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Gender Differences for Specific Body Regions When Looking at Men and Women

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Abstract The goal of the present study was to provide first evidence for gender differences in gaze patterns while looking at the body of men and women. For this purpose participants were exposed to 30 pictures of 15 male and 15 female models in casual clothing. The individual scan paths were recorded using an eye-tracker. The results show that both male and female observers primarily gaze at people's face. Only after this initial face-scan, men look significantly earlier and longer at women's breasts, while women look earlier at men's legs. These observations uncover important aspects of the pattern of the human gaze at others and particularly reveal important gender differences.

Keywords Eye tracking · Gaze · Picture viewing · Gender differences

Introduction

Previous research on human gaze patterns has focused on topics including individual differences in gaze patterns during visual search (Miltner et al. 2004) and in participants with psychopathology like autism (Klin et al. 2002) or on gaze patterns during gender identification (Johnson and Tassinary 2005) and the mutual gaze during interactions of men and women (e.g., Bailenson et al. 2003). Further studies have focused on general questions like how faces are scanned (e.g., Williams et al. 2001) and how the scan path is controlled (e.g., Henderson 2003; Henderson et al. 2003). One interesting aspect of human gaze behavior has not yet been examined systematically in the past, i.e., how women look at men's bodies and men look at women's bodies and how the gaze is distributed among different body regions while scanning the body of the opposite sex. The question of where do we look at when viewing other people was addressed by the present study using an eye-tracking approach.

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Evolutionary psychology suggests that human mating strategies are the consequence of reproductive advantages of certain strategies in the phylogenetic past (for an overview see Buss 2004; Thornhill and Grammer 1999). Among such strategies is the assessment of the health and fertility of a potential sex partner (Buss 2004). Recently, Thornhill and Grammer (1999) reported on correlations between separate ratings of the physical attractiveness of the face and the body of women indicating that both are valid indicators of health, phenotypic, and genetic quality. Yet Zebrowitz and Rhodes (2004) note that facial attractiveness alone seems to be reliably related to health only in the lower half of the attractiveness distribution in males and females. These authors suggested that this finding favors the bad genes hypothesis, which implies that low attractiveness signals poor genetic fitness. Accordingly, bad genes may be detected and avoided through assessing attractiveness, which increases fitness.

In accordance with the evolutionary hypothesis, men's mating strategies are further supposed to include the assessment of a female's waist to hip ratio with a ratio around 0.7 signaling optimal fertility. A recent study by Jasienska et al. (2004) further showed that breast size represents another indicator of reproductive capacity in addition to the waist to hip ratio. In line with this evidence, breast size and waist to hip ratio have been found to be important for the assessment of the attractiveness of women by men (Singh 1993; Singh and Young 1995). It has been shown that the waist to hip ratio is also an important indicator of male attractiveness as assessed by females (Singh 1995). Generally, it may be suggested that men and women focus their attention to those body regions that most likely provide information about the suitability of another person as a mate. Taken together, the importance of the breast region for the assessment of reproductive capacity by males may provide an argument to hypothesize that men as compared to women show increased attention to the breast region, whereas the waist and hip regions are an important source of information for both sexes.

This is in line with the findings of a recent eye-tracking study by Johnson and Tassinary (2005). In their study, participants were requested to assess the sex of walking artificial human figures. The results show, that both for men and women, the waist and hip were the main focus of participants' attention. In addition and as compared to females, male observers showed increased attention to the chest region and spent somewhat less attention to the waist and hip region, which was still the main focus of attention for males as well. However, this gaze pattern might primarily reflect that the participants had to decide on the sex of the ambiguous figures rather than natural gaze behavior toward others. Furthermore, artificial and ambiguous human figures are different from pictures of real men and women. Thus, the study provides interesting but only indirect evidence on how men and women scan each other's body. In another very recent study, Lykins et al. (2006) examined the effect of eroticism of the pictures they presented. They reported on differences between the responses of men and women to erotic versus non-erotic pictures. However, the females only watched male pictures and vice versa and thus any conclusion about gender differences is rather speculative.

Several lines of research suggest that faces are of particular importance for human interactions (e.g., Aharon et al. 2001; Ekman 1999, 2003; Ekman and Oster1979; Fischer et al. 2004; Fridlund 1991; Hall et al. 2005; Öhman 1993). Furthermore, the human brain was demonstrated being highly specialized for facial information (e.g., Haxby et al. 2001; Haxby et al. 2002; Hoffman and Haxby 2000; Schweinberger et al. 2002, 2004). Very early in life, human infants start to fixate faces and respond to different facial expressions (see Johnson et al. 1991; Morton and Johnson 1991). Among the reasons for the salience of faces is the fact that faces convey important information not only about the identity, gender, and racial affiliation of others but also about their emotions and behavioral intentions (Ekman 1999, 2003; Ekman and Oster 1979; Fridlund 1991, 1994; Scharlemann et al. 2001). Due to these manifold functions of facial information, the attention to and proper processing of faces is one of the most important sources of any successful face-to-face interaction and one of the major reasons why we significantly gaze at the faces of others.

In the present study, participants' scan path was recorded by a remote eye tracker while participants viewed pictures depicting front views of female and male models and pictures of landscapes and pets taken from the International Affective Picture System (IAPS) (Lang et al. 2001). Based on the importance of faces for social interaction, we hypothesized that male and female participants would look at the face region primarily, more often, and longer than at any other region of other person's body. Furthermore, we also expected that males as compared to females would also show increased attention to the breast region of women. In addition, we further explored gender differences for all body regions separately for male and female pictures.

Method

Participants and Procedure

Twenty-seven right-handed participants (14 were female) from the student population of the Friedrich Schiller University (Jena, Germany) volunteered in the experiment for course credits (mean age 21.6 years, SD = 3.7 years, range 19–37 years). Prior to the experiment, participants gave written consent for participation. In order to examine natural gaze behavior, it was particularly important to cover the real purpose of the study. Thus, we attempted to persuade the participants that the purpose of the experiment was to investigate pupillary reactions in response to the different luminosity of a series of pictures presented to them and to assess the dilations of the pupil in response to emotional stimuli. After capturing the participants' left eye region with the eye tracker, a calibration procedure was completed (for details see below). The participants were told that this would be necessary to accurately assess the dilation of the pupil independently of their viewing direction. After the experiment, all participants were debriefed about the real purpose of the experiment and asked whether they became suspicious that instead of the pupil dilation the scan path of their eyes was recorded. All participants denied having had such a suspicion.

Stimulus Material

During the experiment proper, 66 pictures were presented to the participants in randomized order comprising 15 front views of women and 15 front views of men. In a pilot study with 57 students (30 women) of the same age as the participants of the present study, this set of pictures was selected from a series of 58 pictures (pictures of 29 men and 29 women) which had been selected from several hundred pictures of advertisements for clothes from the Internet depicting casually dressed young models. Care was taken that each male model corresponded to one female model, and that each such pair of models wore clothes of similar color, similar casual style, posed with the same body posture, showed similar orientation of eye-gaze, and showed body regions of similar size. Concerning the ratings of valence and arousal, we selected the pictures in order to minimize any main effects (i.e., male and female pictures were chosen to be equal in valence and arousal on average across all participants). It is important to note that the pilot study already showed that pictures of the opposite sex are generally rated as more positive and more arousing. This was also the case for the selected pictures of the present study indicating a common preference for heterosexual individuals in general.

In addition, 36 pictures of the IAPS including 12 positive, 12 negative, and 12 neutral images (Lang et al. 2001) were used as distractors. These IAPS pictures did not include pictures of humans. Pictures of models and IAPS were presented at the center of a video screen for 4 s each with an inter-stimulus interval of 5 s during which a fixation cross was depicted. The starting point of the gaze was at the center of the monitor and generally close to the hip region of the presented persons on the target pictures. Subsequent to the presentation of each picture, the participants were asked to rate the appeal (German: Gefallen) of each picture using a Likert scale (1–9 steps). After the presentation of all pictures, a further calibration was accomplished for control purposes. The analysis of the additional calibration after the experimental block and a visual inspection of all individual scan paths revealed no abnormalities of the scan paths.

At the end of the experiment, participants were exposed to the 15 male and 15 female pictures again and were requested to rate the valence, arousal, and attractiveness of each male and female model (Likert scale ranging from 1 to 9). Finally, participants completed a short questionnaire assessing participants' age, sex, and sexual preference (heterosexual, bisexual, homosexual). Based on this information, one female participant had to be excluded from further analyses due to a bisexual orientation which otherwise might have obscured gender differences. Additionally, one participant had to be excluded from the analysis of the rating data due to technical problems during data recording.

Eye Tracking: Recording and Quantification

Participants' eye movements were monitored using a remote eye-tracking recording system [iView, SensoMotoric Instruments, Teltow, Germany (see also Miltner et al. 2004)]. Sampling rate was 50 Hz. Eye movement measures were based on the corneal reflection on the frontal surface of participants' eyes caused by an infrared light source (energy 3.5 mW/cm^2 at a working distance of 70 cm). Before each experiment, participants' eye movements were calibrated by requesting them to focus on nine black crosses inserted in random order at the four corners, the center, and the vertical and horizontal midpoints of the outer borders of the monitor's display space.

For each picture, eye movement data consisted of moment-to-moment measures of the left eye's displacements along the vertical and horizontal axes (in mm) within the spatial working area of the monitor screen, with blinks being indicated by zero values. Eight body regions were defined for each of the 15 male and 15 female pictures including at least one region for face/head (whole head to the chin), shoulders (chin to armpit), breast (armpit to lowest rib), waist (lowest rib to lower stomach), hips (lower stomach to crotch), legs, arms, and hands. The hand region had to be excluded from the analysis due to an excessive number of missing values (no fixations) for most participants. The area sizes of these eight body regions were equally sized for both genders (all $F < 0.24$, all $p > 0.760$). A fixation within one of the eight body regions was counted only if participants' vertical and horizontal scan path of the eye matched this area for a minimum interval of 80 ms. A computer program extracted the following parameters for each participant and each picture: Total contact time within each region (sum of all fixations), number of fixations within each region, latency of first fixation for each region and duration of the first fixation for each region. It is important to note that the total contact time across all fixations to all body regions summed up to about 3 of the 4 s of presentation time. At least 500 ms (ten different fixations for each picture, 50 ms per saccade) are covered by saccadic eye movements. An additional analysis revealed that on average about 50 ms of the time was covered by blinks. The remaining 450–500 ms likely comprise incomplete fixations (<80 ms) to the body, further saccades and time spent on the background of pictures like its architecture or landscape. Data were analyzed using ANOVAs (including Greenhouse–Geisser Epsilon-correction, and partial η^2 as effect size measure for main results) with region as a factor. It is important to note that the contact to one body region excludes contact to another region, which would imply using multinomial logistic regression. For the present study the use of ANOVA should not have affected the results seriously due to aggregation and most importantly due to the fact that gender differences at each region were the main focus of the analyses. *T*-tests were used for tests of hypotheses on specific target regions and for post-hoc analyses of gender differences. Finally, correlations were used to explore relations between rating measures and eye-tracking data.

Results

Rating Data

Appeal ratings of male and female pictures revealed a significant main effect of model gender ($F(1,23) = 8.22$, $p = 0.009$, $\eta^2 = 0.26$), for male pictures the mean rating of 5.19 was lower as compared to 5.64 for females. A significant interaction of participant gender and model gender ($F(1,23) = 29.96$, $p < 0.001$, $\eta^2 = 0.57$) indicated that pictures depicting models of the opposite sex were rated as more appealing (see Table 1). For the ratings of models' valence, arousal, and attractiveness recorded after the experiment the ANOVA revealed a significant main effect of model gender ($F(1,23) = 5.65$, $p = 0.026$, $\eta^2 = 0.20$, $M = 5.19$ for males, 5.66 for females) for attractiveness. Furthermore, there were significant interactions of participant gender and model gender for all three rating scales (for valence: $F(1,23) = 9.39$, $p = 0.005$, $\eta^2 = 0.29$, arousal: $F(1,23) = 8.39$, $p = 0.008$, $\eta^2 = 0.27$, and attractiveness: $F(1,23) = 14.37$, $p = 0.001$, $\eta^2 = 0.38$), indicating higher ratings of valence, arousal, and attractiveness for pictures of the opposite sex (see Table 1). In summary, the results of the rating data correspond with the heterosexual orientation of the participants.

Table 1 Rating data for pictures

Gender of participants	Rating of appeal		Valence		Arousal		Attractiveness	
	Gender of models							
	Female	Male	Female	Male	Female	Male	Female	Male
Women	5.16 (0.26)	5.57 (0.35)	4.80 (0.41)	5.21 (0.38)	3.87 (0.48)	4.17 (0.51)	5.14 (0.35)	5.42 (0.42)
Men	6.11 (0.25)	4.82 (0.33)	5.46 (0.40)	5.15 (0.36)	4.62 (0.46)	3.99 (0.49)	6.19 (0.34)	4.95 (0.40)

Note: Mean and standard error (in brackets)

Eye-Tracking Data

The total contact time and the number of fixations indicated the amount of attention spent to each body region across the whole picture-presentation time of 4 s (see Fig. 1a for examples of scan paths). The latency of the first fixation provides information whether some regions did attract attention faster than others and the duration of the first fixation provides evidence about the capacity of a body region to adhere attention.

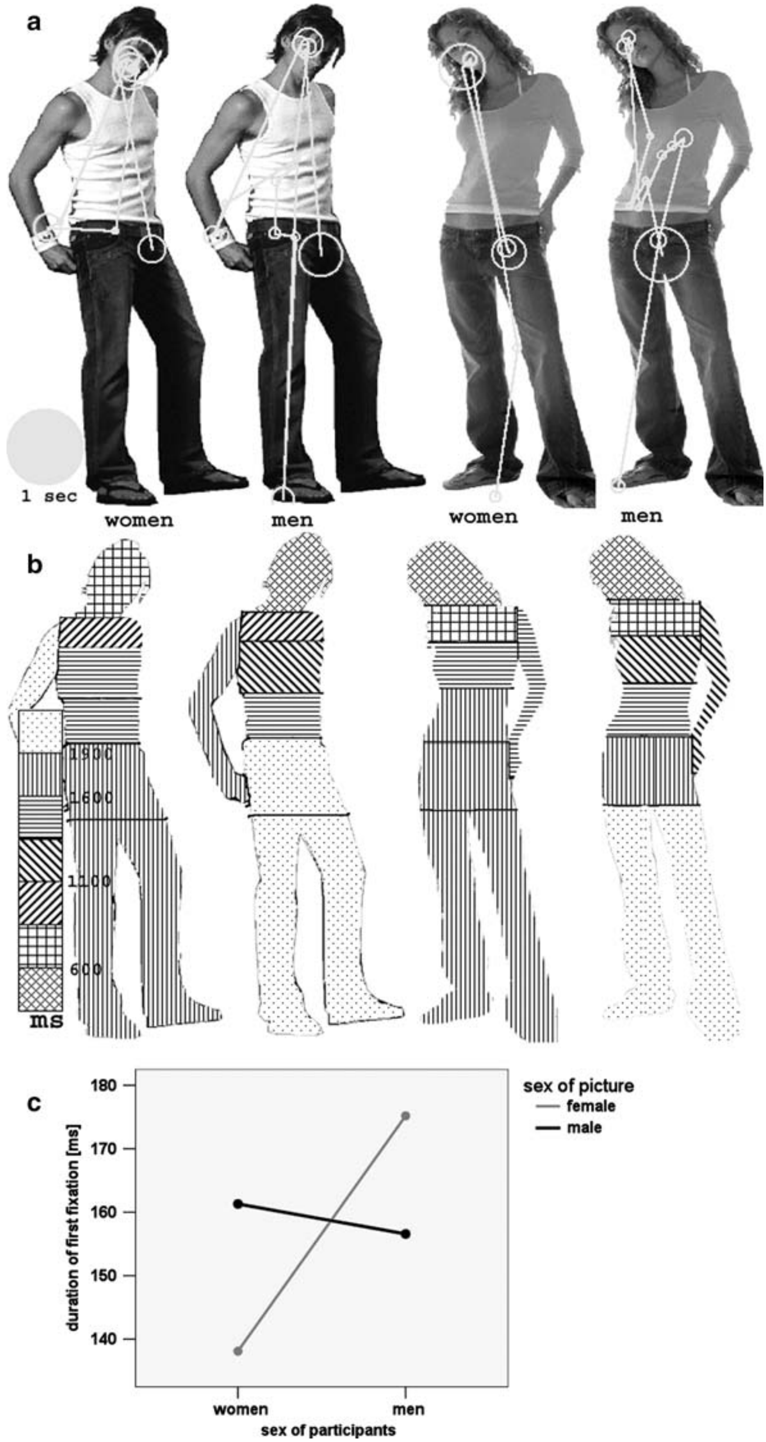
Total Contact Time and Number of Fixations

The ANOVA on the number of fixations revealed a significant main effect of region ($F(6,144) = 38.02$, $p < 0.001$, $\eta^2 = 0.61$) indicating most frequent fixations for the head/face region ($M = 2.13$) as compared to all other regions (M for shoulders = 1.88, breast = 1.41, waist = 1.34, hip = 1.02, legs = 1.02, arms = 0.38). In addition, there was a significant interaction of model gender by participant gender ($F(1,24) = 7.81$, $p = 0.010$, $\eta^2 = 0.25$, see Table 2), which was due to relatively more fixations within pictures of participants' own sex. Finally, there was a significant interaction of region by model gender ($F(6,144) = 3.59$, $p = 0.006$, $\eta^2 = 0.13$) indicating significantly more fixations within the shoulder regions of female models ($p < 0.005$). The three way interaction of region by model gender by participant gender was not significant ($F(6,144) = 0.93$, $p = 0.460$; see Table 2) and t-tests on the sex differences for each region did not reveal significant effects (all $p > 0.074$).

The ANOVA of the total contact time offered a significant main effect of region ($F(6,144) = 91.76$, $p < 0.001$, $\eta^2 = 0.79$) indicating the significant longest total viewing time for the head/face region ($M = 1431.67$) as compared to all other regions (M for shoulders = 302.92, breast = 255.28, waist = 271.90, hip = 242.10, legs = 330.33, arms = 96.77). In addition, there was a significant interaction of region by model gender by participant gender ($F(6,144) = 4.99$, $p = 0.007$, $\eta^2 = 0.17$; see Table 2). According to follow-up ANOVAs testing interactions of model gender by participant gender for each region, male and female participants more likely looked to the head/face region of models of the opposite sex longer as to models of the own sex ($p = 0.016$, see Table 2). In addition, male participants tended to look longer to the waist (and stomach) region of male models ($p = 0.012$). However, t-tests for each region did not reveal significant sex differences (all $p > 0.084$). Taken together, participants' general attention across the viewing period was preferentially directed to the face region of the pictures of male and female models, in particular to the face region of the other sex.

Latency of First Fixation and Duration of First Fixation

The ANOVA on the latency of the first fixation demonstrated a significant main effect of Region ($F(6,144) = 64.61$, $p < 0.001$, $\eta^2 = 0.73$) with participants fixating the head/face region significantly earlier ($M = 582.34$) than any other region of the models (M for shoulders = 858.26, breast = 1299.27, waist = 1538.79, hip = 1860.50, legs = 2054.23, arms = 1673.07). In addition, there was a significant main effect of model gender ($F(1,24) = 6.98$, $p = 0.014$, $\eta^2 = 0.23$, $M = 1364.71$ for female, 1454.28 for male) and an interaction of model gender by region ($F(6,144) = 5.23$, $p = 0.001$, $\eta^2 = 0.18$) suggesting significantly earlier fixations to female models, in particular to the arms of female models ($p = 0.001$, all other $p > 0.050$). Finally, there was a significant interaction of region by participant gender ($F(6,144) = 3.66$, $p = 0.003$, $\eta^2 = 0.13$). Follow-up tests


a
1 sec
women
men
women
men
b
1900
1600
1100
600
ms
c
180
170
160
150
140
duration of first fixation [ms]
sex of picture
female
male
women
men
sex of participants

◀ **Fig. 1** Gender differences of eye-tracking data. Panel (**a**) shows examples of the scan paths of one female (above the term "women") and one male participant (above the term "men") while viewing pictures of models presented in the study. The size of the circles indicates the duration of the fixation at that area of the picture (circle shows 1 s). Panel (**b**) shows tracking data for the latency of the first fixation and reveals shortest latencies for the face (squares), and earlier fixations of male observers to the breast region of male and female models (diagonals) as compared to female observers (horizontals). Female observers exhibit earlier fixations to legs of male and female models (verticals) as compared to male observers (dots). Panel (**c**) shows the average duration of first fixations of observers' scan path to the breast region of male and female models. Male observers exhibit significantly longer durations of first gazes as compared to female observers when looking at the breasts of female models

Table 2 Eye-tracking data for each region

Gender of pictures	Gender of rater	Number of fixations		Total contact time		Latency of first fixation		Duration of first fixation	
Region		Mean	SE	Mean	SE	Mean	SE	Mean	SE
Female pictures									
Face	Female	2.22	0.23	1355.28	162.07	519.55	27.89	690.34	103.21
	Male	2.01	0.18	1534.36	122.16	586.13	42.62	922.35	94.96
Shoulders	Female	1.98	0.16	329.23	42.17	844.83	96.10	154.87	24.84
	Male	2.01	0.18	334.67	42.53	757.32	94.16	139.34	8.68
Breast	Female	1.35	0.15	225.64	38.46	1509.25	91.80	138.11	9.45
	Male	1.33	0.11	264.00	34.39	1166.60	102.75	175.19	15.19
Waist	Female	1.25	0.10	253.13	25.85	1731.29	161.17	210.42	13.59
	Male	1.32	0.21	273.64	51.48	1394.83	115.83	197.23	19.03
Hip	Female	1.10	0.11	263.90	25.95	1798.69	118.37	226.07	13.62
	Male	0.98	0.14	256.82	54.12	1848.95	150.19	263.91	25.67
Legs	Female	1.21	0.15	349.85	46.06	1809.18	140.29	290.15	25.83
	Male	0.90	0.11	304.10	49.30	2436.90	105.90	354.91	32.88
Arms	Female	0.37	0.04	91.59	13.71	1415.15	188.76	263.33	36.14
	Male	0.36	0.05	123.18	18.23	1287.23	206.80	411.74	89.41
Male pictures									
Face	Female	2.18	0.22	1488.31	199.82	649.32	109.66	814.08	115.45
	Male	2.11	0.18	1348.72	94.15	574.38	61.29	785.37	92.43
Shoulders	Female	1.72	0.12	270.26	28.55	944.20	89.79	149.16	19.16
	Male	1.82	0.18	277.54	38.10	886.70	95.16	126.20	9.78
Breast	Female	1.31	0.16	227.69	28.94	1414.94	170.50	161.31	10.86
	Male	1.66	0.11	303.79	32.36	1106.26	108.99	156.57	10.39
Waist	Female	1.24	0.14	220.92	31.80	1552.80	144.14	169.65	8.59
	Male	1.57	0.21	339.90	55.25	1476.23	115.68	191.09	10.87
Hip	Female	1.03	0.13	234.15	43.32	1843.90	178.70	223.76	21.32
	Male	0.96	0.14	213.54	38.26	1950.48	108.32	221.91	22.39
Legs	Female	0.98	0.15	317.85	53.57	1884.37	126.35	346.68	29.17
	Male	1.01	0.12	349.54	35.76	2086.47	70.65	376.15	27.93
Arms	Female	0.34	0.05	72.21	8.97	2206.16	104.42	248.24	33.49
	Male	0.45	0.05	100.10	16.43	1783.74	138.37	222.18	16.21

Note: Mean and standard error (SE)

showed significant participant gender effects for the breast region ($p = 0.037$), and the leg region ($p = 0.003$). Male participants fixated the breast region earlier, whereas women fixated the leg region earlier (see Fig. 1b). A further *t*-test on the hypothesis of gender differences concerning the models' breast region revealed a significantly earlier fixation to females' breast region by male participants as compared to female participants ($t(24) = 2.49$, $p = 0.020$). This comparison was not significant for the breast region of male models ($p = 0.140$). For the leg region, *t*-tests revealed earlier fixations to females' legs by females as compared to males' ($p = 0.002$) and non-significant differences for males' legs ($p = 0.175$). However, it has to be noted that the three-way interaction of region by model gender by participant gender was not significant ($F(6,144) = 1.05$, $p = 0.387$). In addition, further *t*-tests for other regions revealed earlier fixations of men to the male arm region ($p = 0.023$). All other *t*-tests did not reveal significant participant gender differences (all $p > 0.103$). Taken together, male participants do generally fixate the breast region of models earlier than female participants, and male participants tend to fixate the breast region of female models particularly rapidly.

The ANOVA of the duration of the first fixation also revealed a significant main effect of region ($F(6,144) = 65.09$, $p < 0.001$, $\eta^2 = 0.73$) suggesting that the first fixations were significantly longer for the head/face region ($M = 803.03$) than for any other region (M for shoulders = 142.39, breast = 157.79, waist = 192.10, hip = 233.91, legs = 341.97, arms = 286.37). In addition, there was a significant interaction of model gender by participant gender ($F(1,24) = 8.28$, $p = 0.008$, $\eta^2 = 0.26$) indicating relatively longer durations of first fixations at all regions of models of the opposite sex. Yet, post hoc *t*-tests between single conditions failed to be significant (all $p > 0.050$). Finally, there was a significant interaction of region by model gender by participant gender ($F(6,144) = 3.11$, $p = 0.027$, $\eta^2 = 0.12$). In line with this interaction, a *t*-test on the hypothesis of gender differences concerning the models' breast region revealed significantly longer first fixations to females' breast region by male participants as compared to female participants ($t(24) = -2.07$, $p < 0.050$; not significant for male breast region: $p = 0.756$). This observation supported the hypothesis that male participants look at the breast region of female models significantly longer than females, while there is no difference between genders for the male breast region (see Fig. 1c). In addition, further *t*-tests for other regions did not reveal significant participant gender differences (all $p > 0.111$).

In summary, the eye movement data showed that as compared to other body regions models' face regions were scanned 275 to 1472 ms earlier, 1.1 to 5.6 times more often, 1101 to 1335 ms longer in total duration, and received 462 to 661 ms longer first fixations by both male and female observers. Obviously, the face region attracts attention particularly early and it is able to bind attention longer than other body regions. Furthermore, gender differences revealed that the attention of female observers was attracted earlier by the legs, whereas the attention of male participants was attracted earlier by the breast region—particularly when looking at females. Moreover, males' gaze was detained longer by females' breast region as compared to female observers.

Relations Between Subjective Ratings and Eye-Tracking Parameters

A correlation analysis was performed on the subjective ratings and their relation to the eye-tracking parameters separately for male and female participants and separately for male and female pictures. There were no systematic interrelations within the female subgroup. In the male subgroup a systematic pattern was found for the head/face region of both male and female pictures. Male participants who generally yielded higher ratings of appeal, attractiveness, valence, and arousal had a shorter latency and a longer duration of the first fixation, a longer total contact time and more fixations to the face. Thirty out of 64 correlations between ratings and eye-tracking parameters for the head region were significant and all 64 correlations showed the same direction (inverse sign for latency). The size of the significant correlations was between 0.58 and 0.81. Taken together, men with higher subjective positive emotional arousal showed increased attention to the face region across male and female pictures.

Discussion

The present findings corroborate the importance of the face for gaze behavior in humans. For example, mutual gaze behavior has been a focus of research for several decades in research on non-verbal behavior and has provided evidence that looking into each others' face and eyes is an important feature of social interaction and face-to-face communication between individuals (for a review see Hall et al. 2005). In everyday life, it is crucial to read and understand the emotions and intentions of significant others (e.g., Scharlemann et al. 2001) by focusing and following the dynamics of facial expressions and the directional dynamics of eye gazes (e.g., Haxby et al. 2001; Henderson 2003). For the male subgroup of participants, the data of the present study further show that higher positive emotional arousal increases attention to the face region indicating the readiness or motivation to communicate with others. In addition, our findings point to the importance of the face for dating and mating behavior. Significantly longer total viewing durations and significantly higher ratings of valence and arousal for pictures of the opposite sex suggest that participants of both sexes were specifically attracted by the face of models of the opposite sex. This observation supports recent results of a functional magnetic resonance imaging study suggesting that faces of the opposite sex are highly salient and positive stimuli for heterosexual individuals (Kranz and Ishai 2006).

The analysis of the latency of the first fixation further shows that male observers tend to look significantly earlier at the breast region of male and female models than female observers. This is in line with the evolutionary hypothesis that men's mating strategies may include the assessment of a potential female partner's breast size as an indicator of her reproductive capacity (Jasienska et al. 2004). Such a preference might result in a generally increased attention to the breast region. Moreover, male observers' first gazes at the breast region of female models revealed being significantly longer than female observers' first gazes to this area in the present study. Thus, men's gaze seems to be attracted generally earlier by the breast region and adheres longer to females' breast region, yet only after an initial face scan. The present findings are in line with recent data showing that men look more to the chest of sexually animated artificial figures (Johnson and Tassinary 2005). Recent eye-tracking studies further indicate that positive affective stimuli attract participants' gaze (Calvo and Lang 2004). Both aspects suggest that at least in Western cultures women's breasts are of significant interest for potential sex partners and might act as stimuli of positive valence, attractiveness, health, and reproductive capacity (Jasienska et al. 2004; Singh and Young 1995). It has to be noted here that our findings are restricted to the cultural context of Western societies and might turn out rather differently with participants of other cultures. Cultural norms, the presentation of male and female bodies in the media and in societies might have strong influences on gaze behavior (for cultural differences in communication, e.g., Elzinga 1978). The conclusion of the present study is further limited by the selection of stimuli. Only young, fit, and attractive target models were presented. In addition, still photos of course have limited external validity as compared to a real world encounter. Yet, Gullberg and Holmqvist (1999) showed that face-to-face interaction and video encounter elicited rather similar gaze behaviors toward observed gestures.

Our findings indicate that female observers fixate the leg region of male and female models earlier than men. This effect was particularly strong for legs of females. In addition, our findings also show increased attention of male participants to males' waist and arms. It might be speculated that these findings are based on some kind of rivalry and social comparison, yet further research is necessary to examine such effects with eye-tracking data using additional ratings of specific body regions, questionnaire measures of same-sex rivalry, or experimental manipulations of body shape, etc. Several findings support the importance of the waist to hip ratio for attractiveness (Singh 1993; Singh and Young 1995). We did not find any gender differences for the waist and the hip region in the present data (Singh 1995). It may be suggested that these regions are important for the assessment of attractiveness for both sexes and that we thus did not find any gender differences. Future research might further aim to provide data on the attractiveness of different body regions and the attractiveness of these areas as a function of age of the persons depicted and of the viewers. It would further be desirable to increase the ecological validity of such investigations by either using film clips or measurement of eye-movements during a true social interaction between individuals of both sexes in the laboratory. In summary, our data corroborate the importance of the face when we gaze at or encounter other people, and reveal gender differences that follow suggestions from evolutionary psychology.

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