Stereotypes as Dominant Responses: On the "Social Facilitation" of Prejudice in Anticipated Public Contexts

Alan J. Lambert
Washington University

B. Keith Payne
Ohio State University

Larry L. Jacoby and Lara M. Shaffer
Washington University

Alison L. Chasteen
University of Toronto

Saera R. Khan
University of San Francisco

This article challenges the highly intuitive assumption that prejudice should be less likely in public compared with private settings. It proposes that stereotypes may be conceptualized as a type of dominant response (C. L. Hull, 1943; R. B. Zajonc, 1965) whose expression may be enhanced in public settings, especially among individuals high in social anxiety. Support was found for this framework in an impression formation paradigm (Experiment 1) and in a speeded task designed to measure stereotypic errors in perceptual identification (Experiment 2). Use of the process dissociation procedure (B. K. Payne, L. L. Jacoby, & A. J. Lambert, in press) demonstrated that these effects were due to decreases in cognitive control rather than increases in stereotype accessibility. The findings highlight a heretofore unknown and ironic consequence of anticipated public settings: Warning people that others may be privy to their responses may actually increase prejudice among the very people who are most worried about doing the wrong thing in public.

The premise of this article is highly counterintuitive: We argue that public settings can stimulate greater expression of prejudice compared with more private settings, and we report two studies showing support for this prediction. Such findings cannot easily be explained by current models of stereotyping (e.g., Bodenhausen & Macrae, 1998; Brewer, 1988; Devine, 1989; Dovidio & Gaertner, 1986; Fiske & Neuberg, 1990). Although these models are generally silent on the moderating role of private versus public settings, they all emphasize the role of social and normative pressure in inhibiting the expression of prejudice. Hence, research showing that public contexts exacerbate prejudice appears to fall outside the explanatory scope of these models. The premise of this article also is seemingly inconsistent with work in the impression management area, which generally assumes that people are motivated to stra-

tegically present themselves in favorable ways to other people (Cooley, 1902/1964; Goffman, 1959; Mead, 1934; Schlenker, Britt, & Pennington, 1996).

It might seem odd to argue, then, that public settings might exacerbate prejudice relative to private contexts. Why might such effects occur? One can better understand such findings by drawing from largely unrealized connections between the stereotyping and social facilitation literatures. In particular, stereotypes may be conceptualized as a type of dominant response (Hull, 1943; Zajonc, 1965) whose expression may be enhanced in public settings in a manner roughly akin to the facilitation of other well-learned responses. To our knowledge, this is the first line of research to demonstrate that public contexts can increase the expression of prejudice and the first formal model articulating when and why such effects might occur.

Theoretical Background

Gordon Allport (1985) suggested that a defining characteristic of social psychology lies in its concern with how behavior and judgment are affected by "the actual, imagined, or implied presence of others" (p. 3). Consistent with Allport's appraisal, several paradigms (e.g., social facilitation, social loafing, conformity) have vigorously explored the role of interpersonal factors in driving what people say and do. Although there are many ways to demonstrate the power of actual or imagined others in the laboratory, one classic approach has been to have all participants engage in essentially the same task but to have them do so either in relatively private settings or, alternatively, in the actual or anticipated presence of others (e.g., Asch, 1955; Triplett, 1898).

Given the theoretical and practical importance of understanding how private versus public contexts moderate the expression of prejudice—and in light of the centrality of the private–public distinction in social psychology—one might imagine that there is a huge body of work to investigate these matters empirically. This is not the case, however. Indeed, we were unable to locate any stereotyping models that specifically address private versus public contexts per se, and only a handful of studies have directly investigated the topic (e.g., Blanchard, Lilly, & Vaughn, 1991; Dutton & Yee, 1974; Monteith, Deneen, & Tooman, 1996; Plant & Devine, 1998).

Nevertheless, on the basis of the results of some of these studies as well as decades of work on conformity (Asch, 1955), one would intuitively expect stereotyping to be less pronounced in public settings. This is not at all what was found in a set of experiments reported by Lambert, Cronen, Chasteen, and Lickel (1996), however. Lambert et al. (1996) initially collected information regarding White participants' racial attitudes and, 2 months later, had participants complete an ostensibly unrelated study in which they were asked to form an impression of a single Black individual in one of two settings. Half of the participants were told that their responses would be confidential, but the other participants were told that they would be asked to share and discuss their impressions with the other participants in the testing session. Following this, all participants read a biographical sketch in which the target's race (Black in all conditions) was subtly cued in the context of several other pieces of information. Next, participants read a one-page description of the target's behaviors that had ambiguous implications for two traits (intelligence and hostility) known to be relevant to the stereotype of Blacks (Devine, 1989). After reading this information, participants expressed their overall impression of the target.

The primary question in this study concerned the moderating effect of situational context on the attitude–behavior relation (cf. Ajzen, 1988; Fazio, 1995), which in this case corresponds to the correlation between participants' attitudes toward Blacks and their impression of the Black target. Lambert et al. (1996) unexpectedly found that the attitude–behavior relationship was stronger in the anticipated public condition. That is, there was greater consistency between participants' racial attitudes and their evaluation of the target if they expected to share their impressions with others than if they did not. In the next section, we consider a framework that provides a provocative explanation for these findings.[1]

Stereotypes as Dominant Responses

One of the oldest debates in psychology concerns whether an individual's performance is facilitated versus impaired by the presence of an audience or coactors—that is, other individuals performing the same task (e.g., F. H. Allport, 1924; Triplett, 1898; for reviews, see Geen & Gange, 1977; Sanders, 1981). For many years, research on this topic yielded seemingly conflicting answers to this question, as many experiments showed task facilitation, but just as many showed task impairment. A landmark article by Zajonc (1965) provided greater clarity on this debate. Zajonc's argument built on the assumptions of drive theory (Hull, 1943; Spence, 1956), which assumes that placing organisms in a state of high arousal, or drive state, should increase the likelihood that dominant (well-learned) responses are emitted. Hence, one should only expect public audiences to facilitate task performance to the

extent that the dominant response yields the correct answer. Although some lingering questions regarding Zajonc's formulation remain, it has generally received broad empirical support with both human and nonhuman species (e.g., Zajonc, Heingartner, & Herman, 1969).[2]

A core premise of this article is that stereotypes can be conceptualized as dominant responses. In what sense might this be so? Despite a notable absence of cross-talk between theorists in the social facilitation and stereotyping literatures, there is reasonable overlap between the way that theorists have defined dominant responses and stereotypes. Indeed, the two terms most often used to describe dominant responses—*well-learned* and *habitual*—seem to capture an important essence of stereotypes and strong attitudes (e.g., Devine, 1989; Fazio, 1995).

Given the plausible theoretical connections that might be drawn between the social facilitation and stereotyping literatures, one might expect there to be a long and rich tradition of parallels drawn between them. Somewhat to our own surprise, we found few, if any, such connections. To be sure, the notion of mental habits per se is not a novel idea (James, 1890/1983), and there has been some reference over the years by social facilitation theorists that cognitive as well as behavioral responses fall within the theoretical umbrella of social facilitation (Baron, 1986; Callaghan, 1940; Campbell, 1988; Loh & Nuttin, 1972; Thomas, Skitka, Christen, & Jurgena, 2002). Nevertheless, such linkages are much more rare than one might expect, especially with respect to the explicit conception of stereotypes as dominant responses. Indeed, after reviewing several advanced books on stereotyping and prejudice, we were unable to find even one passing mention of the idea that stereotypes could be construed as dominant responses.

---

[1] In this program of research, we typically give all participants a short but explicit reminder, just prior to the biographical sketch, to be as accurate as they can in reading about and forming impressions of the target person. We have included such warnings for accuracy to avoid undesirable confounds between the seriousness or attention that participants accord to the impression formation task and the manipulation of the private versus public variable. This factor explains why, in the private condition, the magnitude of the attitude–behavior relation was relatively weak. Previous work by Neuberg (1989) has shown that accuracy sets (given in private) tend to greatly attenuate stereotypic bias. Hence, the small attitude–behavior correlations reported by Lambert et al. (1996) in the private condition are perfectly consistent with this previous work. Thus, the novel finding in our research is not that attitude–behavior consistency was relatively weak in the private setting but rather that there is something about anticipated public settings that facilitates use of one's own attitudes, beyond these incentives for accuracy. (Unpublished research in our lab has shown that when the accuracy prompt is removed and participants assigned to private settings are explicitly encouraged to use their own attitudes—e.g., "Please feel free to judge the person in whatever way you see fit, in accordance with your own values and opinions"—we always obtain far stronger attitude–behavior correlations in private compared with the private + accuracy goal sets used here.)

[2] Historically, the term *social facilitation* has been used (somewhat confusingly) to refer both to facilitation and to impairment of task performance. For the sake of consistency, we continue to use this term in this way as well. This ambiguity is fundamental to the research on social facilitation because, as we demonstrate, *social facilitation* can refer either to the strengthening of dominant processes or to the impairment of more difficult-to-execute processes.

Forging connections between the stereotyping and social facilitation literatures leads to some counterintuitive predictions that would not otherwise be made. Intuition suggests that public settings should attenuate the impact of stereotypes relative to private settings, but our model makes the exact opposite prediction. Recall that the findings by Lambert et al. (1996) are consistent with this general framework. Thus, conceptualizing stereotypes as dominant responses within the framework of social facilitation theory represents a viable, albeit untested, account of our earlier findings.

Known Moderators of Social Facilitation Effects

Among studies with human populations, social facilitation effects tend to be stronger among participants experiencing relatively high levels of trait- or state-based anxiety or arousal during the experimental task (Geen, 1989). These findings are compatible with two major classes of social facilitation models. On the one hand, drive-based models (Geen, 1989; Zajonc, 1965; see also Baron, 1986) anticipate such effects to the extent that an elevated drive-like state in the anticipated public setting is likely to be higher among participants who are high rather than low in trait anxiety or arousal. On the other hand, to the extent that high-anxiety participants are experiencing greater attentional conflict or distraction (e.g., because of ruminative thoughts about the impending discussion, arousal, or both), models that explain social facilitation in terms of diminished cognitive capacity (Cohen, 1978; Easterbrook, 1959) could easily account for such effects as well. We discuss these models in more detail later in this article.[3]

Actual Versus Anticipated Public Contexts

Use of anticipated public methodologies might seem problematic if we wished to forge connections with the social facilitation literature, whose best known studies use actual public situations. As it turns out, this problem is less serious than might appear at first. This is because social facilitation effects are not restricted to cases in which the audience is physically present, as such findings can arise even when participants anticipate or imagine that others might be appraising their work. Indeed, on a theoretical level, the question of whether an evaluative audience is literally present in the room is largely irrelevant. This is because the various mechanisms proposed to underlie social facilitation (e.g., cognitive distraction or conflict, anxiety, or arousal) could all be produced not only by the literal presence of others but also by the arousing or anxiety-producing prospect of how others might respond in the future. In other words, social facilitation effects can be produced by internal as well as external distractions, which "may explain why *unseen* but evaluative audiences can trigger social facilitation effects" (Baron, 1986, p. 7, emphasis added). Thus, although it is important to acknowledge that anticipated public settings are obviously not the same thing as actual public settings, existing theoretical explanations for social facilitation suggest that both kinds of situations produce similar effects.

Experiment 1

It is well documented that there are meaningful individual differences in the extent to which White Americans associate either favorable or unfavorable sentiments with Blacks. Viewed through the lens of our framework, this suggests that the dominant response toward Blacks varies from individual to individual. A rigorous test of our model requires that we show support for it, generalizing over the specific manner that individual differences in stereotypic responding are operationalized. In this study, we used a multimethod approach, measuring racial sentiment in three ways, including the Modern Racism Scale (MRS; McConahay, 1986), Social Dominance Orientation Scale (SDO; Sidanius, Pratto, & Bobo, 1996) and Humanism–Egalitarianism Scale (HE; Katz & Hass, 1988).

Although social anxiety was not measured in our earlier research, previous work on social facilitation suggested that trait (social) anxiety might play an important role in this paradigm, as noted earlier. (Theoretically, participants scoring high in trait anxiety should show more reactivity to public settings compared with participants who are not dispositionally anxious.) We elected to measure trait differences in social anxiety using a measure developed by Fenigstein, Scheier, and Buss (1975). We chose the Fenigstein et al. measure because it enabled us to test an important prediction of our model while distinguishing between social anxiety and self-consciousness (both of which are measured by the Fenigstein et al. instrument). Some theorists have argued that increasing people's attention to the self can enhance the accessibility of their own attitudes, either through introduction of a mirror or through other means (Carver, 1975; Pryor, Gibbons, Wicklund, Fazio, & Hood, 1977). To the extent that public settings might make people self-conscious, this literature suggests that public settings might increase the accessibility of people's own attitudes. If so, then individual differences in self-consciousness—rather than trait differences in social anxiety—should moderate the effects of our private versus anticipated public contexts.

Method

Participants and Design

A total of 48 participants (16 male and 32 female) participated in partial fulfillment of course credit. There was one manipulated variable (judgmental context: private vs. public) and two individual-differences variables: racial attitudes and social anxiety. Aside from a general tendency for female participants to express more favorable sentiments toward Blacks compared with male participants ($ps < .05$), analyses of gender yielded no additional main effects or interaction, and, hence, the analyses to follow are collapsed over this factor.

Measurement of Individual Differences

Two months prior to the main study, participants completed a 35-page packet of questionnaires, most of which were unrelated to current concerns. Participants arrived at the laboratory in groups of 3–5 but completed these questionnaires in separate cubicles. Participants completed the MRS (McConahay, 1986), SDO (Sidanius et al., 1996), and HE (Katz & Hass, 1988). The MRS consists of 7 items (e.g., "Blacks are getting too demanding in their push for equal rights"), to which participants responded along a scale ranging from -4 (*strongly disagree*) to 4 (*strongly agree*). The SDO

---

[3] In contrast to the ample evidence for moderation, however, there have been relatively few successful demonstrations in the literature to show direct evidence for mediation using psychophysiological measures. This is not to say that these studies are not consistent with general principles of social facilitation. As Baron (1986) noted, most of these studies "do report behavioral evidence of social facilitation. It is the psychophysiological data that is weak" (p. 24).

consists of 16 items (e.g., "If certain groups stayed in their place, we would have fewer problems"), to which participants responded along a scale ranging from 1 (*very negative*) to 7 (*very positive*). The HE consists of 8 items (e.g., "Everyone should have an equal chance and an equal say in most things"), to which participants responded along a scale ranging from 0 (*strongly disagree*) to 10 (*strongly agree*). We formed three composite indices by averaging across the items in each scale, after reverse scoring where necessary. All three indices were coded such that higher numbers indicated more favorable sentiments toward Blacks.

Impression Formation Phase

Approximately 2 months later, participants were brought into the laboratory in groups of 3–5 to participate in an ostensibly unrelated impression formation study. Each participant was ushered into an isolated booth on his or her arrival at the laboratory. As in Lambert et al. (1996), all participants were told at the outset to "try to form as accurate an impression of this person as you can and indicate your judgments of this person on the forms provided." Participants in the private setting were given no further instructions, except that they were informed that all of their responses were confidential. In contrast, participants in the anticipated public setting were told that

> after you have formed your impressions of this person, there will be a general discussion session with the other participants in the room today. During this discussion, each of you will have the opportunity to show others the information that you were given, as well as talk about the kinds of judgments you made about this person.

In reality, none of the participants in this condition actually discussed their judgments of the target with the other participants, and, in the debriefing, all participants were reassured that all of their responses were, in fact, confidential.

Presentation of Information About Target Person

Background information. Participants were then presented with the same biographical sketch that we had used in Lambert et al. (1996), in which the target person had supposedly filled out his name, address, social security number, place of birth, educational status, academic major, expected graduation date, citizenship status, gender, and racial/ethnic background (which was checked *Black or African American* in all conditions). The target's race was thus only one of a dozen or so pieces of background information presented about the target person.

Behavioral description. Participants were then provided with a one-page modified "Donald" description of the target (cf. Srull & Wyer, 1980) that was similar to that used by Lambert et al. (1996). The passage was designed to be primarily relevant to the traits of intelligence and laziness, traits that have been shown by previous research (e.g., Devine, 1989) to be central to the stereotype about Blacks.

Assessment of dependent variables. Participants reported their overall evaluation of the target along a scale ranging from −5 (*very unfavorable*) to 5 (*very favorable*) and indicated how much they would want to meet this person along a scale ranging from −5 (*wouldn't want to meet him*) to 5 (*would want to meet him*). Following this, they estimated the degree to which the target possessed a number of specific trait dimensions (i.e., *likable, successful, unfriendly, intelligent, competent, unmotivated, patient, self-assured, incompetent, polite, lazy, bright, argumentative, aggressive, hard worker, athletic, easy to get along with, cooperative, hostile, shy, responsible,* and *ambitious*). These judgments were made along a scale ranging from 0 (*not at all*) to 10 (*extremely*).

Free recall task. Following their impressions of the target, participants were asked to recall as much information from the biographical sketch as they could. We included this task to test whether participants had noticed the race of the target; 2 participants failed to do so and were excluded from further analyses. Following this, participants were probed for suspicious-

ness, debriefed, and dismissed. None of the participants in the anticipated public condition expressed (prior to debriefing) any suspicion that the group discussion would not actually take place.

Scoring of target judgments. Principal-components analysis was conducted on these ratings to reduce these judgments to a smaller number of theoretically meaningful indices. Analyses revealed a total of six components with eigenvalues greater than 1.00. The first component (eigenvalue = 9.82) appeared to represent a general evaluative component and contained high loadings on many of the individual items. However, the second component (eigenvalue = 2.27) appeared to be more relevant to the Black stereotype and, in particular, to a combination of traits mostly relevant to intelligence and motivation (e.g., *incompetent, lazy*). A standardized index capturing the entire pattern of loadings for this component (using the regression method through SPSS) was used in subsequent analyses; higher numbers indicate more favorable judgments of the target. (Supplemental analyses on the overall evaluative component yielded results that were similar to but weaker than this stereotypic index.)[4]

Measurement of social anxiety and self-consciousness. After completing several filler tasks not directly relevant to this study, participants completed the Fenigstein et al. (1975) measure. The Fenigstein et al. scale consists of a total of 23 items, each accompanied by a scale ranging from 0 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*). The social anxiety index was constructed according to the coding system recommended by Fenigstein et al. (1975) and included the following 6 items: (a) "It takes me time to overcome my shyness in new situations," (b) "I have trouble working when someone is watching me," (c) "I get embarrassed very easily," (d) "I don't find it hard to speak to strangers" (reverse coded), (e) "I feel anxious when I speak in front of a group," and (f) "Large groups make me nervous." A composite index of social anxiety was formed on the basis of an average of these 6 items ($\alpha = .85$).

Our design was based on the assumption that participants' level of social (trait) anxiety would not vary as a function of judgmental context. It did not: Levels of social anxiety were nearly identical across the private versus anticipated public setting (Ms = 2.23 vs. 2.40, respectively; $F < 1.00$). For supplemental analyses, an index of public self-consciousness was formed on the basis of the average of seven items (e.g., "I'm concerned about what others think of me," "I'm usually aware of my appearance"; $\alpha = .84$). An index of private self-consciousness was formed on the basis of an average of 10 items (e.g., "I'm generally attentive to my inner feelings," "I'm constantly examining my motives"; $\alpha = .74$). Scores on these two indices, like the social anxiety index, did not vary as a function of the judgmental context to which participants had been earlier assigned (both Fs < 1.00).

Correlations Among Individual-Differences Variables

Table 1 shows the pattern of reliabilities and correlations arising out of our individual-differences variables. As expected, the three measures of racial attitudes were significantly correlated with one another and were not correlated with self-consciousness or social anxiety, the latter of which were, as expected, strongly correlated with one another.

Results

Preliminary Analyses

Given the strong correlations among our three measures of racial attitude, we suspected that the predicted pattern of attitude–

---

[4] An alternative analytic strategy for forming the index of target judgments is to form an average (after reverse coding when appropriate) of just the highest loading items (absolute values of loadings greater than .50) on the stereotypic component in question. These items were *unmotivated, incompetent, lazy, hardworking, responsible,* and *ambitious.* An index based on the average of these items ($\alpha = .88$) yielded a pattern very similar to but slightly weaker than those reported ahead.

Table 1
Correlations Among and Reliabilities of Individual-Differences Measures Used in Experiment 1

Measure	1	2	3	4	5	6
1. Modern Racism Scale	(.81)					
2. Social Dominance Orientation Scale	.42**	(.88)				
3. Humanism–Egalitarianism Scale	.35*	.72**	(.78)			
4. Social anxiety	−.21	−.22	.08	(.85)		
5. Private self-consciousness	.17	−.03	−.07	.37**	(.74)	
6. Public self-consciousness	.05	−.04	.00	.47**	.68**	(.84)

Note. The Modern Racism, Social Dominance Orientation, and Humanism–Egalitarianism Scales are coded such that higher values correspond to more favorable attitudes toward Blacks and higher levels of egalitarianism. Reliabilities are in parentheses.
* $p < .05$.   ** $p < .01$.

behavior correlations would yield a similar pattern of results, regardless of how these racial attitudes were operationalized. To show this convergence and to facilitate understanding of the formal hierarchical regression analyses to follow, we show the correlations between the three predictor variables and target judgments as a function of judgmental context and trait anxiety. For ease of display, we used a median split to divide participants into high and low anxiety groups. As seen in Table 2, these findings yield excellent support for our predictions. Assigning participants to the anticipated public setting strengthened the magnitude of the attitude–behavior relation, but only if participants were high in social anxiety. Low-anxiety participants, on the other hand, showed a nonsignificant reversal of this pattern.

Note that there were no substantial differences in the pattern of correlations between the high- and low-anxiety participants who had been assigned to the private setting. This similarity supports our argument that the dispositional anxiety of participants is more relevant to the anticipated public, compared with the private, context. Second, the fact that modest correlations were found (regardless of trait anxiety) for participants in the private condition is relevant to the accuracy instructions that all of our participants were given prior to forming their impressions of the target person (see Footnote 1).

Table 2
Correlations Among Individual-Differences Variables and Judgments of Black Target (Experiment 1)

Context	MRS	SDO	HE	Combined attitude index
Private context				
High anxiety	.03	.40	.18	.22
Low anxiety	.21	−.04	.14	.13
Anticipated public context				
High anxiety	.36	.85**	.56*	.70**
Low anxiety	−.11	−.06	−.27	−.17

Note. Individual-differences variables were all coded such that higher numbers indicate more favorable sentiments toward Blacks; positive correlations indicate attitude–behavior consistency. The combined attitude index represents the average of standardized scores on all three individual-differences variables. MRS = Modern Racism Scale; SDO = Social Dominance Orientation Scale; HE = Humanism–Egalitarianism Scale.
* $p < .05$.   ** $p < .01$.

Hierarchical Regression Analyses

We tested the pattern suggested by Table 2 more formally through hierarchical regression analyses. Here, the continuous variables of racial attitude and trait anxiety and the categorical variable of judgmental context (private vs. anticipated public) were (after appropriate centering) entered first as main effects, with all relevant two-way interactions and the three-way interaction in a second and third block, respectively. Given the converging evidence from the MRS, SDO, and HE, it would be conceptually and statistically redundant to conduct three separate regression analyses using each predictor in isolation. Thus, in the analyses to follow, we first converted the three individual-differences indices to z scores and then formed an overall average racial attitude index based on an average of participants' scores on these three indices.

Our model led us to expect differences between high- and low-anxiety participants only in the anticipated public condition, not in the private condition. Situational context had no effect collapsed over other variables ($p > .20$), but the addition of the three-way Racial Attitude × Trait Anxiety × Judgmental Context interaction yielded a marginal increment in R^2, $F(1, 38) = 2.41$, $p = .13$. Moreover, our theory-driven interest in the anticipated public setting revealed, as predicted, a significant Racial Attitude × Trait Anxiety interaction, $F(1, 19) = 5.63$, $p = .03$. In contrast, analyses among participants in the private condition showed no evidence of this effect ($F < 1.00$). Figure 1 shows the pattern of best fitting regression lines across the private (left panel) versus anticipated public (right panel) conditions. In the private condition, modest patterns of attitude–behavior consistency were found, regardless of whether participants were high ($r = .22$) or low ($r = .13$) in social anxiety. When participants were assigned to anticipated public settings, however, this relationship was greatly strengthened in the case of the high-anxiety participants ($r = .70$, $p < .01$) but nonsignificantly reversed in the case of the low-anxiety participants ($r = −.17$).

Tests of Public and Private Self-Consciousness

Hierarchical regression analyses using the public self-consciousness index revealed no significant effect of self-consciousness in its own right or in combination with judgmental context or racial attitudes (all $Fs < 1.00$). (Supplemental analyses conducted only within the anticipated public condition failed to yield any significant results, all $ps > .20$.) Parallel analyses on
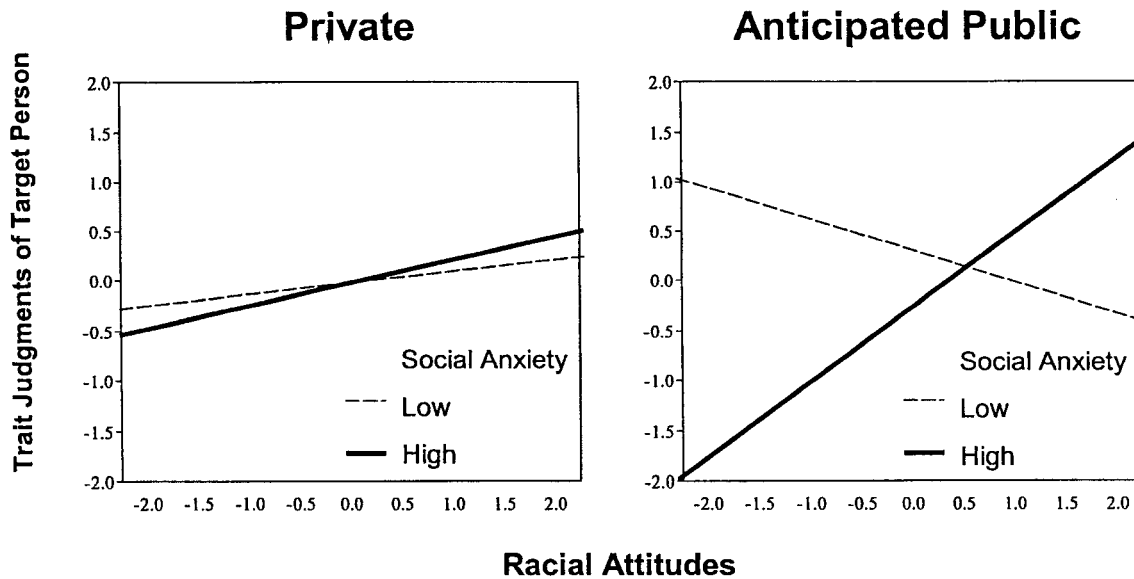
Figure 1. Best fitting regression lines corresponding to the regression of target judgments on racial attitudes for private and anticipated public conditions as a function of trait anxiety level—Experiment 1. Values represent standardized scores. Positive slopes indicate consistency between stereotypic attitudes and evaluative judgments of the Black target.

private self-consciousness also failed to yield any significant results (all *F*s < 1.00).

Discussion

Contrary to intuition, Study 1 shows that racial attitudes played a stronger role in an anticipated public compared with a private context. It is ironic that this pattern was observed among those participants who were high in social anxiety, who by definition have greater concern about saying or doing the wrong thing in public. These findings go beyond simply replicating previous findings by Lambert et al. (1996). First, our findings were not dependent on the particular way that racial attitudes were operationalized. Second, we found a moderating effect of social anxiety, which was not measured in our earlier work. The role of anxiety establishes more clearly the parallel processes we see as relevant in both the stereotyping and the social facilitation areas. Third, our effects were due to social anxiety but not to individual differences in private and public self-consciousness. However, our results converge on the general implications of Lambert et al. (1996), who also found similar effects using a methodology and materials very similar to those used here. Hence, although caution should be exercised given that the three-way interaction did not achieve conventional levels of significance, several factors in combination (i.e., the convergence of our results on earlier findings, the generalizability of our findings across different measures of racial sentiment, and strong support for theory-driven analyses) make these concerns somewhat less important than might otherwise be the case.

Nevertheless, it seemed important to conduct a second experiment to replicate and extend these findings in a different methodological paradigm. Second and more important, our results do not address some important process-level questions regarding the ex-

act mechanisms underlying these provocative findings, as we discuss in the following.

Habit-Strengthening Versus Impairment-of-Control Models

If stereotypes can be thought of as dominant responses, why, exactly, might people be more likely to express them in public? Our reading of the social facilitation literature reveals two general classes of explanations, which we briefly review below.

Habit-Strengthening (Drive-Based) Models

One class of explanations is rooted in Hullian views of drive, emphasizing the energizing role of arousal on dominant responses. Zajonc (1965) drew from this framework in explaining why public settings might improve performance on well-learned tasks. This view is nicely captured in a recent article by Allen, Kenrick, Linder, and McCall (1989), who, in addressing the polarizing effects of arousal on attraction, argued that arousal "adds fuel to whatever fire is currently burning" (p. 262). Although drive is an important part of Hull's (1943) formulation, we prefer to use the more general term *habit-strengthening model* to summarize this view, because (a) some theorists in this area (e.g., Baron, 1986) accept some but not all assumptions of Hull's original model and (b) there are some long-running debates about the concept of drive that are not directly germane to the goals of our article.

At least three models generally fit within this habit-strengthening perspective. The *mere presence view* suggests that members of the same species are intrinsically arousing (Zajonc, 1965). The *evaluation apprehension view* represents a qualification of the mere presence view, arguing that (at least for humans), social facilitation depends on the extent to which people perceive

that they are being evaluated by others (Geen, 1989). Finally, distraction-conflict theory (Baron, 1986) originally stipulated that *attentional conflict* is the most proximal determinant of arousal, in that "indecision or uncertainty about what attentional response to make might stress the organism and elevate arousal or drive" (Baron, 1986, p. 5). Although it is important to acknowledge some important differences between these views, all three models share the same basic Hullian assumption: Preexisting habitual responses should become even stronger in public contexts, fueled by the energizing influence of the increased arousal or anxiety.

As with strong attitudes, stereotypes represent a classic kind of mental habit: well-learned associative links involving a given category (e.g., Blacks) and people's cognitive or affective appraisals of it (Fazio, 1995). If public settings strengthen these associations, this process fits well with the more modern concept of cognitive accessibility. Although work in the priming area (Higgins, Rholes, & Jones, 1977; Srull & Wyer, 1980) has not been concerned with public settings per se, this research has shown that increasing the accessibility of a mental construct increases the extent to which subsequent judgments are consistent with it. Thus, one conceptualization of the results of Experiment 1 is that the public setting served to make racial attitudes more accessible, leading to stronger attitude–behavior consistency.[5]

Impairment-of-Control Models

Impairment-of-control models differ from habit-strengthening models in at least two related ways. First, control-based models assume that public settings impair the ability to engage in controlled processing through a depletion of cognitive resources. This leads, in turn, to a narrowing of attentional focus (Easterbrook, 1959) along with an increased tendency to rely on well-learned processes that are less demanding of these resources (Cohen, 1978). Second, Hullian notions about the arousal → drive link are downplayed or even dropped completely. Although strong levels of arousal may be sufficient to facilitate well-learned responses, they are not logically necessary according to this model. In other words, the increased tendency to rely on easy, well-practiced tasks may be the consequence of dwindling cognitive resources, which could be due to the need to think about or attend to two things at the same time.

Are the Habit-Strengthening and Impairment-of-Control Views Empirically Distinguishable?

Social facilitation theorists have yet to generate definitive evidence favoring either the habit-strengthening or the impairment-of-control models. Indeed, this stalemate led Groff, Baron, and Moore (1983) to suggest that these models may not be distinguishable (even in principle), as the two models often make similar, if not identical, predictions.[6]

This ambiguity is illustrated by the results from Experiment 1, which are compatible with both explanations. The anticipated public context might have increased stereotype-based responding by increasing the accessibility and strength of racial attitudes, as implied by the habit-strengthening hypothesis. Alternatively, such results could have arisen through reduced ability to engage in controlled processing, leading to greater impact of stereotypic attitudes. (As we discuss later in this article, a very similar ambiguity applies to the cognitive load literature in stereotyping.) We

appreciate the fact that, to some readers, these two explanations may sound like different ways of saying the same thing. Is it really different to argue that stereotypes are getting stronger or that participants are less able to engage in controlled processing? Thus, one might be tempted to conclude that we have run into the same conceptual roadblock faced by the social facilitation area. However, we take a more optimistic view in this article. In particular, we believe that Jacoby's (1991) process-dissociation procedure (to be discussed in the context of Experiment 2) offers new leverage in teasing apart these two perspectives.[7]

Experiment 2

Telling people that someone might be watching or that others will be privy to their actions is usually presumed to decrease the extent to which people engage in socially unacceptable behavior by emphasizing public accountability (cf. Tetlock, 1992). This assumption has recently loomed large across many important real-life contexts, ranging from public concern over how to minimize incidents of fiscal irresponsibility (e.g., the Enron scandal) to outrage over the series of shootings of unarmed Black civilians by White police officers (e.g., the shooting of Amidou Diallo).

However, the findings from Experiment 1 show an effect that is opposite to that expected for public accountability: Warning people that their responses would soon be open to public scrutiny

---

[5] To anticipate a possible confusion, we note that there are two versions of distraction-conflict theory that make different assumptions about drive and arousal. The original version of distraction-conflict theory is similar to Zajonc's (1965) view that social facilitation is driven by drive-like mechanisms, except that Baron (1986) viewed attentional conflict (rather than mere presence) as the proximal determinant of drive. A revised version of the model drops the concept of drive entirely, opting to explain social facilitation in terms of diminished cognitive capacity. Hence, the first version of distraction-conflict theory falls into the first, habit-strengthening class of models, whereas the revised version is more compatible with the cognitive control class of explanations to be reviewed below.

[6] The difficulty in distinguishing between these two models derives in large part from the fact that most of procedures used to induce cognitive load (e.g., concurrent or dual-task paradigms) can often lead to attentional conflict, which, in itself, is capable of elevating arousal (Cohen, 1978). This dilemma led Groff et al. (1983) to conclude that "the distinction between an overload and a drive mechanism is a fine one" and later, citing Cohen, to suggest that "it may be impossible to derive competing predictions for these two predictions" (p. 360). Although impairment-of-control models might seem more parsimonious than habit-strengthening models, certain key findings in the literature are more compatible with the latter compared with the former formulation (Baron, 1986).

[7] The following metaphor may be helpful to further illustrate these issues. Consider two explanations that a football fan might use to explain why, in the second half of play, Team X starts scoring touchdowns against Team Y after a first half of lackluster play. This could reflect (a) augmented power of Team X's offense, but it could also reflect (b) impaired defense of Team Y. Stereotyping researchers face (metaphorically speaking) the same ambiguity. On the one hand, a surge of stereotypic processing could be interpreted in terms of the augmented accessibility or strength of the stereotype. (This is analogous to concluding that a surge of touchdowns is due to increased strength of the offense.) Alternatively, an increase in stereotyping could be due to curtailed motivation or ability to block out unwanted effects of the stereotype (Wilson & Brekke, 1994), just as a football fan could interpret a surge in scoring as due to the impaired ability of the defense to block out unwanted intrusions of the offense.

increased, not decreased, the tendency for them to use their ste-reotypic attitudes toward Blacks. As noted earlier, two mecha-nisms could produce this outcome: increased stereotype activation, or reduced cognitive control. It thus becomes critical to rely on a methodology that is able to tease apart these two accounts. The methodology used in Experiment 2, borrowed from a recent in-vestigation by Payne (2001), was specifically designed to achieve this goal.

Payne's (2001) study was inspired, in part, by the aforemen-tioned shooting of Amidou Diallo, which involved a case of mistaken identification: The White officers in question believed that Diallo held up a gun, whereas in fact the object was a wallet. In his task, participants were presented with pictures of handguns and hand tools on a computer monitor. Their assignment was to correctly identify each item by pressing a key labeled either *gun* or *tool* on the keyboard. Immediately prior to each target item, faces of Black and White persons were flashed briefly (but visibly) for a duration of 200 ms. Participants were told that they should be as accurate as they could but they were allowed only a very brief response window of 500 ms to make their responses. Failure to respond within this interval resulted in the display of a large red exclamation point, indicating to participants that they had not responded fast enough. After a series of practice trials, most participants typically became fairly adept at the task, at least in terms of responding within the response window. However, par-ticipants often made errors, and the types of errors they made were disproportionally stereotypic in nature. For example, when partic-ipants were actually presented with a tool, they were more likely to mistakenly respond "gun" if they were primed with a Black rather than a White face.

There are two reasons why this task is especially valuable for current concerns. First, it allows us to show the generalizability of the surprising findings reported in Experiment 1, in that partici-pants showed evidence of greater stereotyping in public compared with private conditions. In this paradigm, the analogue of such findings is greater likelihood of stereotypic errors in the former compared with the latter condition. However, simply observing that stereotypic errors are greater in the anticipated public condi-tion leads to the ambiguity alluded to earlier. In other words, do increased errors reflect (a) strengthening of the habitual associative link between Blacks and guns, as implied by a habit-strengthening view, or (b) a loss of participants' ability to expend the cognitive effort in tracking and responding correctly to the veridical prop-erties of the target stimuli, as suggested by the impairment-of-control model?

This task offers critical leverage in distinguishing between these two accounts insofar as it relies on the logic of opposition that is an important part of the process-dissociation procedure developed by Jacoby and his colleagues (Jacoby, 1991; Jacoby, Kelley, & McElree, 1999). More specifically, it involves arranging experi-ments so that in some conditions automatic and controlled pro-cesses lead participants to make the same response (congruent trials), whereas in other conditions they lead to different responses (incongruent trials). By placing automatic and controlled processes both in concert and in opposition, we can measure the unique contribution of each process. Very few studies in the stereotyping literature have the flexibility to easily accomplish this goal. (In most studies, automatic processing leads to use of the stereotype, whereas controlled processing leads to its nonuse, which corre-

sponds to an incongruent trial.) More details on this procedure and its specific relevance to current concerns are described below.

Separating Influences of Controlled and Automatic Processes Through Process Dissociation

As noted above, this task has both congruent and incongruent trials. Congruent trials contain White–tool pairs and Black–gun pairs. In these cases, responding either on the basis of the racial category or on the basis of the actual target leads to the correct answer. For example, when a Black face is followed by a gun, either responding in a controlled way, using the objectively correct information, or responding on the basis of the stereotype in the absence of control leads to the "gun" response. Incongruent trials include White–gun and Black–tool pairs. In these conditions, the racial stereotypes and controlled processing of the target object lead to contradictory responses. For example, when a Black face is followed by a tool, race stereotypes would lead to an erroneous "gun" response, whereas the objective information would lead to the "tool" response. A stereotypic response in this condition is clearly unintentional, as it leads to a "gun" response even as a tool sits before the participant's eyes.

According to the process-dissociation approach, therefore, cor-rect responses on congruent trials are assumed to result from either (a) controlled response (C) to the target, in which participants are able to successfully respond to the veridical properties of the object, or (b) a stereotypical accessibility bias (A) when control fails $(1 - C)$. This relationship may be expressed mathematically in the following equation: $P(\text{correct} \mid \text{congruent}) = C + (1 - C)A$. Again, this allows for the fact that correct responses on congruent trials can be based on two sources of knowledge: the target, or the stereotype. On incongruent trials, the two processes are set in opposition to one another. In such cases, false alarms occur when an accessibility bias (A) operates when control fails $(1 - C)$. As Payne (2001) noted, this is analogous to a situation in which the police officer is unable to discern that the object being held is, in fact, harmless, leaving him or her to rely on the implications of the racial stereotype (e.g., "It's a gun"). Mathematically, this can be written as follows: $P(\text{stereotypic error} \mid \text{incongruent}) = (1 - C)A$.

As suggested by our earlier discussion of the habit-strengthening versus impairment-of-control hypotheses, these equations are especially useful insofar as they allow us to derive estimates of automatic and controlled processing. We accomplish this in a straightforward way, by simply solving these equations algebraically for estimates of control (C) and automaticity (A). First, control is derived by the difference between correct re-sponses in the congruent condition and errors in the incongruent condition: $C = P(\text{correct} \mid \text{congruent}) - P(\text{stereotypic error} \mid \text{incongruent})$. Given the estimate of control, one can solve for the accessibility bias estimate. Recall that the probability of mistaking a tool for a gun after a Black prime is $P(\text{stereotypic error} \mid \text{incongruent}) = (1 - C)A$. To solve for A, we divide the false alarm rate in the incongruent condition, $(1 - C)A$, by the proba-bility of a failure of control, $(1 - C)$. Thus, $A = P(\text{stereotypic error} \mid \text{incongruent})/(1 - C)$. In this way, the pattern of hits and false alarms can be decomposed into estimates of the ability to control responses based on the true features of the target objects and estimates of the bias to respond in a stereotypical direction when control fails.

Recent studies have validated the estimates of automatic and controlled contributions to stereotype use and the assumptions on which their derivation are based. Consistent with previous research by Jacoby and colleagues (Payne, 2001; Payne et al., 2002, in press), work on the guns–tools paradigm supports the assumption that the control parameter provides an estimate of conscious, intentional processing, whereas the accessibility parameter provides an estimate of automatic processing. For example, work by Payne and colleagues has found that the accessibility bias occurs rapidly (with stimulus onset asynchronies [SOAs] of 200 ms) and is sensitive to manipulations affecting the salience of racial stereotypes but is unaffected by direct manipulations of processing capacity or conscious intentions. In contrast, cognitive control is available to conscious experience and is strongly affected by processing constraints, indicating that it is resource dependent (Payne, 2001; Payne, Jacoby, & Lambert, in press; Payne, Lambert, & Jacoby, 2002).

More relevant to current concerns, this procedure has the ability to explain why stereotypic errors are more likely in public. The habit-strengthening hypothesis suggests that this is due to a strengthening of the stereotypic associations attached to the Black versus White faces. If so, this difference should be revealed in the accessibility parameter, reflecting (e.g.) the greater accessibility of the concept *guns* after mere presentation of a Black face. In contrast, the impaired control hypothesis suggests that augmented stereotypic-consistent errors in public reflect decreased control rather than an increase in stereotype strength.

Summary of Predictions

Despite important methodological differences from Experiment 1, one core prediction is similar to that for the first study: Stereotypic processing should be more evident in the public com-

pared with the private condition. For analyses of errors, this should emerge as a three-way Prime (Black vs. White) $\times$ Object (guns vs. tools) $\times$ Context (private vs. anticipated public) interaction.

Predictions for the subsequent analyses of these errors using process dissociation are different, depending on the viability of the process-level accounts reviewed earlier. These possibilities are summarized in Figure 2. On the one hand, a pure habit-strengthening hypothesis (left side of Figure 2) suggests that increases in stereotypic processing should entail increased stereotype accessibility relative to the private setting, with no change in cognitive control. On the other hand, a pure cognitive control account (middle of Figure 2) suggests that cognitive control should be decreased, with no change in stereotype accessibility. In principle, these two predictions are not mutually exclusive. In other words, it is entirely possible that anticipated public settings could increase stereotype accessibility but also reduce control. This view, which acknowledges the possibility that these two mechanisms could contribute in additive and independent fashion to increased stereotype use, is depicted in the right side of Figure 2.

Additional Considerations

A Note on Individual Differences

In Experiment 1 our primary focus was on individual differences in racial attitudes. All participants judged a Black individual, and we measured the impact of racial attitudes as the relationship between participants' opinions about the group as a whole and their evaluations of a particular group member. The primary predictions of Experiment 2 are less tightly tied to individual differences. Whereas the first study held constant the target stimuli and measured individual variability in responses, primary analyses in the second study average across individuals and compare across
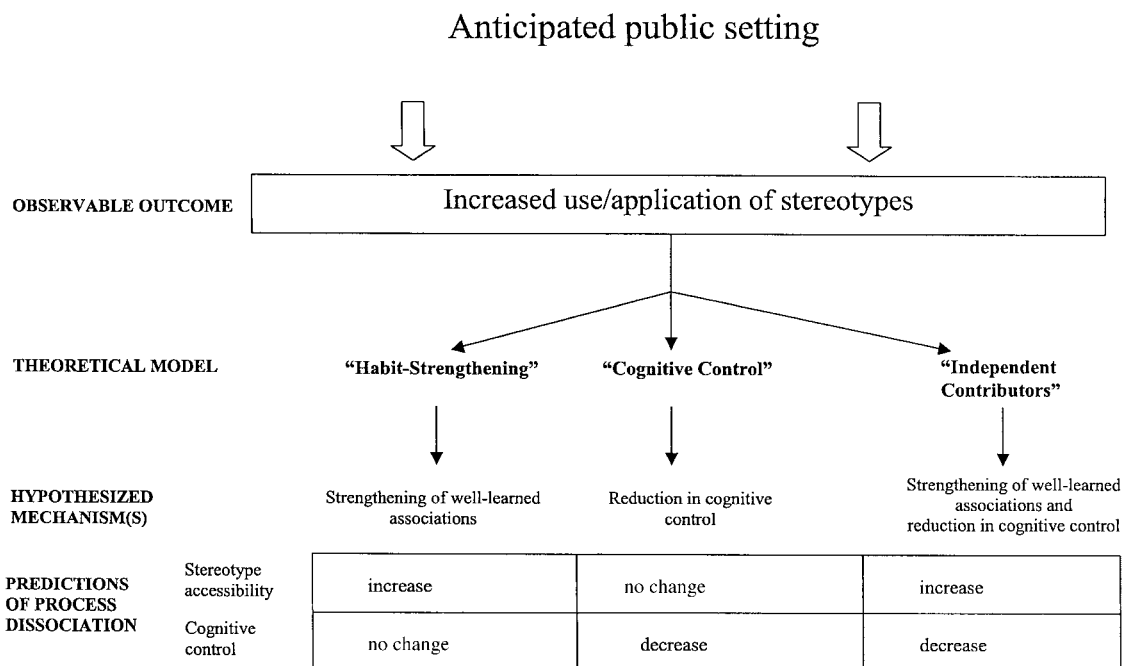
Anticipated public setting

		"Habit-Strengthening"	"Cognitive Control"	"Independent Contributors"
OBSERVABLE OUTCOME		Increased use/application of stereotypes		
THEORETICAL MODEL		"Habit-Strengthening"	"Cognitive Control"	"Independent Contributors"
HYPOTHESIZED MECHANISM(S)		Strengthening of well-learned associations	Reduction in cognitive control	Strengthening of well-learned associations and reduction in cognitive control
PREDICTIONS OF PROCESS DISSOCIATION	Stereotype accessibility	increase	no change	increase
	Cognitive control	no change	decrease	decrease

Figure 2. Three potential conceptualizations of the effects of anticipated public contexts

experimental conditions, because of the combination of the type of prime and the target to be judged. (Central to both, however, is the effect of race on participants' judgments.) Nevertheless, as we show in the following, the process-dissociation approach does allow for the derivation of key parameters that can be treated as individual-differences variables.

Trait Versus State Anxiety

One of the shortcomings of Experiment 1 is that we only measured individual differences in trait social anxiety using the Fenigstein et al. (1975) scale. (In this context, the trait aspect of the measure refers to the fact that it asks participants about their general levels of anxiety in everyday contexts, quite apart from the specifics of the experimental task.) Nevertheless, so-called state anxiety is arguably more critical for our model. In other words, the context-specific, local anxiety about the particulars of the task could provide the most proximal determinant of whether the anticipated public context actually elicits stereotypic responding. Note that participants assigned to the anticipated public context are likely to differ strongly from one another in terms of the level of anxiety they happen to experience during the task. Some participants might be quite anxious, but others might not be especially concerned about the impending discussion at all. Other things being equal, participants who are experiencing relatively high levels of anxiety in the anticipated public context (for whatever reason) should show greater social facilitation compared with participants experiencing relatively low levels of context-specific anxiety. We elaborate on this line of reasoning in the context of the analyses below.

Method

Participants and Design

A total of 127 non-Black undergraduates (23 men, 104 women) participated in return for course credit. The main independent variables included one between-subjects factor, situational context (private vs. anticipated public), and two within-subject factors, race of the prime (Black vs. White) and the type of target (gun vs. tool). Participant gender produced no significant effects in its own right or in combination with the other variables in the design, and, hence, analyses are collapsed over this factor.

Procedure

Aside from the manipulation of situational context, the procedure of this experiment was similar to that of Payne (2001, Experiment 2). After preliminary instructions, all participants were informed,

> In this experiment you will see pairs of pictures presented briefly. The first picture will be a face. The second picture will be either a gun or a hand tool. Your job is to respond to the *second picture* by deciding whether it is a gun or a tool.

All participants were instructed that the task required both speed and accuracy but that they were required to respond quickly.

Manipulation of Situational Context

Manipulation of situational context (private vs. anticipated public) was identical to that of Experiment 1. In particular, after participants completed the practice trials on the priming task (see below), they were told either that all of their responses were confidential or that they would be asked to share and discuss their responses with the other participants in the testing room.

Priming Task

The nature of the priming task has already been described in detail in Payne (2001) and hence is only summarized here. Prime and target stimuli were digitized photographs 5.3 cm $\times$ 4 cm in size. The primes included four Black and four White faces, including two male and two female faces of each race. (Prime gender is included for the sake of generalizability, but this paradigm typically does not reveal reliable effects of this factor.) Target photos included four handguns with varying features and four hand tools (e.g., wrench, pliers). On each trial, a visual pattern mask appeared on the screen for 500 ms. This was followed directly by the prime face (presented for 200 ms) and replaced immediately by the target picture (a gun or a tool). Thus, the SOA was 200 ms. After the target was presented for 100 ms, it was replaced by another visual mask, which remained on the screen for 450 ms. If participants responded any time from the presentation of the target stimulus through the presentation of the visual mask, the next trial began automatically. Hence, the response window for all trials was 550 ms (i.e., 100 + 450 ms for the presentation of the target and visual mask, respectively). If participants did not respond within this response window, however, a large red exclamation point appeared on the screen for 500 ms before the computer automatically advanced to the next trial, indicating to the participant that he or she had not responded quickly enough. Following a set of 48 practice trials, participants completed a total of three blocks of trials. In each block, each of the eight primes was paired with each of the eight targets twice, yielding 128 trials per block. Over three critical blocks, this yielded a total of 384 observations per participant. The pairings were presented in a new randomized order for each participant.

Additional Measures

Immediately following completion of the identification task, participants completed both a state and a trait measure of social anxiety. The trait measure was the same index as was used in Experiment 1 ($\alpha = .76$ in this study). The state measure included six items, all pertaining to participants' feelings of anxiety or apprehension about the experimental context. (Because it was important for these items to work for both the private and the anticipated public context, these items referred to participants' apprehension about their responses per se and not explicitly to the impending discussion, which would of course be relevant only to participants in the anticipated public set.)

Principal-components analyses on these items revealed one primary component on which three items loaded highly ($\lambda > .70$) and that clearly captured the type of anxiety in which we were interested: (a) "I feel a little self-conscious in this experiment," (b) "I am worried about some of the responses I have given during this experiment," and (c) "I am feeling a bit uncomfortable with this experiment because it is requiring me to disclose what I think and feel." To create an index of state anxiety, we formed an average of these three items, which yielded satisfactory levels of internal reliability ($\alpha = .67$). This index was significantly correlated with the trait anxiety measure ($r = .32$, $p < .001$). Although internal reliability for this scale was somewhat lower than we had hoped, the pattern of results reported below provides independent evidence that this measure provided a reasonable index of context-specific anxiety.

After completing the anxiety measures, participants completed Dunton and Fazio's (1997) Motivation to Control Prejudicial Reactions Scale. Although we had no strong a priori predictions for this variable, it is theoretically relevant to our model insofar as it taps individual differences in motivation to control prejudicial reactions, as opposed to ability to control responses, and there is now ample evidence testifying to the fact that motivation and ability can both contribute to the actual level of control exerted in any given judgmental paradigm (e.g., Chaiken & Trope, 1999).
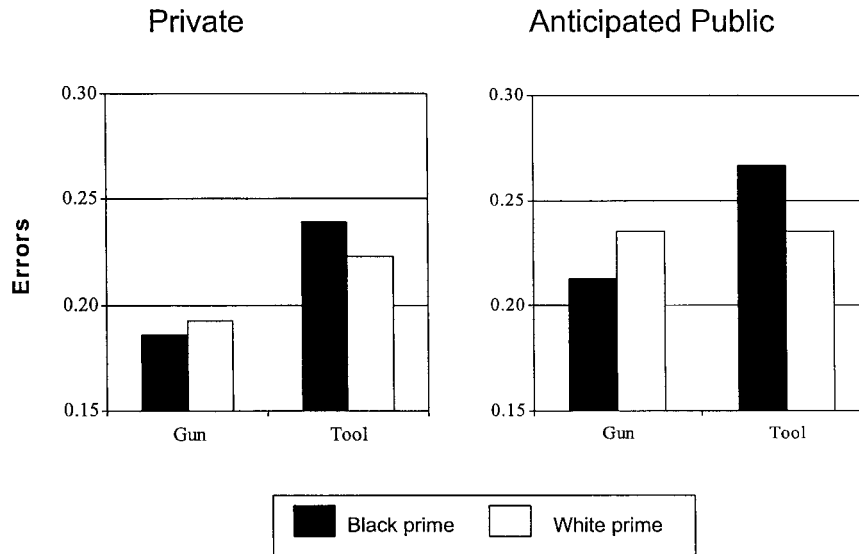
Private

Anticipated Public

Figure 3. Proportion of errors as a function of situational context (private vs. anticipated public), actual identity of object (gun vs. tool), and prime race (Black vs. White)—Experiment 2.

Results and Discussion

The analyses reported below are presented in three sections. First, we analyzed the overall pattern of errors to test the generalizability of our model to this new methodological paradigm. We predicted and found that participants would make more stereotypic errors in the anticipated public compared with the private context. Second, we used process-dissociation procedures to tease apart the habit-strengthening and impairment-of-control hypotheses. Third, we conducted internal analyses to test for moderating and mediational roles of anxiety along with other individual-differences analyses. As we show, these data revealed an overall pattern of moderation that was generally similar to that found in Experiment 1.

Analyses of Identification Errors

Error rates were analyzed by a four-way Prime Race (Black vs. White) $\times$ Prime Gender (male vs. female) $\times$ Target (gun vs. tool) $\times$ Situational Context (private vs. anticipated public) mixed-model analysis of variance (ANOVA). (Results are reported as error rates rather than as accuracy: Accuracy is simply the complement of the error rate.) Initial analyses revealed a highly significant two-way Prime Race $\times$ Object interaction, $F(1, 125) = 22.13$, $p < .001$, that pertained to a pattern of stereotypic errors identical to that reported by Payne (2001). In other words, collapsed over situational context, participants who were actually presented with a tool were more likely to mistakenly identify it as a gun if they were primed with a Black ($M = .24$) rather than a White face ($M = .22$). Conversely, participants who were actually presented with a gun were less likely to mistakenly identify it as a tool if they were primed with a Black ($M = .19$) rather than a White face ($M = .21$).[8] Of greater theoretical interest, however, this interaction was qualified by the predicted three-way Context $\times$ Prime $\times$ Object interaction, $F(1, 125) = 5.69, p < .01$. The pattern of data corresponding to this interaction is shown in Figure 3. As seen here, the pattern of stereotypic errors was enhanced

in the anticipated public compared with the private context. This was confirmed statistically by the fact that the Object $\times$ Prime interaction was stronger in the anticipated public condition, $F(1, 64) = 20.03$, $p < .001$, compared with the private condition, $F(1, 61) = 3.74$, $p = .058$.

Although it does not qualify the implications of the preceding results, the presence of the Black primes appeared to have a stronger effect on participants' behavior than did the White primes, and this was true regardless of situational context. On those trials involving Black faces, participants showed a strong tendency to make stereotypic errors—that is, mistakenly identify tools as guns, $F(1, 125) = 11.52$, $p < .001$, for the main effect of object. When participants were primed with White faces, however, error rates did not vary significantly as a function of object type ($p > .20$), although the overall pattern was in the expected direction. This pattern is similar to that found by Payne (2001) and suggests that, at least in this task, participants' negative expectations about and associations with Blacks appeared to affect their behavior more than did their comparable (positive) expectations about Whites.

Process-Dissociation Analyses

As noted earlier, use of the process-dissociation approach yields estimates of two parameters, control and accessibility bias. Results from this analysis are presented below.

Cognitive control estimates. If the impairment-of-control hypothesis is correct, then estimates of control should show lower control in the public compared with the private condition. As seen in Table 3, estimates of control were, in fact, lower in the anticipated public (.53) compared with the private context (.60). Note that this difference was identical regardless of whether participants

---

[8] Although this effect might appear to be small, the two-way interaction accounts for 15% of the variance, well within the range of variance explained by many classic social–psychological studies (Funder & Ozer, 1983).

Table 3
Cognitive Control Estimates (Experiment 2)

Condition	Prime race	
	Black	White
Private	.60	.61
Public	.53	.53

Note. Estimates can range between a theoretical minimum and maximum of 0.00 and 1.00, respectively, with 1.00 representing perfect accuracy in discriminating between actual guns and tools and 0.00 representing chance responding.

were primed with Black or White faces. Nor did prime type per se affect estimates of control, when we held situational context constant. This pattern was confirmed by the results of a Prime × Situational Context ANOVA, which revealed a main effect for context, $F(1, 125) = 4.54$, $p < .05$, no effect of prime, $F = 0.67$, and no evidence of a Prime × Context interaction, $F = 0.01$.

Accessibility bias estimates. Accessibility bias estimates were constructed so that higher values reflect a greater bias toward responding "gun." Therefore, a stereotypical race bias is shown if bias estimates are higher for the Black prime condition than for the White primes, reflected in a main effect of prime race. Moreover, if the habit-strengthening hypothesis has merit, then race differences in estimates of bias should also be greater in the anticipated public compared with the private condition. Data revealed no support for this hypothesis. Table 4, displays the bias estimates for each condition arising from the crossing of prime and situational context. As Table 4 shows, bias estimates were consistently higher after a Black prime than after a White prime, $F(1, 125) = 20.39$, $p < .001$. No other significant effects emerged from these analyses. Of particular importance is the fact that accessibility bias was not affected by manipulation of situational context ($F < 1.00$).

Summary. The pattern of stereotypic errors is important, because it again shows that public settings have the capacity to actually increase the extent to which people rely on their stereotypes. Second, we shed light on the processes by which such effects might have occurred. Use of the process-dissociation procedure suggests that such effects are due to a loss of cognitive control rather than to a strengthening of stereotype accessibility. It is important to note the double dissociation of these estimates of cognitive control and accessibility bias. Situational context affected control but not accessibility bias. Conversely, race of the prime affected accessibility bias but not control. Thus, the factors that affected one parameter did not affect the other. Together with other compatible findings using this paradigm (Payne, 2001; Payne et al., 2002), such findings are critical for the process-dissociation framework because they provide evidence regarding the independence of cognitive control and accessibility bias in this paradigm.

Effects of the Anticipated Public Context on Anxiety

State anxiety. Consistent with expectations, participants reported significantly higher levels of state (task-specific) anxiety in the anticipated public ($M = 1.89$) compared with the private condition ($M = 1.32$), $F(1, 125) = 10.03$, $p < .01$. This verifies our assumption about the psychological impact of the situational manipulation and provides support for a reasonable line of argu-

ment regarding why participants might have revealed a loss of cognitive control in the anticipated public setting (see below).

Trait anxiety. Recall that we also included a trait-based measure of anxiety after the experimental task. We elected to place the trait measure after the experimental task because Experiment 1 showed that scores on this same scale were not affected by the prior assignment to private versus public context. In contrast to the first experiment, however, we found that scores on the trait-based measure were (like the state measure) also higher in the public compared with the private context ($Ms = 3.02$ vs. 2.37), $F(1, 125) = 15.95$, $p < .001$. Additional covariate analyses revealed that context had an independent effect on the trait measure (when we held scores on the state measure constant), and, conversely, context had an independent effect on state anxiety, when we held trait anxiety constant.

On the one hand, such findings are somewhat incompatible with traditional state–trait distinctions (and not consistent with the results of Experiment 1), in the sense that trait measures are supposedly immune to situational factors. However, more recent studies in the mood and affect literature (see Schwarz, 1990, for a review) have shown that even general, trait-based measures are often affected by fleeting, situationally based factors. Hence, there is some precedent for this finding in the literature, although it is not entirely clear why the same trait measure might have been affected by situational context here but not in Experiment 1. At any rate, the fact that situational context affected both context-specific and general measures of anxiety works somewhat to our advantage, in the sense of providing evidence attesting to the power of this manipulation.

One likely account of the findings presented thus far is that participants in the anticipated public condition were experiencing, on average, higher levels of anxiety and/or distracting, ruminative cognitions about the nature of the impending discussion, all of which are likely to reduce capacity for controlled processing (Baron, 1986). Our results do not, however, address the more fine-grained issue of the extent to which this loss of control was rooted in physiological versus cognitive (distraction) factors. Hence, it seems sensible at this stage to suggest that the impaired control that arose in the anticipated public setting may be reflecting some combination of (a) cognitive factors (e.g., distraction or rumination about the impending discussion) and, perhaps, (b) some decrements in processing due to mild anxiety. However, future work is clearly needed to completely tease apart these factors.

Table 4
Accessibility Bias Estimates (Experiment 2)

Condition	Prime race	
	Black	White
Private	.56	.53
Public	.56	.49

Note. Estimates are probabilities (theoretical range from 0.00 to 1.00), such that values represent the probability of making a "gun" response when control fails.
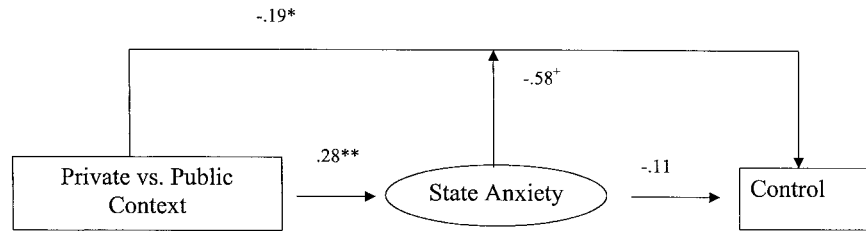
Figure 4. Summary of relationships among situational context, state anxiety, and estimates of cognitive control. Values represent standardized beta weights. Context is coded such that 1 = private; 2 = anticipated public. $^{+}p < .06$. $^{*}p < .05$. $^{**}p < .01$.

Individual-Differences Analyses

Thus far, we have discussed three key variables (accessibility bias, control, and anxiety), mainly in terms of mean differences across experimental condition. However, each of these variables can be operationalized as an individual-differences variable. Recall that participants experienced, on average, more anxiety if they had been assigned to the anticipated public compared with the private context. However, participants differed in their reactivity to this manipulation. Indeed, the actual range of responses on the state anxiety index ranged from 0.00 to 4.67, and a nontrivial number of participants ($n = 17$) in the public setting received a state anxiety score of 1.00 or lower. This means that there was meaningful variability in the extent to which participants experienced potentially distracting emotions or cognitions about the task. This suggests, therefore, that state anxiety could also act as a moderator. In other words, even though situational context resulted in (on average) higher levels of state anxiety in public, the degree to which participants actually experienced higher levels of anxiety could have moderated the impact of context on participants' responses during the perceptual identification task.[9]

We conducted hierarchical regression analyses to illuminate the extent to which state anxiety moderated and/or mediated the effects of context on control. (We consider analyses involving accessibility bias in the next section). In these analyses, the estimate of cognitive control from the process-dissociation analyses was treated as a criterion variable, with situational context and state anxiety entered first as main effects (after appropriate centering), followed by the interaction of these two variables. Motivation to control prejudice was also included in these analyses for exploratory purposes, but as results yielded no significant effects involving this variable, the analyses to follow are collapsed over this factor. (Prior to these analyses, power transformations were applied to the estimates of cognitive control to correct negative skew. The pattern of results without this transformation is virtually identical but slightly weaker than the analyses to follow.)

Consistent with our framework, a Context × State Anxiety interaction emerged from these analyses ($\beta = -.58$, $p = .059$). Subsequent analyses showed that among participants above the median in state anxiety, there was a significant effect of context on estimates of control ($\beta = .25$, $p < .05$), reflecting lower control in the anticipated public context compared with the private context ($Ms = .51$ vs. $.60$, respectively). However, context had no significant effect on control for the participants reporting low levels of anxiety ($\beta = .08$, $p = .52$), reflecting the fact that control was relatively high and about equal across the anticipated public versus private contexts ($Ms = .57$ vs. $.60$). Hence, control appeared to be

especially impaired if participants were in the anticipated public setting and were experiencing above-average levels of state anxiety.

Summary of moderation and mediation effects involving control. Figure 4 provides a heuristically useful summary of these relationships. As seen here, (a) context had a significant effect on state anxiety, (b) context also had a significant effect on control, and (c) state anxiety showed some evidence of moderating the impact of participants' ability to exert control during the task, but (d) state anxiety did not mediate the effect of context on control. This relationship is important for our purposes, insofar as it shows how and why context exerted its effect on control, leading to especially low levels of control in one key conceptual cell of our design: high-anxiety participants in the anticipated public condition. Further implications of this conclusion are explored in a final set of analyses, presented below.

Parallelism with Experiment 1. In Experiment 1, individual differences in stereotypic attitudes were much more strongly correlated with judgments of the Black target among high-anxiety participants who were in the public condition (see Figure 1). According to our framework, this relation obtained because control was particularly impaired for these participants, making it more likely that they would rely on these attitudes as a low-effort basis for responding. A similar conclusion obtains in Experiment 2. Note that the estimate of stereotypic accessibility bias is roughly analogous to the group attitude measures in at least one respect: This estimate captures individual variation in the kinds of stereotypic associations that our participants had about Blacks (i.e., how strongly the participants associate guns with this group). Given that control in this experiment was particularly low among the high-anxiety/public participants (see preceding analyses), this leads to a clear prediction: Among participants in this cell, there should be a particularly strong correlation between (a) estimates of stereotypic accessibility bias and (b) performance on the identification task. Again, this is because these participants should be particularly likely to fall back on accessibility bias as a low-effort basis for responding, analogous to what happened in Experiment 1.

To test this idea, we first constructed an overall index of stereotypic errors from the guns–tool task, such that higher numbers indicate a greater propensity to make errors of a stereotypic

---

[9] Moderator analyses to follow reveal significant effects only of state anxiety. In theory, the trait measure could have played an important role in this kind of mediated–moderated relationship, but analyses reveal only weak effects of this sort, and, hence, analyses using the trait measure are not considered further.
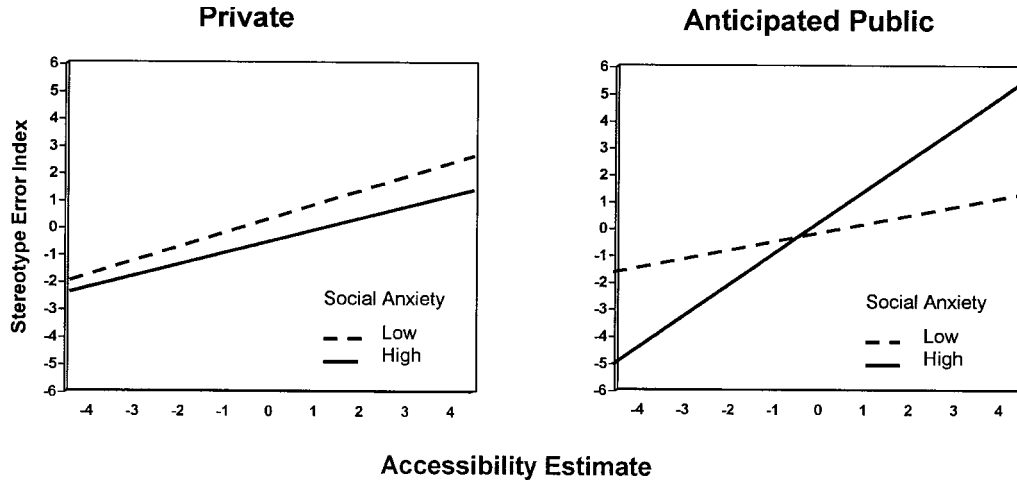
Figure 5.   Best fitting regression lines corresponding to the regression of performance error rate on accessibility bias for private and anticipated public conditions as a function of trait anxiety level—Experiment 2. Positive slopes indicate consistency between stereotypic bias and the degree to which participants made stereotypic errors on the identification task.

rather than a counterstereotypic nature in the presence of a Black prime. We then conducted a hierarchical regression analysis, using this index as the criterion variable, in which we first entered the main effects of context, accessibility bias, and state anxiety as main effects, followed by the two- and three-way interactions in a second and third step, respectively. The predicted three-way interaction involving context, anxiety, and accessibility bias emerged, $F(1, 118) = 4.11$, $p < .05$, for the change in R^2.

The nature of this interaction in illustrated in Figure 5. As seen here, (a) the relationship between stereotype accessibility bias and responses was moderate and about the same in the private context, regardless of anxiety, and (b) this relationship was especially strong in the public, but only among participants who were high in anxiety. Note that this pattern provides a fairly close, albeit not exact, match to the pattern shown in Figure 1. For our purposes, the most important parallel is that the difference in slopes for the high- versus low-anxiety participants was reliably different in the public (but not the private) condition, which is what happened in Experiment 1 as well. In this experiment, simple effects tests on the public participants revealed a significant two-way interaction, corresponding to the fact that the slope for the high-anxiety participants ($rs = .52$, $p < .01$) was reliably different from the slope for the low-anxiety participants ($r = .25$, $p > .20$), $F(1, 60) = 6.86$, $p < .01$, for the two-way interaction. In contrast, the slopes in the private condition for the high- versus low-anxiety participants ($rs = .44$ vs. .21) were not reliably different from each other ($F < 1.00$), although the former correlation was significant in its own right ($p < .05$).[10]

Hence, the findings from Experiment 1 and 2 provide converging evidence for the validity of our theoretical framework, despite obvious differences in their respective methodologies and operationalizations of key concepts: The data from both experiments are consistent with the assumption that differences in situational context and anxiety combined to affect control, with lowered control being especially likely among participants in a public setting who experienced a high degree of anxiety. When control failed, this made it more likely that these participants responded on the basis

of their racial stereotypes. As we discuss in more detail later, both experiments highlight an ironic consequence of public settings, insofar as these situations exacerbated prejudice among the very people who were most worried about doing the wrong thing in public.

General Discussion

The overarching goal of this article was to gain further insight into a surprisingly understudied issue: the moderating effects of relatively private versus public contexts on stereotyping and prejudice. The main contributions of the present research may be summarized as follows:

1. Across two experiments, we found support for an extremely counterintuitive idea, that public settings can exacerbate prejudice relative to more private settings. We obtained similar results despite striking differences in the methodology of the two studies. Experiment 1 used an impression formation paradigm, whereas Experiment 2 measured perceptual errors in identification. Another difference is that Experiment 2 was blatantly related to

---

[10] Three aspects of this index are worth noting. First, this index is derived from the pattern of errors that occurred on Black trials only, given that stereotypic errors in performance were mostly driven by the presence of the Black primes (see earlier analyses of the performance data). Second, one participant's score on this index was more than 12 standard deviations above the mean, and, thus, this data point was excluded for purposes of this analysis only. Finally, some readers might question whether it is a foregone conclusion to test whether estimates of stereotype accessibility are correlated with performance on the guns–tools task, as the former was derived directly from the latter. For our purposes, however, the key aspect of our prediction is that the estimate would differentially predict performance as a function of situational context and anxiety. In other words, the predicted three-way interaction corresponds to the theoretically important issue of how the combination of situational context and anxiety influenced the extent to which participants responded on the basis of their stereotypes about Blacks.

issues of race, but this was not true of Experiment 1. Moreover, Experiment 2 used an arguably unrealistic response deadline manipulation, but Experiment 1 allowed participants unlimited time to make their responses. Hence, the convergence of our results across these studies makes our results more generalizable than if we had restricted our efforts to only one experimental paradigm.

2. Although the stereotyping and social facilitation literatures have historically been regarded as separate areas of research, we believe that there are several rich but virtually unexplored areas of overlap between these two literatures. In particular, we propose that stereotypes may be regarded as a dominant response (Hull, 1943; Zajonc, 1965) and, hence, may be guided by some of the same principles that have been articulated in the social facilitation area.

3. We offer a methodology, in the form of Jacoby's (1991) process-dissociation framework, that sheds light on a core problem that has generated lively debate for nearly 30 years—namely, whether social facilitation effects represent a strengthening of dominant responses or a loss of control (Sanders & Baron, 1975; Zajonc, 1965). Although widely used in the cognitive literature (Jacoby, 1991), this procedure has only recently been extended to the stereotyping domain (Payne, 2001), and, to our knowledge, it has never been applied by social facilitation theorists. We show that the social facilitation-like effects produced in Experiment 2 were driven entirely by a loss of control rather than through increased strength or accessibility of participants' stereotypes.

Toward a Resolution of Parallel Ambiguities in the Social Facilitation and Stereotyping Literatures

Many stereotyping studies have shown that when people are made to be cognitively busy they are more likely to use or apply stereotypes, compared with individuals whose cognitive capacities are less taxed (Bodenhausen & Lichtenstein, 1987; Bodenhausen & Wyer, 1985; Macrae, Milne, & Bodenhausen, 1994; Pratto & Bargh, 1991; Rothbart, Fulero, Jensen, Howard, & Birrell, 1978; see also Gilbert & Hixon, 1991). If one accepts the premise that stereotypes represent one type of dominant response, the cognitive load literature may be seen as closely related to work in the social facilitation area, especially the line of work by Robert Baron (1986) and his colleagues. A major insight arising from Baron's work is that classic social facilitation effects are produced not only by social distractors (e.g., public audiences) but also by nonsocial distractors, such as distracting flashing lights or other attention-demanding tasks (Baron, 1986). Thus, these two literatures are remarkably similar in that (a) both use dual task methodologies and (b) both show enhancements in dominant responses when people are faced with a concurrent task (or other attention-demanding events).

Nevertheless, there is a fundamental ambiguity that is common to both areas. Although this point is rarely discussed by stereotyping theorists, there is a long history of research in other areas (e.g., Cohen, 1978; Sanders & Baron, 1975; Thibaut & Kelley, 1959)

suggesting that attentional conflict and/or cognitive overload can lead to increased arousal or drive-like states. Earlier, we noted that indecision or uncertainty about what attentional response to make can serve as a mild stressor in its own right (Baron, 1986). Other aspects of dual-task paradigms could produce similar effects, in that

> the overload of attempting to attend to and process multiple inputs also could elevate stress/arousal/drive [in addition] to frustration due to delay of reinforcement caused by response conflict. In short, attentional conflict is hypothesized to produce the same drivelike effects long associated with such forms of behavioral conflict as approach-approach conflict and approach-avoidance conflict. (Baron, 1986, p. 5)

Hence, most dual-task studies showing increased production of dominant responses—including greater reliance on stereotypes—are subject to the same fundamental problem: Such effects can be interpreted in terms of the habit-strengthening or impairment-of-control models described earlier. Hence, the conceptual framework presented in Figure 2 appears to apply equally as well to cognitive load manipulations as it does to anticipated public settings. Framed in the more modern language of dual-process models (Chaiken & Trope, 1999), this ambiguity translates to an important gap in our understanding of the role of automatic and controlled processes in guiding stereotypes and prejudice. When a particular manipulation (e.g., an anticipated public setting or a dual-task paradigm) is shown to increase stereotyping, such data do not, in themselves, allow one to tell whether these effects are driven by changes with respect to automatic or controlled processing.

The strength of the process-dissociation procedure arises from its ability to derive independent estimates of automatic and controlled processing from the same task. For precisely this reason, it allows leverage in testing the viability of the theoretical models discussed in this article (cf. Figure 2) in a way that previous models in either the stereotyping or the social facilitation literature cannot.

Previous Work on Private Versus Public Contexts

Manipulations of Accountability

In a well-known program of research by Tetlock and his colleagues (e.g., Tetlock, 1992), participants are randomly assigned to conditions in which they make their responses in private or are told in advance that they will have to justify and defend their views to a future audience. Although the general notion of accountability is obviously related to the present research, the connection of our work to the specific methodology used by Tetlock (1992) is not as strong as one might think. In Tetlock's paradigm, manipulation of the nature of the setting (private vs. public) is perfectly confounded with the set of instructions explicitly given to participants (justify and defend vs. none). Hence, any effects of accountability manipulations could be due to instructional set, situational context, or both factors in combination. To be clear, we note that such manipulations are perfectly appropriate to the specific aims of Tetlock and his colleagues. However, because our interest was in the effects of situational context per se, it was important for us to manipulate this variable while holding constant the type of instructions explicitly given to participants. The extent to which manipulations of private versus public contexts and manipulation of goal

states exert independent and/or interactive effects is, of course, an empirical question. However, we are not aware of any research that has addressed this issue.

Other Work in the Stereotyping and Attitude Domains

Earlier in this article, we noted that relatively few studies in the stereotyping literature have directly investigated the effects of private versus public contexts on the use versus disuse of stereotypes (Blanchard et al., 1991; Dutton & Yee, 1974; Monteith et al., 1996; Plant & Devine, 1998). Results emerging from these studies have not been consistent, however. Although two of these studies found at least some evidence for diminished stereotyping effects in public compared with private settings (Dutton & Yee, 1974; Plant & Devine, 1998), the other two found that the private versus public manipulation produced no effects at all (Blanchard et al., 1991; Monteith et al., 1996).

A flurry of attitude research in the 1960s and 1970s also examined the effects of private versus public contexts, but the pattern of results is just as confusing. On the one hand, a number of investigations have shown a shift to the middle, or moderation effect, in that participants express less extreme attitudinal judgments in public compared with private contexts (e.g., Cialdini, Levy, Herman, & Evenbeck, 1973; Hass, 1975; Hass & Mann, 1976). However, several other studies have shown the opposite effect, in which participants adopt more extreme (polarized) attitudes when they are placed in anticipated public, compared with private settings (Cialdini, Levy, Herman, Kozlowski, & Petty, 1976; Greenwald, 1969; Jellison & Mills, 1969; Sears, Freedman, & O'Connor, 1964). Hence, it is very difficult to draw generalizable conclusions from this literature. As is discussed elsewhere (Lambert, Chasteen, & Payne, in press), some of these differences could be attributed to methodological variations in how public settings were operationalized, although future work is clearly needed to address this issue more directly.

Actual Versus Anticipated Public Settings, Redux

Compared with anticipated public settings, one might conjecture that actual public settings should be more successful in leading people to inhibit their stereotypes. After all, the pressures to be on one's best behavior are presumably stronger in the latter case, compared with the admittedly vague implications of a future group discussion. Although this issue clearly warrants empirical test, there is reason to suspect that, ironically, the exact opposite might occur. For example, suppose we had designed Experiment 2 such that half of our participants completed the task with a confederate peering over their shoulder. The looming presence of this person could be even more distracting and/or produce more anxiety compared with anticipated public settings, thereby eroding cognitive control to an even greater extent.

Imagining yet a different kind of actual public setting heightens the ironic flavor of this prediction still further. Suppose that the confederate (a) was Black and (b) was ostensibly monitoring White participants' responses for evidence of racist responding. We presume that this variation would be even more likely to interrupt cognitive control and, hence, lead to even greater likelihood of stereotype-based responding. These counterintuitive predictions arise from the premise that the factors that stimulate greater motivation to avoid responding in a biased manner (e.g.,

public audiences) are, in themselves, the same factors that are likely to erode people's ability to maintain successful cognitive control. Of course, it would be foolish to conclude that people are never able to conceal their stereotypes in public settings, and we do not make this claim. However, our point is that claims about the consequences of public settings—whether they be actual or anticipated—must take into account the complex trade-offs between motivation to avoid prejudice and the cognitive costs involved in attempting to do so.

Implications for Eradicating Prejudice and Bargh's (1999) Fable of the Cognitive Monster

Bargh (1999) recently used the metaphor of a cognitive monster of prejudice to "illustrate the assumptional shifts in social cognition that have taken place since the 1960's concerning the controllability (vs. automaticity) of social perception and judgment" (Bargh, 1999, p. 362). In contrast to earlier concerns about the apparent uncontrollability of automatic stereotyping and prejudice (cf. Fiske, 1989), Bargh pointed out that the pendulum has recently swung in the direction of a "meta-assumption of strategic control over stereotyping" (p. 365). In other words, there seems to be renewed hope that prejudicial reactions could be restrained (i.e., the monster in chains). Although such hope is obviously laudable as a social goal, Bargh's position is that the empirical data offer little evidence in support of this rosy picture (but see Devine & Monteith, 1999, for a dissenting view).

Although Bargh (1999) did not specifically discuss situational context, the broader implications of our research are relevant to his argument. It seems reasonable to hope and believe that public contexts might be one of the restraining factors that could keep the cognitive monster of prejudice at bay, albeit temporarily. After all, when people know in advance that other people are (or will be) privy to their behaviors, one might expect those people to be on their best behavior insofar as they avoid thinking and acting in a prejudicial manner. We believe we have discovered a new and ultimately discouraging irony: Warning people that others might be watching has the potential of triggering even more prejudice, especially among those people who are most nervous about doing the wrong thing. Hence, to paraphrase a comment made by Bargh (1999), with enemies like (anticipated) public settings, the cognitive monster of prejudice does not need friends.

This does not mean, of course, that controlled processes are not important in the realm of prejudice. Indeed, other work in our laboratory (e.g., Payne, 2001; Payne et al., 2002) highlights the fact that controlled mechanisms can play a key role in reducing the impact of prejudicial bias, and we believe that the process-dissociation framework holds promise for more precisely articulating the unique influences of controlled as well as automatic mechanisms in guiding behavior. Be that as it may, we are certainly in agreement with Bargh (1999) insofar as factors that intuitively seem like they ought to or should reduce prejudice may not actually do so or, in the present case, have effects diametrically opposite to those intended.

Potential Extensions of Our Model to Other Domains

One of the appealing aspects of our framework is that it offers alternative explanation for at least three domains other than those investigated here. Although the ideas to follow should be regarded

as speculative pending empirical confirmation, they are easily testable and, as such, strike us as fruitful avenues for future research.

Mirror Manipulations

Placing people in front of a mirror has been shown to reliably increase the extent to which people act according to preexisting attitudes (Pryor et al., 1977). Such findings are typically interpreted in terms of increased self-awareness and, moreover, are framed in terms of increased attitude accessibility. Our model is different from previous explanations in two ways. First, mirrors may be arousing and, as such, may increase the extent to which people rely on their strong attitudes through mechanisms that have nothing directly to do with self-awareness per se. Second, process dissociation allows one to make a distinction not made in this literature—namely, that increased reliance on strong attitudes could be due to increased accessibility, impaired control, or both factors in combination (see Figure 2).

Group Polarization

Decades of research have shown that group discussion can lead to polarization of people's initial attitudes (Stoner, 1961) in that "the initial tendency of individual group members toward a given direction is enhanced following group discussion" (Isenberg, 1986, p. 1141). This literature would predict, for example, that people who are moderately in favor of affirmative action would be even more so following group discussion. To the extent that the initial tendency of individual group members represents a kind of dominant response, attitude polarization following exposure to a public forum is exactly the kind of effect predicted by our model. Again, such effects could reflect either habit strengthening, impaired control, or both factors in combination. At any rate, our model provides a novel explanation of group polarization that is quite different from the three currently viable models (persuasive arguments, normative influence, and self-categorization) that have been proposed to date.

Ironic Effects of Explicit Requests for Stereotype Suppression

According to our model, explicit demands to avoid prejudice (e.g., "It's imperative that you avoid acting in a racist manner") could augment stereotyping for two reasons: (a) The directive itself impairs control through the anxiety-arousing properties of such warnings, or (b) mentioning the issue of race could, in itself, make the stereotype more accessible. The extent to which either (or both) of these factors contribute to increased stereotyping can be determined by process dissociation (see Payne et al., 2002). This sort of ironic effect may be somewhat different from those previously demonstrated in the stereotyping literature (Macrae, Bodenhausen, Milne, & Jetten, 1994; Wegner, 1994) in that directives for suppression are initially successful, followed by increased use of the stereotype. In contrast, our focus is on the possibility that such directives might lead more or less immediately to increased stereotype use. Nevertheless, our model could hold promise of clarifying the different routes, whereby imploring people to not be prejudiced could have the opposite effect.

Conclusion

Some scholars have critiqued social cognition research for its tendency to ignore the role of social context and interpersonal factors in guiding judgment and behavior. Indeed, this state of affairs recently led McGuire (in press) to lament "the strange neglect of interpersonal factors" among most social psychologists since the 1950s. Devine (1998) expressed similar sentiments, stating that

> relatively more attention has been focused on the connection of stereotypes to micro-level processes than to the development of macrolevel processes in which the social perceiver has to manage not only his or her cognitive processes, but also the social context in which stereotyping is played out. (p. 71)

The present research represents only one step in this direction, and more work is clearly required to develop this first advancement of our model. However, we believe that the research reported here might be heuristically useful in terms of generating some new approaches to some very old questions. Indeed, the present framework recasts two of social psychology's most enduring problems—the pernicious effects of prejudice (G. W. Allport, 1954) and the imagined or actual impact of other people (Triplett, 1898)—in a novel way that holds potential to stimulate new theoretical insights and empirical research.

References

Ajzen, I. (1988). *Attitudes, personality, and behavior.* Homewood, IL: Dorsey Press.

Allen, J. B., Kenrick, D. T., Linder, D. E., & McCall, M. A. (1989). Arousal and attraction: A response-facilitation alternative to misattribution and negative-reinforcement models. *Journal of Personality and Social Psychology, 57,* 261–270.

Allport, F. H. (1924). *Social psychology.* Boston: Houghton Mifflin.

Allport, G. W. (1954). *The nature of prejudice.* Reading, MA: Addison Wesley.

Allport, G. W. (1985). The historical background of social psychology. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (Vol. 1, pp 1–46) Reading, MA: Addison Wesley.

Asch, S. E. (1955). Opinions and social pressure. *Scientific American, 193,* 31–35.

Bargh, J. A. (1999). The cognitive monster: The case against the controllability of automatic stereotype effects. In S. Chaiken & Y. Trope (Eds.), *Dual process theories in social psychology* (pp. 361–382). New York: Guilford Press.

Baron, R. S. (1986). Distraction-conflict theory: Progress and problems. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 1–40).

Blanchard, F. A., Lilly, T., & Vaughn, L. A. (1991). Reducing the expression of racial prejudice. *Psychological Science, 2,* 101–105.

Bodenhausen, G. V., & Lichtenstein, M. (1987). Social stereotypes and information-processing strategies: The impact of task complexity. *Journal of Personality and Social Psychology, 52,* 871–880.

Bodenhausen, G. V., & Macrae, C. N. (1998). Stereotype activation and inhibition. In R. S. Wyer Jr. (Ed.), *Stereotype activation and inhibition* (pp. 1–52). Hillsdale, NJ: Erlbaum.

Bodenhausen, G. V., & Wyer, R. S. (1985). Effects of stereotypes in decision making and information-processing strategies. *Journal of Personality and Social Psychology, 48,* 267–282.

Brewer, M. B. (1988). A dual process model of impression formation. In T. K. Srull & R. S. Wyer Jr. (Eds.), *Advances in social cognition* (Vol. 1, pp. 1–36). Hillsdale, NJ: Erlbaum.

Callaghan, J. C. (1940). Social facilitation in persuasion. *Quarterly Journal of Speech, 26,* 643–656.

Campbell, D. T. (1988). A phenomenology of the other one: Corrigible, hypothetical, and critical. In D. Campbell & S. Overman (Eds.), *Methodology and epistemology for social science: Selected papers.* Chicago: University of Chicago Press. (Original work published 1969)

Carver, C. S. (1975). Physical aggression as a function of objective self-awareness and attitude toward punishment. *Journal of Experimental Social Psychology, 11,* 510–519.

Chaiken, S., & Trope, Y. (1999). *Dual process theories in social psychology.* New York: Guilford Press.

Cialdini, R. B., Levy, A., Herman, P., & Evenbeck, S. (1973). Attitudinal politics: The strategy of moderation. *Journal of Personality and Social Psychology, 25,* 100–108.

Cialdini, R. B., Levy, A., Herman, C. P., Kozlowski, L. T., & Petty, R. E. (1976). Elastic shifts of opinion: Determinants of direction and durability. *Journal of Personality and Social Psychology, 34,* 663–672.

Cohen, S. (1978). Environmental load and the allocation of attention. In A. Baum, J. E. Singer, & S. Valins (Eds.), *Advances in environmental psychology:* I. *The urban environment* (pp. 1–29). Hillsdale, NJ: Erlbaum.

Cooley, C. H. (1964). *Human nature and the social order.* New York: Schocken. (Original work published 1902).

Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56,* 5–18.

Devine, P. G. (1998). Beyond the isolated social perceiver: Why inhibit stereotypes? In R. S. Wyer (Ed.), *Stereotype activation and inhibition* (pp. 69–81). Hillsdale, NJ: Erlbaum.

Devine, P. G., & Monteith, M. J. (1999). Automaticity and control in stereotyping. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 339–360). New York: Guilford Press.

Dovidio, J. F., & Gaertner, S. L. (1986). *Prejudice, discrimination, and racism.* Orlando, FL: Academic Press.

Dunton, B. C., & Fazio, R. H. (1997). An individual difference measure of motivation to control prejudiced reactions. *Personality and Social Psychology Bulletin, 23,* 316–326.

Dutton, D. G., & Yee, P. (1974). The effects of subject liberalism, anonymity, and race of experimenter on subjects' rating of oriental and white photos. *Canadian Journal of Behavioral Science, 6,* 332–341.

Easterbrook, J. A. (1959). The effect of emotion on cue utilization and the organization of behavior. *Psychological Review, 66,* 183–201.

Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R. E. Petty & J. A. Krosnik (Eds.), *Attitude strength: Antecedents and consequences* (pp. 247–282). Hillsdale, NJ: Erlbaum.

Fenigstein, A., Scheier, M. F., Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology, 43,* 522–527.

Fiske, S. T. (1989). Examining the role of intent: Toward understanding its role in stereotyping and prejudice. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 253–283). New York: Guilford Press.

Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 1–74). New York: Academic Press.

Funder, D. C., & Ozer, D. J. (1983). Behavior as a function of the situation. *Journal of Personality and Social Psychology, 44,* 107–112.

Geen, R. G. (1989). Alternative conceptions of social facilitation. In P. Paulus (Ed.), *The psychology of group influence* (2nd ed., pp. 15–51). Hillsdale, NJ: Erlbaum.

Geen, R. G., & Gange, J. J. (1977). Drive theory of social facilitation: Twelve years of theory and research. *Psychological Bulletin, 84,* 1267–1288.

Gilbert, D. T., & Hixon, J. G. (1991). The trouble of thinking: Activation and application of stereotypic beliefs. *Journal of Personality and Social Psychology, 60,* 509–517.

Goffman, E. (1959). *The presentation of self in everyday life.* Garden City, NY: Doubleday.

Greenwald, A. G. (1969). The open-mindedness of the counterattitudinal role player. *Journal of Experimental Social Psychology, 5,* 375–388.

Groff, B. D., Baron, R. S., & Moore, D. L. (1983). Distraction, attentional conflict, and drivelike behavior. *Journal of Experimental Social Psychology, 19,* 359–380.

Hass, R. G. (1975). Persuasion or moderation: Two experiments on anticipatory belief change. *Journal of Personality and Social Psychology, 31,* 1155–1161.

Hass, R. G., & Mann, R. W. (1976). Anticipatory belief change: Persuasion or impression management? *Journal of Personality and Social Psychology, 34,* 105–111.

Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology, 13,* 141–154.

Hull, C. L. (1943). *Principles of behavior: An introduction to behavior theory.* New York: Appleton-Century.

Isenberg, D. J. (1986). Group polarization: A critical review and meta-analysis. *Journal of Personality and Social Psychology, 50,* 1141–1151.

Jacoby, L. L. (1991). A process dissociation framework: Separating automatic from intentional uses of memory. *Journal of Memory & Language, 30,* 513–541.

Jacoby, L. L., Kelley, C. M., & McElree, B. D. (1999). The role of cognitive control: Early selection vs. late correction. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 383–400). New York: Guilford Press.

James, W. (1983). *The principles of psychology.* Cambridge, MA: Harvard University Press. (Original work published 1890)

Jellison, J. M., & Mills, J. (1969). Effect of public commitment upon opinions. *Journal of Experimental Social Psychology, 5,* 340–356.

Katz, I., & Hass, R. G. (1988). Racial ambivalence and American value conflict: Correlational and priming studies of dual cognitive structures. *Journal of Personality and Social Psychology, 55,* 893–905.

Lambert, A. J., Chasteen, A. L., & Payne, B. K. (in press). On finding prejudice in all the wrong places: Ironic effects of situational contexts and interpersonal anxiety. In G. V. Bodenhausen & A. J. Lambert (Eds.), *Foundations of social cognition.* Hillsdale, NJ: Erlbaum.

Lambert, A. J., Cronen, S., Chasteen, A., & Lickel, B. (1996). Private vs. public expressions of prejudice. *Journal of Experimental Social Psychology, 32,* 437–459.

Loh, W. D., & Nuttin, J. M. (1972). Effects of interethnic-group comparisons and attitudes on task performance. *Journal of Personality and Social Psychology, 24,* 291–300.

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.

Macrae, C. N., Milne, A. B., & Bodenhausen, G. V. (1994). Stereotypes as energy-saving devices: A peek inside the cognitive toolbox. *Journal of Personality and Social Psychology, 66,* 37–47.

McConahay, J. B. (1986). Modern racism, ambivalence, and the Modern Racism Scale. In J. Dovidio & S. L. Gaertner (Eds.), *Prejudice, discrimination, and racism: Theory and research* (pp. 91–120). New York: Academic Press.

McGuire, W. J. (in press). The morphing of attitude-change into social-cognition research. In G. V. Bodenhausen & A. J. Lambert (Eds.), *Foundations of social cognition.* Hillsdale, NJ: Erlbaum.

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

Monteith, M. J., Deneen, N. E., & Tooman, G. D. (1996). The effect of social norm activation on the expression of opinions concerning gay men and Blacks. *Basic and Applied Social Psychology, 18,* 267–288.

Neuberg, S. L. (1989). The goal of forming accurate impressions during social interactions: Attenuating the impact of negative expectancies. *Journal of Personality and Social Psychology, 56,* 374–386.

Payne, B. K. (2001). Prejudice and perception: The role of automatic and controlled processes in misperceiving a weapon. *Journal of Personality and Social Psychology, 81,* 181–192.

Payne, B. K., Jacoby, L. L., & Lambert, A. J. (in press). Attitudes as accessibility bias: Dissociating automatic and controlled processes. In R. Hassan, J. A. Bargh, & J. Uleman (Eds.), *The new unconscious.* Oxford, England: Oxford University Press.

Payne, B. K., Lambert, A. J., & Jacoby, L. L. (2002). Best laid plans: Effects of goals on accessibility bias and cognitive control in race-based misperceptions of weapons. *Journal of Experimental Social Psychology, 38,* 384–396.

Plant, E. A., & Devine, P. G. (1998). Internal and external motivation to respond without prejudice. *Journal of Personality and Social Psychology, 75,* 811–832.

Pratto, F., & Bargh, J. A. (1991). Stereotyping based on apparently individuating information: Trait and global components of sex stereotypes under attention overload. *Journal of Experimental Social Psychology, 27,* 26–47.

Pryor, J. B., Gibbons, F. X., Wicklund, R. A., Fazio, R. H., & Hood, R. (1977). Self-focused attention and self-report validity. *Journal of Personality, 45,* 514–517.

Rothbart, M., Fulero, S., Jensen, C., Howard, J., & Birrell, B. (1978). From individual to group impressions: Availability heuristics in stereotype formation. *Journal of Experimental Social Psychology, 14,* 237–255.

Sanders, G. S. (1981). Driven by distraction: An integrative review of social facilitation theory and research. *Journal of Experimental Social Psychology, 17,* 227–251.

Sanders, G. S., & Baron, R. S. (1975). The motivating effects of distraction on task performance. *Journal of Personality and Social Psychology, 32,* 956–963.

Schlenker, B. R., Britt, T. W., & Pennington, J. (1996). Impression regulation and management: Highlights of a theory of self-identification. In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition: The interpersonal context* (Vol. 3, pp. 118–147). New York: Guilford Press.

Schwarz, N. (1990). Feelings as information: Informational and motivational functions of affective states. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 527–561). New York: Guilford Press.

Sears, D. O., Freedman, J. L., & O'Connor, E. F. (1964). The effects of anticipated debate and commitment on the polarization of audience opinion. *Public Opinion Quarterly, 28,* 615–627.

Sidanius, J., Pratto, F., & Bobo, L. (1996). Racism, conservatism, affirmative action, and intellectual sophistication: A matter of principled conservatism or group dominance? *Journal of Personality and Social Psychology, 70,* 476–490.

Spence, K. W. (1956). *Behavior theory and conditioning.* New Haven, CT: Yale University Press.

Srull, T. K., & Wyer, R. S. (1980). Category accessibility and social perception: Some implications for the study of person memory and interpersonal judgments. *Journal of Personality and Social Psychology, 38,* 841–856.

Stoner, J. A. F. (1961). *A comparison of individual and group decisions involving risk.* Unpublished master's thesis, Massachusetts Institute of Technology.

Tetlock, P. E. (1992). The impact of accountability on judgment and choice: Toward a social contingency model. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 331–376). New York: Academic Press.

Thibaut, J. W., & Kelley, H. H. (1959). *The social psychology of groups.* Oxford, England: Wiley.

Thomas, S. L., Skitka, L. J., Christen, S., & Jurgena, M. (2002). Social facilitation and impression formation. *Basic and Applied Social Psychology, 24,* 67–70.

Triplett, N. (1898). The dynamogenic factors in pacemaking and competition. *American Journal of Psychology, 9,* 507–533.

Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review, 101,* 34–52.

Wilson, T. D., & Brekke, N. (1994). Mental contamination and mental correction: Unwanted influences on judgments and evaluations. *Psychological Bulletin, 116,* 117–142.

Zajonc, R. B. (1965). Social facilitation. *Science, 149,* 269–274.

Zajonc, R. B., Heingartner, A., Herman, E. M. (1969). Social enhancement and impairment of performance in the cockroach. *Journal of Personality and Social Psychology, 13,* 83–92.