
SHORT REPORT

Facial features influence the categorization of female sexual orientation

Konstantin O Tskhay, Melissa M Feriozzo, Nicholas O Rule

Department of Psychology, University of Toronto, 100 St George Street, Toronto, ON M5S 3G3, Canada; e-mail: konstantin.tskhay@mail.utoronto.ca

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Abstract. Social categorization is a rapid and automatic process, and people rely on various facial cues to accurately categorize each other into social groups. Recently, studies have demonstrated that people integrate different cues to arrive at accurate impressions of others' sexual orientations. The amount of perceptual information available to perceivers could affect these categorizations, however. Here, we found that, as visual information decreased from full faces to internal facial features to just pairs of eyes, so did the accuracy of judging women's sexual orientation. Yet and still, accuracy remained significantly greater than chance across all conditions. More important, however, participants' response bias varied significantly depending on the facial feature judged. Perceivers were significantly more likely to consider that a target may be lesbian as they viewed less of the faces. Thus, although facial features may be continuously integrated in person construal, they can differentially affect how people see each other.

Keywords: face perception, sexual orientation, social perception

1 Introduction

People rapidly and automatically categorize each other into groups (Macrae and Quadflieg 2010). Multiple studies have documented that group memberships are perceptible with accuracy that exceeds chance guessing. Although some groups are easier to categorize because they possess obvious markers to their identities (Allport 1954), most of the groups to which people belong are ambiguous. Yet, studies continue to show that perceivers can accurately distinguish these ambiguous groups (Tskhay and Rule 2013).

Sexual orientation is one ambiguous distinction that has received increasing attention in the psychological literature. Researchers have demonstrated that sexual orientations are perceptible with accuracies that exceed chance guessing, that information about sexual orientation is extracted automatically and rapidly from faces, and that categorizing sexual orientation employs various cues (eg Rule et al 2008, 2009). Thus, accurate categorizations of male sexual orientation depend on observable cues, but these cues could also affect response bias in different ways.

In the current study, we therefore examined the cues that people use to accurately perceive female sexual orientation from faces and how these cues affect categorization. Importantly, the current work expands and complements the findings reported by Rule et al (2008) by examining the differential influences of facial features within the context of female sexual orientation. Although the focus of the previous research on one naturally occurring ambiguous group membership (male sexual orientation) revealed that facial features have varying effects on accuracy, it remains somewhat unclear whether the pattern of feature utilization is similar across different target groups. Thus, if we observe findings parallel to those reported by Rule et al (2008), we could conclude that similar processes may underlie judgments of both male and female sexual orientation that might also extend to other perceptually ambiguous groups. Alternatively, if we see a different pattern, it would suggest that the perceptual processes involved in judging sexual orientation may vary according to the target group studied.

We recruited a community sample of female participants from the Toronto Pride festival and asked them to categorize faces or facial features borrowed from Rule et al (2009) as either “lesbian” or “straight”, comparing how hairstyles, internal facial features, and the eyes alone might affect perceptions of female sexual orientation (see section 2 below). We expected that accuracy would be greater than chance in all three conditions but would diminish linearly as the amount of available information decreased (Rule et al 2008; Tskhay and Rule 2013). Thus, we predicted that information from the features would be systematically and continually integrated to generate a complete and unified construal of sexual orientation, consistent with recent dynamic models of person perception (Freeman and Ambady 2011). Furthermore, we expected that participants would demonstrate a bias towards categorizing targets as straight. We predicted that this effect would decrease as the participants had less information available. Additionally, because lesbian and bisexual women are likely to be more familiar with other lesbians (see Brambilla et al 2013), we expected to find lower response biases for these women.

We computed the accuracy index d' and response bias index c for each participant and submitted them to a 2 (participant sexual orientation: lesbian, straight) \times 3 (feature: full face, internal features, eyes only) between-subjects ANOVA. Sexual orientation was perceived more accurately than chance in all conditions: full faces ($t_{65} = 12.98, p < 0.001, r = 0.85$), internal features ($t_{67} = 9.60, p < 0.001, r = 0.76$), and eyes only ($t_{48} = 2.43, p = 0.02, r = 0.33$); see figure 1 for descriptive statistics. Accuracy varied as a function of feature ($F_{2,177} = 24.91, p < 0.001, \eta^2 = 0.22$), however neither participant sexual orientation nor the interaction between participant sexual orientation and the feature condition judged were significant ($F_s < 1$). Accuracy was greater for full faces than for internal features ($t_{132} = 3.87, p < 0.001, r = 0.32$) or eyes only ($t_{113} = 6.68, p < 0.001, r = 0.53$). Furthermore, accuracy for judging internal features was greater than for judging eyes ($t_{115} = 3.75, p < 0.001, r = 0.33$).

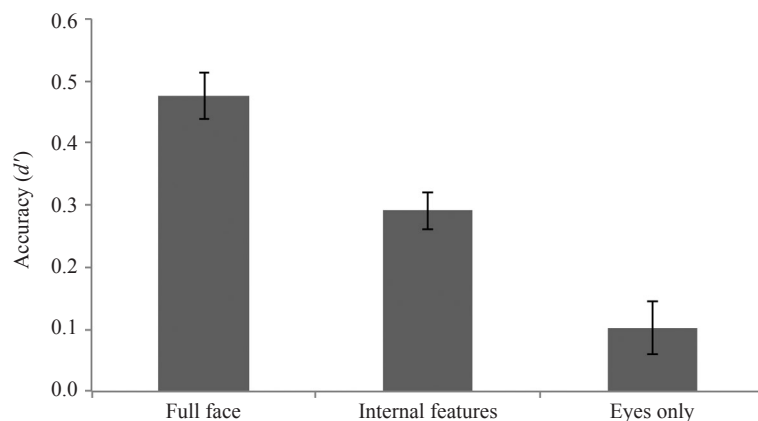


Figure 1. Mean participant accuracy (d') in categorizing women’s sexual orientation as a function of the feature examined in each condition. Error bars denote standard errors of the means.

Response bias was significantly greater than zero in the full face condition ($t_{65} = 3.33, p = 0.001, r = 0.38$), but did not differ from zero in either the internal features ($t_{64} = 1.12, p = 0.27, r = 0.14$) or eyes-only ($t_{48} = 0.52, p = 0.60, r = 0.08$) conditions; see figure 2 for descriptive statistics. A 2 \times 3 between-subjects ANOVA of response bias scores showed main effects of feature ($F_{2,177} = 3.39, p = 0.04, \eta^2 = 0.04$) and participant sexual orientation ($F_{1,177} = 4.59, p = 0.03, \eta^2 = 0.02$) but no interaction ($F_{2,177} = 1.49, p = 0.22, \eta^2 < 0.02$). Simple effects tests showed that the mean response bias towards categorizing targets as straight was similar in the full face and internal features conditions ($t_{132} = 1.54, p = 0.12, r = 0.13$).

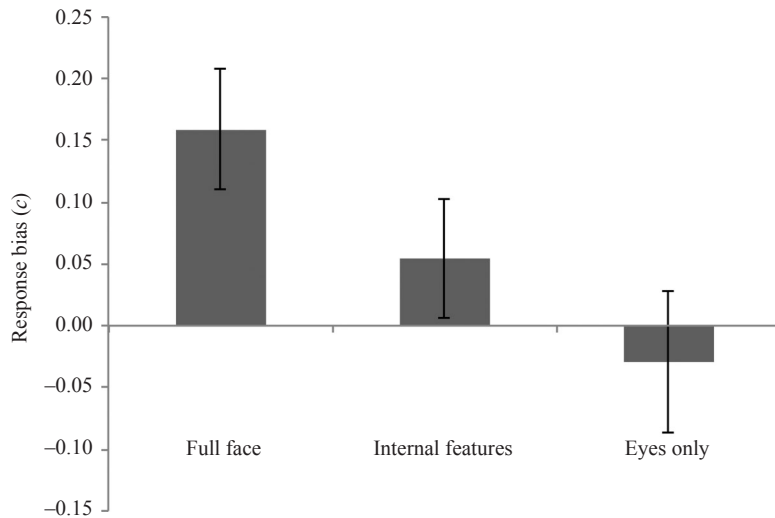


Figure 2. Mean participant response bias (c) in categorizing women's sexual orientation as a function of the feature examined in each condition. Error bars denote standard errors of the means.

Likewise, there were no differences in response bias between the internal features and eyes-only conditions ($t_{115} = 1.12$, $p = 0.26$, $r = 0.10$). Importantly, however, participants showed a significantly greater tendency to categorize targets as straight in the full face versus eyes-only conditions ($t_{113} = 2.56$, $p = 0.01$, $r = 0.23$).

In terms of participant sexual orientation, response bias was significantly greater than zero for straight women ($t_{86} = 3.20$, $p = 0.001$, $r = 0.33$), but not for lesbian and bisexual women ($t_{95} = 0.01$, $p = 0.99$, $r < 0.01$). Thus, straight women ($M = 0.15$, $SD = 0.43$) demonstrated a significantly greater bias to categorize faces as straight than did lesbian and bisexual women ($M = 0.00$, $SD = 0.36$; $t_{181} = 2.54$, $p = 0.01$, $r = 0.19$).

Thus, consistent with prior research, we found that female sexual orientation could be accurately perceived from faces (Rule et al 2009). Specifically, we found that accuracy continually diminished as participants were provided with less information upon which to judge. Accuracy was significantly greater than chance across all three conditions, however. This finding suggests that hairstyles significantly affected the perception of women's sexual orientation and that something about the internal facial features beyond the eyes additionally provided reliable and valid information. Broadening previous findings (Rule et al 2008), however, we found a similar pattern of feature use in the perception of female sexual orientation previously reported for male targets. Thus, it is likely that the perceptual system utilizes facial features similarly for male and female targets in the perception of sexual orientation, thereby suggesting that there may be a common process used to make such judgments. Further study should explore the specific nature of this common process and assess whether it may extend to other perceptually ambiguous groups.

Notably, we observed that response bias was affected by one important cue: hairstyle. As information decreased, however, participants did not show a preference towards categorizing women as lesbian or straight. Response bias was also affected by the participants' sexual identities: lesbian and bisexual women were less likely to adopt a systematic labeling strategy, whereas straight women were more likely to assume that women were straight. This finding is novel and interesting, yet expected, because lesbian and bisexual women are more likely to be more familiar with other women who identify as sexual minorities than would be expected for straight women. Thus, they may be less biased to assume that other women are straight due to explicit exposure to sexual diversity. Furthermore, although we did not replicate the

relationship between accuracy and familiarity reported for men in previous work (Brambilla et al 2013), our response bias findings suggest that familiarity continues to affect perception. Researchers in the future should explore further how familiarity with particular target groups may bias perceptions of them.

Additionally, the accuracy and response bias data provided some intriguing results. Specifically, the condition with the most information produced the greatest accuracy and strongest response bias. In light of the previous research done with male targets (Rule et al 2008), perceivers seem to become less accurate and less able to predict their accuracy a posteriori as the available visual information decreases. Importantly, Rule et al (2008) found that postdicted accuracy correlated with actual accuracy only when participants judged male sexual orientation based on hairstyles alone; thus, the participants were aware of their accuracy when they made judgments based on hairstyle. Perhaps similar awareness of one's judgments is related to perceivers' increased accuracy and greater response bias in the analogous condition of the current study. That is, because participants were aware that the hair demarcates sexual orientation, they may have been more likely to base their judgments on stereotypes of hairstyles associated with particular female sexual orientation, which could produce an increase in response bias. Furthermore, if hairstyle is a valid stereotypical cue, it should provide a 'kernel of truth' for judgments of sexual orientation, resulting in greater accuracy.

Although the effects reported in the current work are interesting, they are not without limitations. We recruited our sample during the Toronto Pride celebration. This allowed us to examine the effects of participants' self-identified sexual orientation on accuracy and response bias. Importantly, however, straight women in the current sample were likely allies of the gay community, given that they were attending the Pride celebration; thus, they may not be a representative sample of all straight women. In future work, researchers could examine how perceptions may change as a function of exposure and attitudes towards sexual minorities (see Brambilla et al 2013). Importantly, the present study extends research on the perception of sexual orientation and ambiguous groups to a community sample, rather than university students, and to include sexual-minority participants.

In sum, these findings extend extant theories of person perception by providing evidence to suggest that social categorization is differentially affected by various cues, and that such cues may be systematically and continuously integrated across different target groups (Freeman and Ambady 2011). Thus, although people integrate many facial features in categorization, different facial cues influence what we ultimately perceive.

2 Method

2.1 Participants

A sample of a 183 women ($n = 87$ straight; $M_{\text{age}} = 26.51$ years, $SD_{\text{age}} = 10.12$ years) was recruited from the 2013 Toronto Pride festival to participate in a study examining 'gaydar'. Nineteen participants did not identify as lesbian, bisexual, or straight and were, therefore, removed from the sample. One additional participant did not complete the study due to a computer malfunction.

2.2 Stimuli

Stimuli were a randomly selected subset borrowed from a previously validated database (Rule et al 2009) for a total of forty-eight straight and forty-eight lesbian women downloaded online from dating websites. Women seeking female partners were considered lesbians, whereas women seeking male partners were considered straight. All women's faces were oriented directly towards the photographer's camera and were free of any facial adornments, such as piercings and jewelry. The faces were removed from their original backgrounds, converted

to grayscale, and standardized in size. We utilized images from three conditions: full faces, internal features of faces (ie without cranial hair), and just the targets' eyes.

2.3 Procedure

Participants were randomly assigned to the full face ($n = 66$; 36 straight), internal facial features ($n = 68$; 37 straight), or eyes-only ($n = 49$; 14 straight) conditions. The participants were asked to look at the faces or features on a computer and to categorize them as either straight or lesbian by key-press. Although the participants performed the task at a self-paced rate, we encouraged the participants to trust their gut instinct and not to spend too much time on any one face. The stimuli were presented in random order for each participant.

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