texas.
- Jost, J. T., & Banaji, M. R. (1994). The role of stereotyping in system-justification and the production of false consciousness. *British Journal of Social Psychology*, *33*, 1–27.
- Kleck, R. E., & Strenta, A. (1980). Perceptions of the impact of negatively valued physical characteristics on social interaction. *Journal of Personality and Social Psychology*, *39*, 861–873.
- Lazarus, R. S. (1986). Emotions and adaption: Conceptual and empirical relations. *Nebraska Symposium on Motivation*, *16*, 175–266.
- Lepper, M. R., Woolverton, M., Mumme, D. L., & Gurtner, J. L. (1993). Motivational techniques of expert human tutors: Lessons for the design of computer-based tutors. In S. P. Lajoie & S. J. Derry (Eds.), *Computers as cognitive tools: Technology in education*. Hillsdale, NJ: Erlbaum.
- Leyens, J. P., Désert, M., Croizet, J. C., & Darcis, C. (2000). Stereotype threat: Are lower status and history of stigmatization preconditions of stereotype threat? *Personality and Social Psychology Bulletin*, *26*, 1189–1199.
- Macrae, C. N., Bodenhausen, G. V., Milne, A. B., & Jetten, J. (1994). Out of mind but back in sight: Stereotypes on the rebound. *Journal of Personality and Social Psychology*, *67*, 808–817.

- Major, B. (1995, August). *Academic performance, self-esteem, and race: The role of disidentification*. Presented at the annual meeting of the American Psychological Association, New York.
- Major, B., & Schmader, T. (1998). Coping with stigma through psychological disengagement. In J. K. Swim & C. Stangor (Eds.), *Prejudice: The target's perspective* (pp. 219–241). San Diego, CA: Academic Press.
- Major, B., Spencer, S. J., Schmader, T., Wolfe, C. T., & Crocker, J. (1998). Coping with negative stereotypes about intellectual performance: The role of psychological disengagement. *Personality and Social Psychology Bulletin*, *24*, 34–50.
- Markus, H. R., Steele, C. M., & Steele, D. M. (2000). Colorblindness as a barrier to inclusion: Assimilation and nonimmigrant minorities. *Daedalus*, *129*, 233–259.
- McGuire, W., McGuire, C., Child, P., & Fujoko, 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.
- Osborne, J. W. (2001). Testing stereotype threat: Does anxiety explain race and sex differences in achievement? *Contemporary Educational Psychology*, *26*, 291–310.
- Osborne, J. W. (1997). Race and academic disidentification. *Journal of Educational Psychology*, *89*, 728–735.
- Oyserman, D., Harrison, K., & Bybee, D. (2001). Can racial identity be promotive of academic efficacy? *International Journal of Behavioral Development*, *25*, 379–385.
- Pinel, E. C. (1999). Stigma consciousness: The psychological legacy of social stereotypes. *Journal of Personality and Social Psychology*, *76*, 114–128.
- Plaut, V. C. (in press). Cultural models of diversity: The psychology of difference and inclusion. In R. Shweder, M. Minow, & H. R. Markus (eds.), *The free exercise of culture: How free is it? How free ought it to be?* New York: Sage.
- Pronin, E., Steele, C. M., & Ross, L. (2001). *Stereotype threat and the feminine identities of women in math*. Unpublished manuscript, Harvard Univ.
- Purdie, V. J., Steele, C. M., Davies, P. G., & Crosby, J. R. (2001, August). *The business of diversity: Minority trust within organizational cultures*. Presented at the annual meeting of the American Psychological Association, San Francisco, CA.
- Ramist, L., Lewis, C., & McCamley-Jenkins, L. (1994). *Student group differences in predicting college grades: Sex, language, and ethnic groups* (College Board Report No. 93-1, ETS No. 94.27). New York: College Entrance Examination Board.
- Sartre, J. P. (1948). *Anti-Semite and Jew* (J. G. Becker, trans.) New York: Schocken Books.
- Schmader, T. (2002). Gender identification moderates stereotype threat effects on women's math performance. *Journal of Experimental Social Psychology*, *38*, 194–201.
- Sekaquaptewa, D., & Thompson, M. (in press). The differential effects of solo status on members of high and low status groups. *Personality and Social Psychology Bulletin*.
- Shih, M., Pittinsky, T. L., & Ambady, N. (1999). Stereotype susceptibility: Identity salience and shifts in quantitative performance. *Psychological Science*, *10*, 80–83.
- Spencer, S. J., Iserman, E., Davies, P. G., & Quinn, D. M. (2001). *Suppression of doubts, anxiety, and stereotypes as a mediator of the effect of stereotype threat on women's math performance*. Unpublished manuscript, Univ. of Waterloo.
- Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology*, *35*, 4–28.
- Stangor, C., Carr, C., & Kiang, L. (1998). Activating stereotypes undermines task performance expectations. *Journal of Personality and Social Psychology*, *75*, 1191–1197.
- Staples, B. (1994). *Parallel time: Growing up in black and white*. New York: Pantheon Books.
- Steele, C. M. (1975). Name-calling and compliance. *Journal of Personality and Social Psychology*, *31*, 361–369.

- Steele, C. M. (1992). Race and the schooling of black Americans. *Atlantic Monthly*, 269, 68–78.
- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52, 613–629.
- Steele, C. M. (1999). Thin ice: Stereotype threat and Black college students. *Atlantic Monthly*, 248, 44–54.
- Steele, C. M., Spencer, S. J., Davies, P. G., Harber, K., & Nisbett, R. E. (2001). *African American college achievement: A “wise” intervention*. Unpublished manuscript, Stanford Univ.
- 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.
- Steele, S. (1990). *The content of our character: A new vision of race in America*. New York: St. Martin Press.
- Stone, J., Lynch, C. I., Sjomeling, M., & Darley, J. M. (1999). Stereotype threat effects on Black and White athletic performance. *Journal of Personality and Social Psychology*, 77, 1213–1227.
- Stricker, L. J. (1998). *Inquiring about examinee’s ethnicity and sex: Effects on AP calculus AB examination performance* (College Board Rep. 98-1; ETS Research Rep. No. 98-5). New York: College Entrance Examination Board.
- Taylor, D. M., Wright, S. C., Moghaddam, F. M., & Lalonde, R. N. (1990). The personal/group discrimination discrepancy: Perceiving my group, but not myself, to be a target for discrimination. *Personality and Social Psychology Bulletin*, 16, 254–262.
- Treisman, U. (1985). A study of mathematics performance of Black students at the University of California, Berkeley. Program report.
- Tyler, T., DeGoey, P., & Smith, H. (1996). Understanding why the injustice of group procedures matters: A test of the psychological dynamics of the group-value model. *Journal of Personality and Social Psychology*, 70, 913–930.
- Tyler, T., Smith, H., & Huo, Y. J. (1996). Member diversity and leadership effectiveness: Procedural justice, social identity and group dynamics. *Advances in Group Processes*, 13, 33–66.
- von Hippel, W., Hawkins, C., & Schooler, J. W. (2001). Stereotype distinctiveness: How counter-stereotypic behavior shapes the self-concept. *Journal of Personality and Social Psychology*, 81, 193–205.
- Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review*, 101, 34–52.
- Wenzlaff, R. M., & Wegner, D. M. (2000). Thought suppression. *Annual Review of Psychology*, 51, 59–91.
- Wheeler, S. C., Jarvis, W. B., & Petty, R. E. (2001). Think unto others: The self-destructive impact of negative racial stereotypes. *Journal of Experimental Social Psychology*, 37, 173–180.
- Wheeler, S. C., & Petty, R. E. (2001). The effects of stereotype activation on behavior: A review of possible mechanisms. *Psychological Bulletin*, 127, 797–826.
- Wolsko, C., Park, B., Judd, C. M., & Wittenbrink, B. (2000). Framing interethnic ideology: Effects of multicultural and color-blind perspectives on judgments of groups and individuals. *Journal of Personality and Social Psychology*, 78, 635–654.