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Through a Glass Darkly: Effects of Smiling and Visibility on Recognition and Avoidance in Passing Encounters

Miles L. Patterson & Mark E. Tubbs

This study examined the patterns of recognition and avoidance in pedestrians as they walked past a confederate. The first purpose of the study was to replicate the results of an earlier experiment (Patterson, Webb, & Schwartz, 2002) showing that the addition of a smile from the confederate greatly increased pedestrians' responsiveness. A second purpose was to determine if confederates' visibility (wearing sunglasses or not) in these passing encounters would affect pedestrians' reactions and provide insight regarding the functions involved in these events. Specifically, the effects of condition (avoid, look-only, and look and smile), sex of confederate, and sunglasses on passing pedestrians were examined in a field study on 183 participants. A log-linear analysis of the results provided support for the first hypothesis with more glances, smiles, and nods in the look and smile condition than in the avoid and look-only conditions. The hypotheses that confederates who wore sunglasses would receive fewer glances than those who did not and that this effect would be greater for the male confederate were not supported. There was, however, a significant Sunglasses \times Sex of Confederate effect on smiles, with pedestrians smiling more at the male confederate when he wore sunglasses than when he did not and smiling less at the female confederate when she wore sunglasses than when she did not. The contrasting effect of sunglasses for the male and female confederate was discussed in terms of the different functions of a smile in pedestrian encounters.

Keywords: Nonverbal communication; Pedestrian behavior

It is common to equate interactions with conversations, but there are many settings where people interact without saying a word. As people stand in line at the grocery store,

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share an elevator ride, or walk through a crowded mall, they make adjustments in their behavior to the close presence of others. Thus, in subtle ways, people interact in these common situations. Although these occurrences are fleeting in nature, they are, nevertheless, interesting because they can indicate something about the individuals involved and the norms underlying social behavior in public settings. In addition, it is likely that the specific nature and quality of micro-interactions affect subsequent reactions to others. For example, even brief, subliminal exposure to faces of outgroup individuals in the laboratory can precipitate hostility in later interactions (Bargh, Chen, & Burrows, 1996). In a similar fashion, face-to-face encounters with outgroup members can also prime later judgments and behaviors, often automatically and outside of awareness (Bargh, 1997; Kunda, 1999, chap. 8). Of course, to the extent that our judgments and behaviors operate outside of awareness, we have little insight into and control over them. Thus, these micro-interactions are important not only because they provide information about the individuals involved and the social norms affecting them, but also because they can prime subsequent social judgments and behavior outside of our awareness.

In these situations of simple shared presence, people use subtle behavioral adjustments to maintain comfort and to regulate their involvement with others. One way in which this may be accomplished is through 'civil inattention.' This occurs when people recognize the presence of another person with a brief glance and then look away to show that they (a) are not concerned about the other person and (b) want to respect the individual's privacy (Goffman, 1963, pp. 83-88). According to Goffman, one example of civil inattention involves the behavior of pedestrians as they approach and pass one another on the sidewalk. In order to determine just where the other person is walking, pedestrians typically look at one another until they reach a separation of approximately eight feet (p. 84). Inside of eight feet, however, Goffman suggests that people typically look down, a reaction similar to dimming the lights for an approaching car. In a series of four studies on pedestrian passings, Cary (1978) found, however, little evidence for civil inattention. In general, pedestrians did not lower their heads and avert gaze as they passed one another. Thus, glancing at another person at close distances in these passing encounters may be more common than Goffman proposed.

Looking at another person is not only an important social behavior, but also one that precipitates arousal in the recipient (Kleinke, 1986; Patterson, 1976). In fact, a recent simulation using a virtual reality apparatus identified distinctive brain activity in response to direct gaze (Pelphrey, Viola, & McCarthy, 2004). Specifically, functional magnetic resonance imaging (fMRI) measures were taken as participants, wearing virtual reality goggles, viewed an approaching man. When the participants were the targets of a one-second look, compared to gaze avoidance, brain activity in the right hemisphere superior temporal sulcus increased dramatically. The superior temporal sulcus is involved in deriving social meaning in the facial and bodily movements of others (Kolb & Whishaw, 2003, p. 375).

Thus, it appears that subtle and rapid changes in glances register and demand attention. Recipients not only interpret these events, but they also respond behaviorally. Consequently, it is likely that behavior, even in these very brief encounters, is not

random. That is, pedestrians' behavioral adjustments have some adaptive utility in these situations (see Patterson, 1983, 1991, for a discussion of the varied functions of nonverbal behavior). Because people can have a range of motives in these public encounters, reactions may vary as pedestrians pass one another. Initiating a glance toward the other person indicates a change in attention and opens the door for a response, but a look alone is still relatively ambiguous (Ellsworth & Langer, 1976). That is, the meaning of the glance is substantially determined by the accompanying facial expression. According to the Behavioral Ecology View of facial displays (Fridlund, 1994, chap. 7), the social significance of facial expressions is *not* to indicate underlying emotional states, but to signal intentions for subsequent behavior. For example, the common social display of a smile is not primarily a sign of happiness, but rather, a sign of either (a) readiness to affiliate or (b) readiness to appease (pp. 129-130).

In an attempt to understand the dynamics involved in these brief encounters and more specifically the role of glances and smiles, a recent study examined factors affecting pedestrians' attention as they passed one another on the sidewalk (Patterson, Webb, & Schwartz, 2002). In the experiment, pedestrians' reactions were monitored as they approached and passed male and female confederates. At approximately twelve feet, the confederates initiated one of three conditions: (1) avoidance, that is, continued looking straight ahead; (2) look, involving a brief glance of less than one second; and (3) look and smile. An observer, walking approximately 30-40 feet behind the confederate, recorded the reactions of the pedestrians in the 'passing zone.'

The results showed a main effect for condition on glances back at the confederates, with approaching pedestrians displaying much higher levels of glancing in the look and smile condition than in either the avoid or look conditions. In addition, among the pedestrians who did glance at the confederate, there were similar condition effects on smiling, nodding, and greetings. The effect was most pronounced with increased smiles toward the confederates. In both the avoid and look-only conditions, approximately 10% of the pedestrians who glanced at the confederate also smiled, but in the look and smile condition, over 40% of those who glanced at the confederate also smiled at the confederate. Thus, the addition of a smile from the confederate increased, not only glances from pedestrians, but also other positive reactions in the form of smiles, nods, and greetings.

Before specific hypotheses are suggested for the present experiment, it is important to make explicit an assumption underlying these behavioral adjustments in pedestrian passings. In particular, it is assumed that most people engage in some degree of monitoring as they approach and pass a stranger and, consequently, they are able to react to what the other person does. This includes some people who clearly and distinctly look at the approaching person independently of what that person does. Perhaps more common are instances where people do not directly look at others but, nevertheless, use their peripheral vision to monitor the approaching person. Another possibility is that very brief glances might be so quick that the approaching pedestrian does not notice them. Obviously, those people who clearly avoid by looking down or away should not be affected by what the confederate does, but the results of the Cary (1978) and Patterson et al. (2002) studies suggest that such occurrences are infrequent.

The first purpose of the present study was to attempt to replicate the effect of smiling on the reactions of passing pedestrians (Patterson et al., 2002). Because the initiation of a look and smile is typically perceived as a positive and friendly signal (Fridlund, 1994, pp. 129–130), it is likely that pedestrians will reciprocate in some fashion (Burgoon & Hale, 1988; Cappella & Greene, 1982; Patterson, 1976). Thus, the first hypothesis is:

H1: Pedestrians will respond with more glances, smiles, nods, and greetings in the look and smile condition than in the avoid and look-only conditions.

A second purpose of this study was to determine if changes in the circumstances surrounding these passing encounters would affect pedestrians' reactions and provide insight regarding the functions involved. Specifically, a person's relative visibility may affect reactions from an approaching pedestrian. There is evidence, for example, that people are less comfortable talking to a partner who is wearing sunglasses than to one without sunglasses (Argyle, Lalljee, & Cook, 1968). Apparently, the asymmetry in visibility makes the person wearing sunglasses more the observer than the observed. Consequently, this provides a power advantage to the wearer that can affect return looks from their partners (Fehr & Exline, 1987). In such a case, greater avoidance of a confederate wearing sunglasses is expected.

H2: Fewer pedestrians will glance when the confederates wear sunglasses than when they do not wear sunglasses.

The effect of sunglasses may, however, be moderated by the sex of the confederate. In the earlier study of passing encounters, male confederates received fewer glances than did female confederates, especially in the look-only and look and smile conditions (Patterson et al., 2002). Perhaps a male stranger poses a greater potential threat than a female stranger does, leading to increased avoidance of male confederates. This difference is also consistent with evidence that men typically have greater social dominance than women in American society (Sidanius, Pratto, & Bobo, 1994). Consequently, the power advantage of wearing sunglasses is likely to be intensified with a male confederate.

H3: The hypothesized effect of sunglasses in reducing pedestrians' glances toward the confederates will be greater for the male confederate than for the female confederate. That is, a Sunglasses \times Sex of Confederate interaction was predicted on glances toward the confederates.

Method

Design

The design of the experiment was a 3 (condition: avoid, look-only, look and smile) \times 2 (sunglasses vs. no sunglasses) \times 2 (sex of confederate) factorial. A total of 187 pedestrians walking alone on the campus sidewalks of an urban midwestern university were observed as they passed a confederate. There were four pedestrians dropped from the analysis due to confederate procedural errors, observers' problems with seeing the pedestrians, or problems with recording the data. This left a total of 183 pedestrians in

the analysis, with an approximately equal number in each of three conditions. The majority of the pedestrians were White and/or Hispanic ($n = 130$), with African-Americans ($n = 56$) and Asians ($n = 21$) constituting the remainder of the sample. Although most pedestrians were in the 18–30 age range ($n = 149$), there were also a substantial number in the 31–40 range ($n = 29$), and just a few ($n = 5$) who were in the 41–50 and 51–60 ranges.

Setting

The experiment was conducted on several sidewalks near the university library. These sidewalks were chosen because they were near the center of the campus in an area where the terrain was level. The sidewalks were straight, or only slightly curving, and allowed unobstructed vision to identify approaching pedestrians. Because there was some variability in the width of the sidewalks, ranging from approximately seven to ten feet, confederates were instructed to pass the approaching pedestrian at a constant side-by-side distance of two to three feet. Trials were not run during the winter or when there was rainy weather. Times immediately around class changes were avoided because pedestrian traffic levels were too high.

Procedure

One white male student and one white female student served as both confederates and observers in the experiment. Both confederates were in their early 20s and, in terms of appearance, within an average range of attractiveness.¹ In addition, one African-American male student also served as observer on some trials. The basic format required that the confederates, while either wearing or not wearing sunglasses, initiate a look, a look and smile, or simply avoid the oncoming pedestrian (i.e., look straight ahead). The look-only and the look and smile conditions involved a slight head turn toward the approaching pedestrian as the look was initiated. This was the same procedure that was used in the Patterson et al. (2002) study. Consequently, even though pedestrians in the sunglasses conditions could not see the confederate's eyes, the head turn clearly signaled that the confederate was looking at them. The students were trained in the confederate role by the first author and practiced the conditions on one another before data were collected. After several practice trials, confederates could reliably estimate the 12-foot distance (± 2 ft) between themselves and an approaching pedestrian at which they would initiate the condition. Details about the specific training procedure may be found in the earlier study (Patterson et al., 2002).

To increase the amount of information collected on the approaching pedestrians and to establish inter-rater reliabilities, observers walked behind the confederates. The observers had to be close enough to monitor gaze changes of oncoming pedestrians, but not so close that the pedestrians were likely to start looking at the observers before they passed the confederates. Through trial and error, we settled on a following distance of 30–40 feet. Because the observers had to know when to start monitoring the

oncoming pedestrians, the confederates provided a signal, specifically, clenching the left fist (i.e., the side closer to the approaching pedestrian) as they entered the passing zone.

Within the sunglasses and no-sunglasses condition, each confederate ran the avoid, look-only, and look plus smile manipulations in a block randomized order. Observers were blind to the latter conditions. In the sunglasses condition, both confederates used the same pair of plain, medium dark, nonreflecting sunglasses. Confederates and observers were dressed causally, typical of the students on campus, and carried a book and a notebook. The confederate positioned him/herself at one end of a sidewalk, in a location to identify a potential pedestrian. The observer was behind and physically separated from the confederate. No attempt was made to select pedestrians by gender or race. When the confederate started to move down the sidewalk, the observer followed at approximately 30–40 feet behind the confederate. After the confederate and observer passed the pedestrian and reached the end of the sidewalk, they stopped in separate locations and recorded their observations. Then they got ready for the next trial. Confederates were kept blind regarding the hypotheses.

Selection of Pedestrians

In order to make sure that each pedestrian had a comparable opportunity to notice and react to the confederate, a number of restrictions were placed on the potential pedestrians. These restrictions included the following circumstances: (a) the sidewalk had to be uncrowded with no more than a few people in the oncoming traffic; (b) the pedestrian had to be walking alone on the right side of the sidewalk; (c) there had to be a gap of at least 30–40 feet between the pedestrian and the person walking in front of him/her (i.e., in order for the pedestrian to have a clear view of the approaching confederate); (d) the pedestrian could not have just turned the corner on to the sidewalk; (e) pedestrians could not be involved in other activities while walking (wearing headphones, talking on a cell phone, smoking, reading, eating, carrying heavy or awkward objects); (f) pedestrians could not be running or obviously disabled; and (g) pedestrians could not be wearing sunglasses because it was too difficult to monitor their gaze direction. In addition, pedestrians could not be someone the confederate knew or someone the confederate or observer recognized from an earlier trial.

Response Measures

The observer's data sheet contained items on the time of day, location, temperature, weather, race and sex of pedestrian, and approximate age of pedestrian (18–30, 31–40, 41–50, 51–60, and over 61). The pedestrian's reactions toward the confederate in the passing zone (12 ft to 0 ft) were recorded on the following dimensions: (a) glance, (b) nod, (c) smile, and (d) a verbal greeting. On each of the measures, reactions were scored as present, absent, or uncertain. For both the look-only and look and smile conditions, confederates independently made the same judgments as the observers on

glance, nod, smile, and verbal greeting.² Confederates did not attempt any ratings in the avoid condition because they were not looking in the direction of the oncoming pedestrians. Inter-rater reliabilities were computed on the judgments of the confederates and observers in look-only and look and smile conditions. Cohen's Kappa (Cohen, 1960), which corrects for chance agreement, was high for glance (0.76), nod (0.90), smile (0.95), and greeting (1.00).

Results

Overall, a total of 105 out of 183 pedestrians (57%) glanced at the passing confederate. Because the effects of multiple categorical variables were examined, log-linear analyses were employed. Specifically, a simultaneous entry procedure was conducted on SPSS, that is, the relevant variables were entered in a single step (see Howell, 2002, pp. 655–690). Partial χ^2 in the log-linear analysis tests the significance of the relationships between predictor variables and the dependent measures. Specific comparisons in log-linear analysis are usually made in odds ratios, that is, the ratios of two conditional probabilities (the odds) for a dichotomous outcome. Because odds ratios can assume any value between 0 and infinity and are not affected by the marginal frequencies, they are particularly useful measures of effect size (Fleiss, 1994). It should be noted that a significant partial Chi-square indicates that the odds ratios are significantly different from 1.0.

Condition Effects

Support for the first hypothesis was found in a log-linear analysis of the main and interaction effects of condition, sunglasses, sex of confederate, and sex of pedestrian on glance frequency. The predicted condition effect on pedestrians' glances ($\chi^2[2] = 7.26$, $p < .05$), seen in Table 1, was significant. The odds of glancing/not glancing in the avoid and look-only conditions were 0.88 and 1.21, respectively, whereas the odds of glancing/not glancing in the look & smile condition were 2.39. Pedestrians in the look and smile condition were 2.72 times (2.39/0.88) more likely to glance at the confederate than those in the avoid condition and 1.98 times (2.39/1.21) more likely to glance at the confederate than those in the look-only condition. Post hoc contrasts showed that

Table 1 Effect of Condition on Glances

	Avoid	Look	Look&Smile
Glance	28	34	43
No glance	32	28	18
N	60	62	61
% glances	47	55	70
Odds ^a	0.88	1.21	2.39

^aOdds = glances/no glances.

there was significantly more glancing at the confederates in the look and smile condition than in the combined avoid and look conditions, $z = 2.49, p < .05$. The avoid and look-only conditions were not significantly different from one another, $z = .89, p > .05$ (see Tabachnick & Fidell, 1996, pp. 284–285 for contrasts in log-linear analysis).

Next, the additional reactions of 105 pedestrians who glanced at the confederates were analyzed. A total of 40 pedestrians also initiated some combination of smiling, nodding, or greeting reactions. Among those who glanced, the predominant additional reactions were either just smiling ($n = 16$) or just nodding ($n = 17$) at the passing confederate. Because there were fewer pedestrians in this analysis and the frequencies of the responses were lower, the tests had to be more limited. The analyses involving three or four independent variables, and even some with two independent variables, had contingency tables with empty cells (zero entries). According to Howell (2002, p. 672), these 'sparse matrices' should be collapsed across variables to increase expected cell frequencies. Consequently, the log linear analyses of smiling and nodding were limited to computing partial Chi-squares on only the main effects and some first-order interactions.

First, there was a significant effect of Condition on smiling ($\chi^2[2] = 21.70, p < .0001$). Post hoc contrasts showed that, among those pedestrians who glanced at the confederates, significantly more pedestrians smiled in the look and smile condition ($M = 42\%$) than in the combined avoid and look-only conditions ($M = 6\%$), $z = 3.78, p < .001$. The odds ratio for the look and smile condition compared to the combined avoid and look-only conditions indicated that pedestrians in the look and smile condition were 10.29 times (0.72/0.07) more likely to smile at the confederate than pedestrians in the combined avoid and look-only conditions. The avoid and look-only conditions were not significantly different from one another, $z = .70, p > .05$.

Next, the analysis of pedestrians' nodding showed a significant effect of condition ($\chi^2[1] = 9.38, p < .01$). Post hoc comparisons showed that, among those pedestrians who glanced at the confederates, significantly more pedestrians nodded in the look and smile condition ($M = 35\%$) than in the combined avoid and look-only conditions ($M = 13\%$), $z = 2.59, p < .01$. The odds ratio indicated that pedestrians in the look and smile condition were 3.60 times (0.54/0.15) more likely to nod at the confederate than pedestrians in the combined avoid and look conditions. The avoid and look-only conditions were not significantly different from one another, $z = 1.12, p > .05$. Finally, because there were only five pedestrians who initiated a greeting in the passing zone, there were not enough responses to conduct an analysis of greetings. Nevertheless, it is worth noting that all five were males and four out of the five greetings occurred in the look and smile condition. Overall, the pattern of significantly more glances, smiles, and nods in the look and smile condition than in the avoid and look-only conditions provided clear support for the first hypothesis.

Main and Interaction Effects of Sunglasses

Approximately 55% of the pedestrians (odds = 1.23) in the sunglasses condition glanced at the confederates, whereas 60% of the pedestrians (odds = 1.47) in the

no-sunglasses condition glanced at the confederates. Although the differences were in the predicted direction, the effect of sunglasses on glance frequency was not significant ($\chi^2[1] = .49, p > .05$). Consequently, there was no support for the second hypothesis. Next, the predicted Sunglasses \times Sex of Confederate effect on glances did not approach significance ($\chi^2[1] = .09, p > .05$). Thus, there was no direct support for the third hypothesis that the effect of sunglasses on pedestrians' glances would be greater for the male than for the female confederate. Among the pedestrians who did glance at the confederates, there was, however, a significant Sunglasses \times Sex of Confederate interaction ($\chi^2[1] = 6.97, p < .01$) on the frequency of smiles. Although post hoc comparisons between the sunglasses and no sunglasses cells for both the male confederate ($z = -1.33, p > .05$) and the female confederate ($z = 1.38, p > .05$) were not statistically significant, the relative differences for the male and female confederate, seen in Table 2, were clear. Specifically, pedestrians were 2.96 times (0.32/0.11) more likely to smile at the male confederate when he was wearing sunglasses than when he was not wearing sunglasses. In contrast, pedestrians were 2.65 times (0.53/0.20) more likely to smile at the female confederate when she was not wearing sunglasses than when she was wearing sunglasses. Thus, the effect of sunglasses was directly opposite for the male and female confederates. Consequently, there was some indirect support for the effect of sunglasses being qualified by the sex of the confederate in the pattern of pedestrians' smiles.

Sex of Pedestrian \times Sex of Confederate Interaction

The other significant effect, a Sex of Confederate \times Sex of Pedestrian interaction ($\chi^2[1] = 6.08, p < .05$), can be seen in Table 3. Although post hoc comparisons between male and female pedestrians passing the male confederate ($z = 1.83, p > .05$) and the female confederate ($z = -1.35, p > .05$) were not statistically significant, this disordinal interaction indicated that pedestrians smiled more at an opposite-sex than a same-sex confederate. Specifically, the male confederate was 7.14 times (0.50/0.07) more likely to receive a smile from female pedestrians than from male pedestrians, whereas the

Table 2 Sunglasses \times Confederate Sex Interaction Effect on Smiling

Confederate sex	Sunglasses		No sunglasses	
	Male	Female	Male	Female
Smile	6	4	3	9
No smile	19	20	27	17
N	25	24	30	26
% of smiles	25	17	10	35
Odds ^a	0.32	0.20	0.11	0.53

^aOdds = smiles/no smiles.

Table 3 Confederate Sex \times Pedestrian Sex Interaction Effect on Smiling

Confederate sex	Male pedestrians		Female pedestrians	
	Male	Female	Male	Female
Smile	2	7	10	3
No smile	27	19	20	17
<i>N</i>	29	26	30	20
% of smiles	7	27	33	15
Odds ^a	0.07	0.37	0.50	0.18

^aOdds = smiles/no smiles.

female confederate was 2.06 times (0.37/0.18) more likely to receive a smile from male pedestrians than from female pedestrians.

Discussion

The results of this study supported the first hypothesis by replicating the condition effect in the Patterson et al. (2002) study. Specifically, pedestrians in the look and smile condition glanced significantly more at the confederates than did those in the avoid and look-only conditions. Although the overall level of glancing at the confederates was higher in the present study (57%) than in the earlier study (39%), the odds ratios of glances in the look and smile condition to glances in the avoid and look-only conditions were similar across the two studies. Specifically, on the basis of the odds ratios, pedestrians in both studies were approximately twice as likely to glance at the confederates in the look and smile condition than in the avoid and look-only conditions. Among the pedestrians who did glance at the confederate, there was also a condition effect on smiles and nods similar to that of the Patterson et al. (2002) study. On the basis of the odds ratios, pedestrians in both studies were seven to ten times more likely to smile and three to four times more likely to nod in the look and smile condition than in the combined avoid and look-only conditions. Thus, smiles from the confederates clearly precipitated greater positive attention from the pedestrians in the passing zone.

The primary interest in the present study was, however, the effect of sunglasses on pedestrians' reactions. In fact, the results did not support either the hypothesized main effect of sunglasses or the hypothesized Sunglasses \times Sex of Confederate interaction effect on pedestrians' glances. That is, pedestrians did not glance significantly less when the confederates wore sunglasses than when they did not and there was no evidence that such an effect was greater for the male than for the female confederate. There was, however, a significant Sunglasses \times Sex of Confederate effect on smiling. Specifically, pedestrians who did glance at the confederates smiled more frequently at the male confederate when he wore sunglasses than when he did not, but they smiled less frequently at the female confederate when she wore sunglasses than when she did not.

The contrasting effect of sunglasses on smiles toward the male and female confederates may reflect different functions of smiling in interactions (see Patterson, 1983, 1991). This is consistent with Eibl-Eibesfeldt's (1989, pp. 170–184) view that people are ambivalent to strangers in these kinds of public situations. That is, we would like to have friendly contact with others, but we also want to avoid the potential threat that strangers may represent. If a smile can convey either an intention to be friendly and affiliate or an intention to appease (Fridlund, 1994, pp. 129–130), then the sunglasses manipulation might precipitate different reactions to male and female confederates. Specifically, because men are typically perceived as more dominant than women (Sidanius et al., 1994) and women are typically perceived as more friendly and connected with others than men are (Myers, 2002, pp. 179–184), it is likely that the sunglasses manipulation had a different effect on smiles toward the male and female confederates. If the male confederate is viewed as more dominant, or perhaps as a greater potential threat, then he is likely to precipitate more appeasement smiles (LaFrance & Hecht, 1999). In contrast, if the female confederate is viewed as more friendly, then she is likely to precipitate more spontaneously friendly smiles. Because the wearing of sunglasses can increase the power of an individual relative to a partner (Argyle et al., 1968), then the net result is that the male is seen as even more dominant or potentially threatening, but the female is simply seen as less friendly. Thus, one interpretation for these results is that appeasement smiles toward the male confederate increased and friendly smiles toward the female confederate decreased in the sunglasses condition. Because the design of the study was limited in having only one male confederate and one female confederate, confidence in generalizing these results requires replication in future research with a larger sample of male and female confederates.

The results do point to a conditional effect of sunglasses on behavioral adjustments in passing encounters, but it was not the expected effect. It is not clear why there was no main effect of sunglasses and no Sunglasses \times Sex of Confederate effect on glances, but two possibilities might be considered. Although we have no data on the number of people who wore sunglasses while walking on campus during the experiment, it was evident that only a small proportion of people on campus did wear sunglasses. Perhaps the relative infrequency of sunglasses made pedestrians curious about the confederates and actually prompted more glances in the passing zone than might otherwise be expected. Another possibility is that the campus is a safe setting and pedestrians were not concerned about avoiding people who wear sunglasses. Whatever the reason, once the pedestrians glanced, then they reacted differently to the male and female confederates. If the relative safety of the campus facilitates more glancing, even at confederates wearing sunglasses, then a different kind of setting, like the streets of a downtown area, might yield the predicted differences in glances. In any case, it is important to examine adjustments in these passing encounters in other locations with other confederates.

In conclusion, the results of the present study provide additional support for the power of a smile in precipitating positive recognition in pedestrian passings. Furthermore, the effect of sunglasses on smiles in the passing zone was moderated by the sex of the confederate, suggesting that smiles may serve a different function in passing a male confederate than in passing a female confederate. Although these micro-interactions last

only a second or two, they provide an opportunity to monitor and evaluate an approaching stranger. Much of this may happen automatically and outside of awareness, but the residual effects of such brief exposures can prime subsequent judgments and behavior (Bargh, 1997). In addition, results showing distinct brain activity following a one-second glance from an approaching stranger (Pelphrey et al., 2004) suggest that these micro-interactions are potentially important events that register with people. Finally, this experiment provides further evidence for the utility of the passing encounters paradigm in studying micro-interactions and the circumstances that affect subtle exchanges between strangers.

Notes

- [1] Because there was only one confederate of each sex, it is possible that distinctive characteristics of a particular confederate could be responsible for sex differences in this study. Nevertheless, our experience in selecting confederates and in later testing for differences among them within sex suggests that this was not a serious concern. First, across several studies using this paradigm, we have been selective in recruiting confederates whose ages range from approximately 20 to the early 30s. People who are at the extremes of height and weight are not recruited as confederates. Second, in the Patterson et al. (2002) study and in new unpublished data (Patterson, Iizuka, Tubbs, Ansel, & Anson, 2004) in which two or more confederates of each sex were recruited, we found no significant differences among confederates within sex on participant glances at the confederates.
- [2] In the instances where there was a confederate and observer disagreement, two decision rules were employed in determining a scored reaction. First, if either person made an uncertain judgment and the other person judged that the behavior was present or absent, the present or absent judgment was selected as the final one. For any other disagreement (e.g., the confederate judging that a smile occurred and the observer judging that a smile did not occur), the confederate's judgment was selected as the final one because the confederate was closer to the pedestrian when making the judgment.

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