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Abstract

We investigated the construction of gender in chat groups. Four unacquainted persons chatted in two gender-anonymous conditions and a non-anonymous control condition. In one anonymous condition, the gender focus was made salient. The other groups did not know about the gender focus. All participants had to guess the gender of the others and give reasons for their decisions. Results suggest that (a) overall, 2/3 of gender guesses fit the sex category of the targets, (b) gender anonymity was more comfortable for women, (c) participants used mostly gender-stereotypic cues to infer gender, however, men and women used syntactic, semantic, and pragmatic cues (with different predictive value) to different degrees, (d) conversational behavior varied depending on gender anonymity, and (e) degree of gender salience was irrelevant for the use of gender as an organizing category.

keywords: gender, language, chat, computer-mediated communication (CMC), small groups, stereotypes, cue analysis

Constructing Gender in Chat Groups

Traditionally, Western societies conceptualize gender[1] in a dichotomous and essential way, that is, as something a person *has* or *is*. Starting from a constructionist perspective, we followed a conceptualization of gender as something that people *do* on a day-to-day and moment-to-moment basis in social interaction, as a fleeting, transitional, and highly context dependent phenomenon (Deaux & LaFrance, 1998; Deaux & Major, 1987; Kessler & McKenna, 1978; West & Zimmermann, 1987). We assumed that large parts of how people construct and re-construct gender happen in face-to-face communication in daily interaction (Koch, 2004; Marecek, Crawford, & Popp, 2004), for example, in processes of verbal communication of power (Thimm, Rademacher, & Kruse, 1994) or nonverbal "visible acts of meaning" (Bavelas & Chovil, 2000, p. 163). At the same time, we do not neglect structural gender-related differences (Butler, 1991; Eagly, 1987; Kanter, 1977; Ridgeway, 1992, 2001). Nowadays, however, an increasing part of personal and professional interaction takes place via computer-mediated communication (CMC; Doering, 1999; McGrath & Hollingshead, 1993; Zumbach 2002). In this pilot study we investigated how the new media affect communicative gender construction under different degrees of gender salience (cf. Lott, 1995). Specifically, we looked at computer-mediated communication among four people who had not known or seen each other before entering into a split-screen ICQ-chat (in German). We distinguished three conditions: One non-anonymous (condition 1), where chat mates knew each other's middle names (all clearly identifiable as either masculine or feminine), and two anonymous conditions, where chat mates addressed each other by color labels. Of the two anonymous conditions, one was anonymous and gender non-salient (condition 2), where chat mates had no idea that the study was gender-related, and one was anonymous and gender-salient (condition 3), where chat mates knew they had to guess gender in the end, but were not allowed to ask about it. All participants had to guess the gender of the chat mates after

the chat. We focused on real and perceived differences in conversational behavior (analysis of participants' cue-utilization), differences in stereotypic perception, pleasantness of anonymity, and guessing success.

The *gender-in-context model* (Deaux & LaFrance, 1998; Deaux & Major, 1987), which was used as the pragmatic model for our investigation, describes how gender is communicated. Its three key elements are: the specific situation, the target person, and the actor. The latter two are understood as interchangeable roles that either person can take at any given moment. The model assumes that different situations make gender-related aspects either more or less salient. It then attempts to identify interrelated processes that can occur between two interacting persons. Into each interaction, people bring their individual goals, their general convictions and gender-related belief systems, and their personal and learned gender-related self-concepts. As a consequence, there is a tendency to confirm the gender-related expectations of the other person. The perception of the behavior becomes biased by the expectations one holds ("cognitive bolstering", cf. Snyder, Tanke, & Berscheid, 1977; "cognitive confirmation", Darley & Gross, 1983). The expectation-guided behavior of each person induces certain reactions from the other person, and can easily lead to "self-fulfilling prophecies" (Merton, 1948) or "behavior confirmation" (Snyder et al., 1977).

Moreover, actors try to keep their gender-related self-concepts stable by displaying consistent behavior ("self-verification", e.g., Swann, 1983) and by interpreting outside information in accordance with that gender-related self-concept. At the same time, each interaction creates a certain social reality, in the context of which subsequent behavior is guided by potential reinforcement from the other person (e.g., Baumeister, 1982; Eckes & Trautner, 2000; Goffman, 1994).

Doing Gender in Computer-mediated Communication (CMC)

One obvious difference between communication via computer and face-to-face communication (FTF) is that with the computer we do not immediately see those with whom we are interacting. Unlike the FTF communication situation, if we do not know the person already, we depend entirely on the information transmitted via text. In computer-mediated communication, we lack certain essential information that is normally self-evident in FTF communication (Allen, 1995): perceptions of age, gender, race, personal style, and signs of status or attractiveness. All we typically see on the computer screen is text, as was the case in the chat exchanges we used in the present study (Mueller, 2001).

These circumstances raise several questions in the context of gender-related interactions. Do the suggestions of Garfinkel (1967) or Goffman (1994) that gender is an omnirelevant category in communication also apply to CMC contexts? Some researchers have expressed strong expectations about the internet as a potentially liberating force that can help us to overcome inequalities derived from sex, race, physical ability, and social class differences (cf. Danet, 1998; Turkle, 1998). There is, for example, a surprising number of people who – although generally not interested in cross-dressing - experiment with their gender identity on the Internet or other CMC contexts with different motivations and degrees of success (Danet, 1998; Doering, 1999, Turkle, 1998). However, some authors, such as Crowston and Kammerer (1998), who investigated the amount of participation in CMC-group discussions in a work context, have expressed skepticism about the equalizing potential of CMC. Their results suggest that men and high status persons contribute significantly more to discussions than other participants do - even in a condition where participants were allowed to use pseudonyms. In the pseudonym condition, they also found that people who usually say nothing actually participated in the discussion. Other authors have described the very same gender-stereotypic processes for Internet communication as for “normal” FTF communication (Herring, 1996a, 1996b; Thomson & Murachver, 2001). Herring conducted

linguistic studies on gender-specific language use and communication styles. Results in general coincide with the behavioral tendencies usually found in FTF interactions (for an overview see Hannah & Murachver, 1999). Herring (1996a) described women's linguistic style as "reassuring/soothing" and "supportive", and men's style as "aggressive". Herring attributed symbolic function to these styles because they help the observer to make inferences about the gender of the actor. Herrschel (1994), however, did not find these linguistic styles in his studies. Moreover, participants in Savicki, Kelley, and Oesterreich (1999) and Mulac's (1998) investigations were not able to predict the sex of the author of a certain descriptive text at a rate any better than chance (but see Mulac, 1998, for details of differences that depend on measurement issues).

In view of these contradictory results, it seems worthwhile to take a closer look at the factors that might be relevant to gender-related aspects of communication in different situations and at the potential explanatory contribution and context specificity of different theories about gender. Moreover, the empirical study of CMC seems to offer a good forum for learning about the usually unquestioned aspects and structures of our everyday knowledge and actions in FTF communication, in particular, the processes by which gender is continuously constructed. The present study is a step in this direction. The following questions are of interest:

- How does gender anonymity influence communication?
- Does the postulated "omnirelevance of gender" (Garfinkel, 1967; p.118) manifest itself in all conditions? If so, how? Do participants implicitly or explicitly refer to gender?
- Do participants form hypotheses about the gender of the co-participants on the basis of language and communicative behavior? If so, which criteria do they use?
- How often are the hypotheses correct, and upon what does the accuracy depend?
- How do participants perceive one another on gender-stereotypic traits?

Putting Gender into CMC Context – an Application of the Gender-in-context Model

Some researchers have argued that, independent of the consequences of gender anonymity, CMC conditions generally reduce the degree of social control people experience (Jessup, Connolly, & Tansik, 1990). The arguments of Jessup et al. (1990) in their "theory of anonymous interactions" led us to expect that, in CMC, some individuals would adapt less than others to the social norms of interaction (including gender-related norms). As far as their gender-related self-concept is concerned, however, we assumed that all participants would stick to some of their usual (gender typical) behaviors in order to display identity-related coherence or self consistency. Moreover, we assumed the specific situational context to be relevant.

We aimed to select a gender-neutral topic that was relevant to first semester psychology students and chose the question: "Do many students study psychology to overcome their own problems?" The topic did not turn out to be absolutely gender neutral. Both women and men tended to expect women to treat the question rather seriously and empathically, and men to treat it rather humorously. Expectations of participants, however, did not always prove to be correct.

We tested the following hypotheses:

H1: In all conditions trait-ratings will correspond to the gender-assumptions (gender-hypotheses) of participants. That is, that (assumed) men would be identified by stereotypic traits such as *dominant* and *analytic*, and that (assumed) women would be identified by traits such as *cooperative* and *emotional*. *In the non-anonymous condition we expected effects to be more pronounced than in the anonymous conditions.*

Participants' estimates of *the influence of others' contribution* on their own opinions and the *quality of the others' argument* both served as estimates of the *competence* of the other person. *Expectation states theory*[2] (Berger, Connor, & Fisek, 1974) argues that gender is a diffuse

status cue, so that, in the absence of other competence cues, men are expected to be judged as more competent than women. This is the basis for Hypothesis 2:

H2: Participants will perceive a greater influence and higher quality of arguments for male than for female participants in the non-anonymous condition.

On the performance level, we tested the active participation (in Hypothesis 3):

H3: Men will talk more than women in the non-anonymous control condition, and there will be a smaller difference in the same direction in both anonymous conditions. Following Noller and Fitzpatrick (1988) we expected that men would talk more in public contexts. The chat situation was considered a public rather than a private situation. According to previous research, however, one can infer at least two contrasting outcomes based on different theoretical premises, and empirical evidence seems to contradict some theoretical explanations (Bhappu, Griffith, & Northcraft, 1997; but cf. Crawford, 1995). Following Crawford (1995) we might expect that, in mixed-sex groups, the quantitative contribution of women would be smaller, but would be seen as equal to the quantitative contributions of men. The respective theoretical premise is that people do not even notice when women talk less than men. Alternatively, we might expect the actual quantitative contribution of women to be just as high as that of men, but to be perceived as smaller. The theoretical premise here is that the actual inputs of women receive less attention than those of men do (Bhappu et al., 1997). Finally, we expected the following difference between the two anonymous conditions.

H4: There will be more gender-related communication in the gender salient condition than in the non-salient condition. Within the gender-anonymous conditions, we expected participants in the gender-salient group to follow a more active conversational strategy to try to find out about the gender of their chat mates. It would also be interesting whether, in the non-salient group, there would be participants for whom gender is not at all a relevant category (cf.

Hall & Carter, 1999). If high salience of gender makes a difference in the direction postulated in Hypothesis 4, it would be evidence that gender functions as an organizer primarily under gender-salient conditions (non-salient conditions would be a more or less gender-free space). If gender salience does not make a difference in the expected direction, it points to the omnipresence of the gender category, at least within contexts such as those studied here. In order to avoid an artificial activation of the gender category in any of the conditions, we posed the open-ended questions first and the directly gender-related questions last.

Method

Sample and Design

Participants (n=62) were recruited mainly from the incoming first semester psychology class of fall, 2000. Twenty men and 42 women participated in this study[3]. Participants worked in groups of four people (either two men and two women or four women). They discussed the assigned topic (i.e., "Do students study psychology to overcome their own problems?") for about 25 minutes via ICQ computer chat. Distribution to specific groups was done by assigning each student to a group meeting time that fit both their schedules and ours.

Groups were then randomly assigned to one of three conditions. In the *first condition* (non-anonymous; n=20), participants were asked to present themselves by their middle name. All middle names clearly indicated the gender of the person. Participants in this condition accepted the other participants' gender as a given and assumed that their own gender was known to others as well. In the *second condition*, the gender-anonymous and gender non-salient group (n=22), participants were given the topic of discussion, and were asked to only use color labels to address the other participants. No additional rationale was provided for the use of the color labels. In this group participants knew neither the gender of the others nor that gender was a relevant aspect of the study. We were curious about whether and when during the discussion participants gender

would come up as a topic. In the *third condition*, the gender-anonymous gender-salient group (n=20), participants were told that they would communicate using color labels. Yet, gender was made salient from the beginning by telling participants in the third condition – and only those participants - that they were not supposed to ask each other about sex or gender because they had to guess the gender of their group mates later on. We were interested in the strategies participants would develop to find out about the gender of their chat mates. We assumed that participants in this condition would use more active strategies to investigate gender.

Materials and Procedure

Participants were given written instructions that told them that the aim of the study was to compare face-to-face discussions and discussions via the Internet. Participants were each instructed individually, and they did not know who or where the other participants in their chat group were. A researcher or a research assistant was present who could be addressed if participants faced any technical difficulty or had any questions throughout the chat. Participants communicated in a synchronous manner from different rooms in the psychology department. Each participant worked on a single computer with the screen partitioned into four parts, each of which had a color label, on which they could follow participants' contributions, including their own, as they were being typed in real time. Participants were assigned their color labels and told to address each others only by these labels (i.e., "Yellow," "Red," "Green," and "White"). Those in condition one also had partitioned screens but the sections were labeled with participants' middle names, which they used to address each other. After the 25 minute chat discussion answered written questions on (1) how they experienced the anonymity of the situation (open ended and rating scale from 1 "very unpleasant" to 4 "very pleasant"), (2) whether they missed specific information about the other participants (open-ended; coded for the fact whether gender was mentioned), (3) whether that lack of information influenced the discussion in any way (open-

ended), and (4) what image they had of one another (short, open-ended descriptions of how they imagined the other persons to be).

To examine questions about the influence of gender-anonymity on gender perception and communication, the two gender anonymous conditions were compared to the non-anonymous condition. Here, we were particularly interested in differences in members' *mutual perceptions* of chat mates, an important aspect with potential influence on gender-related behavior (Deaux & Major, 1987). Participants were asked to judge the following traits of their chat mates', including themselves (eight items on five-point rating scales from "very much" to "not at all"): *(a) analytic/task-oriented, (b) cooperative/supportive, (c) displays emotions, (d) pleasant, (e) quality of argumentation, (f) talks a lot, (g) influence on opinion of others,* and *(h) assertive/dominant*.

In the anonymous conditions, participants were asked about the gender of their chat mates and whether they had already developed their gender hypotheses during the discussion. In the control condition, they were asked what gender they would have guessed each chat mate to be if they had not known their names. Their *subjective confidence* in those judgments was assessed by administering a four-point rating-scale from 1 "not at all confident" to 4 "very confident" directly after each gender guess.

To obtain a content-analytic assessment of the cues they used to infer gender, we provided participants with a print-out of their chat text and asked them to indicate which cues they had used to identify the other persons' gender. We then classified these cues into syntactic, semantic, and pragmatic indicators (Merten, 1995) using the following definitions:

1. Syntactic Cues: Hints from language and grammar, e.g., sentence construction, use of certain expressions, and use of certain grammatical forms. For example, high use of softeners or hedges such as "kind of/sort of" or intensifiers such as "really/truly", indicates a woman.

2. Semantic Cues: Hints taken from direct content-related text parts. Descriptions of profession or hobbies, certain experiences or interests, for example, interest in statistics / motor sports indicates a man, whereas always wanting to become a nurse indicates a woman.

3. Pragmatic Cues: Hints from conversational behavior, style, arguments and relational behavior. For example, cracking jokes indicates a man; listening carefully indicates a woman.

This method allowed us to examine language-related gender construction processes in an almost pure way, that is, uncontamined by other variables such as nonverbal cues. Participants were supposed to mark with a highlighter each part of the text that offered a clue to gender and to write their gender guess and its cause in the margin (see Figure 1). In the non-anonymous control condition, we asked participants whether they would have been able to determine the gender of the others from some of the text passages without having known each other's gender, and, if so, which would have been their criteria.

Variables and Control Variables

The *independent variable* of the experiment was gender salience condition (three levels: 1. anonymous condition, gender non-salient; 2. anonymous condition, gender salient; 3. non-anonymous control group). *Dependent variables* were: 1. participants' ratings of their chat mates' traits (eight items) and gender; 2. the number of words per contribution; 3. the pleasantness of gender anonymity; 4. syntactic, semantic, and pragmatic cues in the chat discourse used for gender identification (qualitative cue analysis) as well as gender hints in the discourse (content-analytic procedure). In addition, *gender of participant* served as another independent variable for the analyses *experience of gender anonymity*, *amount of talk*, and the *cue-analysis*.

In order to control the course of the experiment we followed McGrath (1984) and McGrath and Hollingshead (1993) who argued that four classes of variables can influence group interaction and performance and, thus, are able to contribute alternative explanations to the

differences observed. These are: 1. attributes of the individual; 2. aspects of the group; 3. aspects of the task; 4. Aspects of the environment or context.

For *individuals* we controlled *typing skills, chat experience, interest in discussion topic,* and *age*. Regarding the aspects of the *group* (e.g., relations between group members, group structure, group composition) we controlled potential recognition of chat mates by a question in the final questionnaire. In each condition, there was at least one group of four women. However, only groups that were made up of two men and two women were included in the final data analysis, following Kanter's numerical proportion model (Kanter, 1977). According to Kanter the manifestation of gender stereotypes depends on the gender composition of the group: a small minority is stereotyped more strongly than is a demographic category with a larger representation in the group. We tried to eliminate influences of the *task* by choosing a gender neutral topic (unfortunately we were not entirely successful). Influencing aspects of the *environment or context* could have been gender differences among experimenters. In this experiment, except for one male, almost all persons involved were women. It is, thus, possible that men perceived themselves as being in the minority. In addition, participants theoretically knew the *base-rates* of men and women in the population of the student cohort (17% men in the first year psychology class). We asked about the influence of this knowledge in the debriefing, and it did not play a role except for one participant. In fact, the majority of the participants did not assume that they had talked to people from their cohort.

Results

Control Variables

Table I presents means and standard deviations of our sample with regard to the control variables *age, chat experience, interest in the discussion topic*, and *typing skill*. Apart from age all variables were assessed by self-ratings on a four-point scale.

Differences in means between women and men were tested regarding their statistical significance. Conditions for an ANOVA were met (cf. Bortz, 1993), except for homogeneity of variances in the anonymous gender-salient condition. In the non-anonymous control condition, as well as in both gender-anonymous conditions, the Levene-test resulted in homogenous variances of at least $p < .20$ for 11 of 12 cases. An exception was *chat experience* in the gender non-salient condition. With a probability of $p < .001$ the self-rating of chat experience had a much greater variance within the group of men than within the group of women, which most likely resulted from a "floor-effect" as women's ratings were all extremely low. We consequently applied an ANOVA for non-homogenous variances and corrected the degrees of freedom in the case of *chat experience* in the non-salient condition. Overall, statistically, men and women did not differ significantly on the control variables in any of the conditions, nor were any of the interactions significant (condition by gender). In addition, differences between men and women were non-significant in all three conditions. There were, however, some potentially meaningful differences, which we considered during the course of our analyses (see Table I).

Results of Hypothesis Testing

H 1: For statistical comparison, group mean values were computed for all gender-hypotheses related to men and women separately for each participant (see Table II). An ANOVA revealed two significant differences between conditions in *perception of chat mates on stereotypic traits* due to true gender vs. gender hypothesized. Men's *cooperativeness and support* was rated to be lower (stereotypic direction), $F(1,45)=16.0$, $p < .001$, and $eta^2 =. 26$, when gender was known. Women's *quality of argumentation* was rated higher when gender was known (counter-stereotypic direction), $F(1,45)=5.7$, $p < .05$, and $eta^2 =. 11$ (for all means see Table II.). *Quality of argumentation* and *influence on opinion of others* were used as indicators for competence.

H 2: Participants did not perceive a greater *influence* and higher *quality of arguments* for male than for female participants in the non-anonymous condition. In fact, a significant effect in the opposite direction emerged. Women were attributed a higher quality of argumentation than men when gender was known, *Rao R* (4.88) = 2.49, $p < .05$, in an ANOVA with repeated measurement. This effect could be due to the choice of a discussion topic with different expectations regarding the contributions of men and women. *Quality of argumentation*, in this situation, might have been associated with taking the topic seriously, which, according to the results of the content analysis, was expected more from women. Only in the anonymous conditions did we find an effect in the assumed direction: in the third condition influence of men was rated higher than influence of women ($p < .05$).

H 3: Men did not talk more than women in the non-anonymous control condition. No significant effects emerged for H3. A comparison of means shows that the tendency was for men to talk more in the non-anonymous, and for women to talk more in the anonymous, conditions.

H 4: In the gender salient condition, we expected to see more gender-related communicative processes than in the non-salient condition. The hypothesis was not confirmed: the lack of gender information was mentioned in the non-salient condition as often as in the salient condition, and there was approximately the same amount of highlighted text parts in both conditions. Participants in the salient condition asked slightly more semantic or content-related questions in order to get more gender cues, but over and above this strategy did not improve their guessing success. The fact that there were no significant differences between salient and non-salient condition suggests that gender as a category is omnipresent in communication (cf. Garfinkel, 1967; Goffman, 1994).

Besides the specified hypotheses, we also were interested in the perceived role of gender anonymity, the correctness and details of gender guesses, and, especially, in the cue utilization of participants, that is, their communicative construction of gender from conversational cues.

Gender Anonymity

How does gender anonymity change the perceptions of participants? How pleasant or unpleasant was anonymity experienced? Judgments of *pleasantness of anonymity* (four-point rating scale from 1 “very little” to 4 “very much”) did not significantly correlate with any of the control variables. In the mixed-sex groups, the average judgment in the non-anonymous condition was $M = 1.84$ ($n = 16$; $SD = 0.74$), in the gender-anonymous conditions it was $M = 2.44$ ($n = 19$; $SD = 0.76$) for the gender non-salient condition and $M = 2.24$ ($n = 19$; $SD = 0.77$) for the gender salient condition. The likelihood that the means stem from the same population is $p < .025$ for control group and non-salient condition and $p < .034$ for control group and salient condition. Gender-anonymous and non-anonymous groups differed significantly, with a main effect of $F(43, 2) = 8.45$, $p < .034$, and $eta^2 =. 42$, but there were no significant differences between the two gender anonymous conditions. Overall, participants in the gender-anonymous discussion groups evaluated the situation as significantly more pleasant than did participants in the non-anonymous control condition. In all three conditions, the mean judgment of women was higher than that of men, but those differences were not statistically significant.

Gender Guesses / Hypotheses

(a) Gender hypotheses in the gender-anonymous conditions. Of the 80 gender hypotheses produced in the two gender-anonymous conditions, 53 were correct, and 27 were incorrect. Thus, guessing accuracy was significantly higher than chance ($p < .02$), with a higher percentage of correct hypotheses than in the results of similar studies (Mulac, 1998, but see also Thomson & Murachver, 2001). The percentage of correct and incorrect guesses was equally distributed

between men and women. With the same-sex groups included, the ratio of correct guesses remained at two-thirds, and the probability level reached $p < .018$. In the mixed-sex groups of both gender-anonymous conditions a woman was correctly guessed to be a woman in 31 cases, whereas she was incorrectly guessed to be a man in 11 cases. Within the same-sex groups a woman was incorrectly guessed to be a man in one-third of the cases. A man was correctly guessed to be a man 22 times, yet was incorrectly guessed to be a woman 16 times. Generally, hypotheses about women were wrong in 26%, and hypotheses about men in 43% of the cases.

(b) Gender hypotheses in the non-anonymous control condition. For reasons of comparison between conditions, participants in the non-anonymous control condition were asked what their gender hypotheses about their chat mates would have been, if they had not known their gender. In the mixed-sex groups, 80% of the participants were confident that they would have guessed the gender of the other participants correctly. With the same-sex groups included, participants assumed they would have guessed the gender correctly in 77% of the cases (women 75%, men 78%). If we take the ratio of correct gender hypotheses in the gender-anonymous conditions as a probable base-rate, it seems that participants in the non-anonymous control condition overestimated their guessing abilities.

Subjective *confidence in judgments* did not play a role either in the non-anonymous or in the anonymous conditions. With the same sex-groups included, women were correctly guessed 17 times and incorrectly guessed 5 times in the non-anonymous condition. Men were correctly guessed 16 times and incorrectly guessed 5 times. Generally, men and women were correctly guessed in 77% and 76% of the cases respectively.

Cue Analysis

Which semiotic cues did participants use to identify the gender of their group mates? At the end of the experiment, participants received a print-out of their chat texts. They were asked to

highlight cues that they had used to infer their gender hypotheses, or that generally provided hints about the gender of the chat mates. They were asked to identify for each highlighted part (a) to which gender the highlighted text pointed, and (b) why that was the case. An example is given in Figure 1. We categorized the highlighted semiotic cues into syntactic, semantic, and pragmatic cues (Koch, 2004; Merten, 1995), as defined in the method section. The following paragraphs give examples of cue utilization by participants and their correctness in all three categories.

Syntactic Cues: Use of softeners or hedges, "kind of/sort of" (German "irgendwie"), intensifiers "really/truly" (German "wirklich"), high use → must be a woman. *Examples: strong language → man (correct); uses intensifiers → woman (correct); talks a lot → woman (incorrect); uses male and female version of "student" (2x) → woman (correct); uses colloquial language → man (correct); uses complex sentence structure → woman (correct); politically correct language → woman (correct).*

Semantic Cues: Typically masculine interests (e.g., statistics, motor sports, doing voluntary work at the fire department) → must be a man; typically feminine interests (e.g., always wanted to become a nurse) → must be a woman. *Examples: "I am looking forward to stats" → man (correct); "doing therapy gives one the sensation of power" → man (correct); math and biology interests → man (incorrect); interested in organizational psychology → man (incorrect); "at the weekend I'd rather be in front of the computer" → man (incorrect); computer interest → man (incorrect); dancing as hobby → woman (2 x correct); talks about car races → man (correct); talks about making money at the car races → man (incorrect); "I recently read a book …" → woman (correct); "talking to friends" → woman (correct).*

3. Pragmatic Cues: Hints from conversational behavior (e.g., cracks lots of jokes → must be a man; listens carefully → must be a woman). *Examples: understanding → woman (correct); sensitive → woman (incorrect); serious → woman (correct), aggressive → man (correct);*

aggressive → man (incorrect); helpful → woman (correct); self-confident → woman (incorrect); wants to flirt, searches contact → man (2 x correct); talks a lot/"bullshits" → man (correct); "mothering" → woman (incorrect); assertive → man (2 x correct); emotional → woman (3 x correct); emotional → woman (2 x incorrect); rational → man (2 x incorrect); insecure → woman (correct); open → woman (3 x correct); "sorry", apologetic → woman (incorrect); romantic → woman (incorrect); self-ironic → woman (correct); making fun of another person → man (correct); brief, structured → man (incorrect); direct, tries to take leadership → man (incorrect); cynical → man (incorrect); reflecting, person-oriented → woman (correct); knows everything better → woman (correct); sensitive, shows solidarity → woman (correct); helper syndrome → woman (correct); cordial expression → woman (incorrect); dominant → man (incorrect); self-confident → man (2 x incorrect).

Table III shows the results of cue use for both anonymous conditions, including all groups (same-sex and mixed-sex). Note that the least used *syntactic cues* had the best predictive value. For example, 'using both gender forms in addressing people' was the best predictor for women (e.g., using "*Student/In,*" the language-fair German term that includes both male and female students; as opposed to "*Student,*" the masculine term, or "*Studentin,*" the feminine term. The term "*Student*" is often used generically as the non-language-fair term for both sexes). 'Using strong language' was the best predictor for men. The specific syntactic cues used led participants to a success rate of > 88% (see Table II). However, it was almost only women who made use of syntactic cues. Only one man of 17 participants used a syntactic hint (specifically: *uses strong language* → must be a man). *Semantic cues* had the least predictive value. People, for example, talked about 'interest in statistics' and usually inferred a man based on statistical interest. However, the predictive value of this cue was no better than chance (50%), as were, on average, all the semantic cues people used. The by far most often used *pragmatic cues* had a predictive value

of 63%, which parallels the average guessing probability. Note that man were more accurate than women when using pragmatic cues (men 72%, women 54%), which one might have assumed to be the other way round (following, for example, Hall, 1984). All participants used mostly stereotypic conversational behavior to infer gender from pragmatic cues. Paragraphs that suggested assertive or aggressive behavior were mostly used to infer a man, paragraphs that suggested emotional or sensitive behavior were mostly used to infer a woman.

Discussion

This study was based on a conceptualization of gender as a social construction, as something that we do not *have* but *do*, e.g., by language use in social interaction. Results suggest, first, that gender anonymity within the chat situation is generally more comfortable for women, which is not surprising given that gender role expectations are usually experienced as more restrictive by women (cf. Jaffe, Lee, Huang, & Oshagan, 1995). Second, we found that there was a better-than-chance-probability for correctly guessing the gender of group mates. About two-thirds of the gender guesses of men and women fitted the sex category of the targets independent of condition. This is a comparatively high percentage (Mulac, 1998).

Third, regarding *cue-utilization*, we found that participants not only used a lot of idiosyncratic cues, but also a lot of gender stereotypic cues, as the basis for inferring others' gender. In all conditions, stereotypes influenced evaluations. Some stereotypic traits systematically led to over- or underestimation (Swim, 1994); for example, the mention of content-related stereotypic traits, such as professional interests or hobbies, often led to an incorrect gender hypothesis, whereas certain syntactic markers (e.g., the use of strong language, or the use of feminine as well as masculine word forms) and certain pragmatic markers (e.g., supportive conversational behavior as a basis for inferring a woman, competitive behavior as a basis for inferring a man), often led to a correct gender hypothesis. Of all cues used to infer gender, *syntactic cues* were the

least used (14%), but had the best predictive value (88% success rate). Almost all users of syntactic cues were women. S*emantic cues* were used in 15% of the cases, but had the least predictive value (50%, no better than chance). *Pragmatic cues* were used in 70% of the cases and had a predictive value of 63%, which was also the average guessing probability. Utterances that included assertive or aggressive behavior were mostly used to infer a man, whereas those that included emotional or sensitive behavior were mostly used to infer a woman. The women in our sample were significantly more sensitive to syntactic cues, the most accurate cues for gender prediction. Due to the small numbers of use of syntactic cues, however, this effect needs testing in further studies.

In the gender-anonymous conditions, women and men were judged more similarly than they were in the non-anonymous condition. The fact that there were no significant differences between the gender salient and non-salient conditions suggests that gender as a category is omnirelevant (Garfinkel, 1967) and automatically assessed in the process of each interaction. As expected, gender-salience had a small influence on active strategy use in conversation. For example, participants asked interest and hobby questions, such as "do you like Schumi (Michael Schumacher)?" However, as we have seen, semantic cues did not really have any predictive value, and, thus, in the end were not of any use to the participants who chose this strategy. The notion of the relevance of gender as an organizing category for perception of interaction corresponds to findings from Markus and Oyserman's study (1989) on self and other-related concepts.

The chat occurred in German and we should ask ourselves whether the effects could potentially be tied to the German language in particular. Generally, German is a more gender marked language than English; it uses, for example, masculine and feminine determiners and suffixes (grammatical gender in German versus natural gender in English). Although we cannot

entirely exclude that the German language leads to a higher percentage of correct gender categorizations, we would caution against such a view, as systematic gender biases have also been found in absolutely non-gender marked languages such as Turkish (Braun, 2001). However, systematic cross-language studies are missing from the literature.

In our discussion, we should not lose sight of the special conditions of CMC contexts. Following the assumptions of Sproull and Kiesler (1986), Kiesler, Siegel, and McGuire (1984), Dubrowsky, Kiesler, and Sethna (1991), and Dennis, Kinney, and Hung (1999) we can assume that the pressure to display norm-oriented behavior is considerably lower in CMC-situations than in FTF contexts – independent of whether gender is known or unknown to discussants. But this assumption is also subject to scientific debate and needs to be explored more specifically in further studies. From this perspective, however, gender stereotypic expectations should play a lesser role in CMC than in FTF communication, whereas in "normal everyday situations" our behavior and perception are far more influenced by gender-related expectations. Yet, the impact of gender on these situations varies considerably. Gender is always constructed within a concrete situation, which varies due to a complex interplay of perceptual and behavioral processes. These processes can re-construct gender, but they also include the potential for change. In the present study, gender anonymity was experienced as significantly more pleasant than non-anonymity. To what degree gender stereotypic expectations, toward ourselves and others, will shape or restrict our perceptual and behavioral possibilities is strongly influenced by the specific context.

Methodological Considerations that Result from Trait-ratings

Men's *cooperativeness and support* was rated lower when gender was known. And women's *quality of argumentation* was rated higher when gender was known. Lower ratings of men's *cooperativeness and supportiveness* may have resulted from the stereotype as well as from men's actual conversational behavior. Stereotypic perception possibly outweighs the behavioral

explanation here as there are not many hints about men's cooperative/supportive behavior from the content analysis of chat texts. The higher ratings of women's *quality of argumentation* could perhaps be explained by the fact that the discussion topic was not experienced as entirely gender-neutral by participants. According to results of the content-analysis women were expected to take the discussion topic more seriously and react more openly to it. The discussion topic was, therefore, slightly biased toward a feminine task direction. Thus, following predictions of *expectation states theory* (Berger et al., 1974), women should be rated as more competent than men regarding this topic. Despite the higher *quality of argumentation* and more analytic reasoning attributed to women, influence on the opinion of others was evaluated lower for women than for men, though not significantly. The fact that the influence of women was not rated higher even though their quality of argumentation was rated higher can be explained by the general tendency to use gender as a diffuse status cue (Berger et al., 1974) and to assume higher status and more influence for men (Eagly, 1987; Eagly & Karau, 2002). Although the actual gender of a participant was not important for the trait judgments, the hypothesized gender was clearly related to participants' evaluations by chat mates.

It is more difficult, though, to explain the *similarities* in ratings on, for example, "dominant/assertive," "talks a lot," and "displays emotions". One possible explanation for the discrepancies between our findings and the general gender stereotypes may be found in the main assumption of the *shifting standards model* (Biernat & Fuegen, 2001; Biernat & Manis, 1994). That model assumes that participants do not use the same standards for the judgment of men and women. The use of subjective scales, as in the present study, can lead to a differential anchoring of those scales depending on the target of judgment (here the hypothesized and actual gender of participant). An identical amount of displayed emotion could thus lead to a higher rating for men than for women. Such a shift of standards may have occurred when gender was known (non-

anonymous control condition). Moreover, the "assumed gender" in the other conditions may have operated in the same way. Thus, predictions of the shifting standards model would have supported our hypotheses. Whether the effect of the known gender of participants on the judgment of their communicative behavior is related to observable behavioral differences can not be answered conclusively (even though there are some hints that support this assumption). In fact, these processes are interwoven on many levels. In the end, the behavior of men and women did not differ fundamentally, but was to a large degree flexible and context dependent. Effect sizes of gender differences were low throughout. Non-gender individual factors played a much more prominent role than did gender, even when gender was known. For example, *interest in the discussion topic* had an important influence on the judgments of the others. One problematic aspect of the study was the fact that it was done in groups of four. Although this group-design increased external validity, it also made it difficult to tell whether results were due to participants' own genderedness or to the way the others influenced them. Overall, the pilot study was only a partially successful way to answer the questions posed in the introduction. The cue analysis, on the other hand, brought unexpected interesting results regarding gender construction processes and should therefore be followed up in further studies.

In sum, our results suggest (a) an important role of gender expectations, despite the potentially reduced normative pressure in CMC, that was revealed particularly by the qualitative analyses (cue-analysis), (b) the omnipresence of gender as a category independent of gender-salience in experimental condition, (c) the influence of anonymity on gender-specific perception, (d) a comparatively high accuracy of guessing (>63%) from non-standardized online CMC communication, and (e) the conversational relevance of gender-stereotypic syntactic, semantic, and pragmatic cues, for inferring gender. Results of verbal cue analyses indicated that all participants used gender stereotypes, but that they used semiotic cues differently depending upon

their own gender and the assumed gender of their chat mates. Syntactic cues had the highest predictive value in the inference of gender, but were the least used, and almost exclusively by women. They were followed by pragmatic cues, whereas semantic cues, which participants assumed to have the highest diagnosticity for gender differentiation, left them at chance level of guessing gender correctly. Overall, a great portion of behavioral variability was also due to factors other than gender. However, our results underline the relevance of language in gender construction and the omnirelevance of gender as an organizing category in social cognition.

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Table I.

Descriptive Values of Gender Differences on Control Variables (Age, Chat Experience, Interest in Topic and *Typing Skills;* Self-ratings on Four-point Rating-scales).

		N	Mean	SD	Std. Error Mean
Age	Women	22	22.86	4.65	0.99
	Men	21	25.29	4.78	1.04
Chat Experience	Women	22	1.29	0.80	0.17
	Men	21	1.67	1.02	0.22
Interest in Topic	Women	22	2.95	0.84	0.18
	Men	21	2.67	1.06	0.23
Typing Skills	Women	22	2.93	0.60	0.13
	Men	21	2.48	0.81	0.18

Note: Mean age of men was higher ($p < 0.07$, especially in condition1), women rated their typing skills as better ($p < 0.17$, especially in conditions 1 and 3), and men rated their chat experience as higher ($p < 0.12$, especially in condition 2); interest in topic was slightly higher for women (across conditions).

Table II.

Means (Standard Deviations) of Dependent Measures (Trait-Ratings)

Condition	Non-anonymous control		Anonymous, non-salient		Anonymous, salient	
Variable	Men	Women	Men	Women	Men	Women
Analytic/ task-oriented	2.53 (0.78)	3.07 (0.53)	2.77 (0.75)	3.38 (0.53)	3.04 (0.93)	2.73 (0.57)
Cooperative/ Supportive	2.12 (0.57)	2.85 (0.63)	2.86 (0.56)	2.96 (0.43)	2.64 (0.46)	2.56 (0.55)
Emotional	2.47 (0.78)	2.44 (0.80)	2.31 (0.75)	2.47 (0.70)	1.93 (0.83)	2.62 (0.67)
Pleasant	2.53 (0.60)	2.97 (0.60)	2.75 (0.77)	2.82 (0.70)	2.75 (0.85)	2.63 (0.52)
Quality of argumentation	2.41 (1.12)	2.8 (0.66)	2.58 (0.49)	2.64 (0.69)	2.57 (0.96)	2.37 (0.55)
Talks a lot	2.56 (0.86)	2.93 (0.86)	3.06 (0.54)	2.81 (0.55)	2.57 (0.85)	2.45 (0.70)
Influence on opinion of others	2.38 (0.72)	2,34 (0.41)	2.56 (0.91)	2.57 (0.66)	2.61 (0.49)	2.28 (0.38)
Assertive/ dominant	2.88 (0.88)	2.47 (0.52)	2.81 (0.62)	2.62 (0.63)	2.93 (0.65)	2.34 (0.67)

Table III.

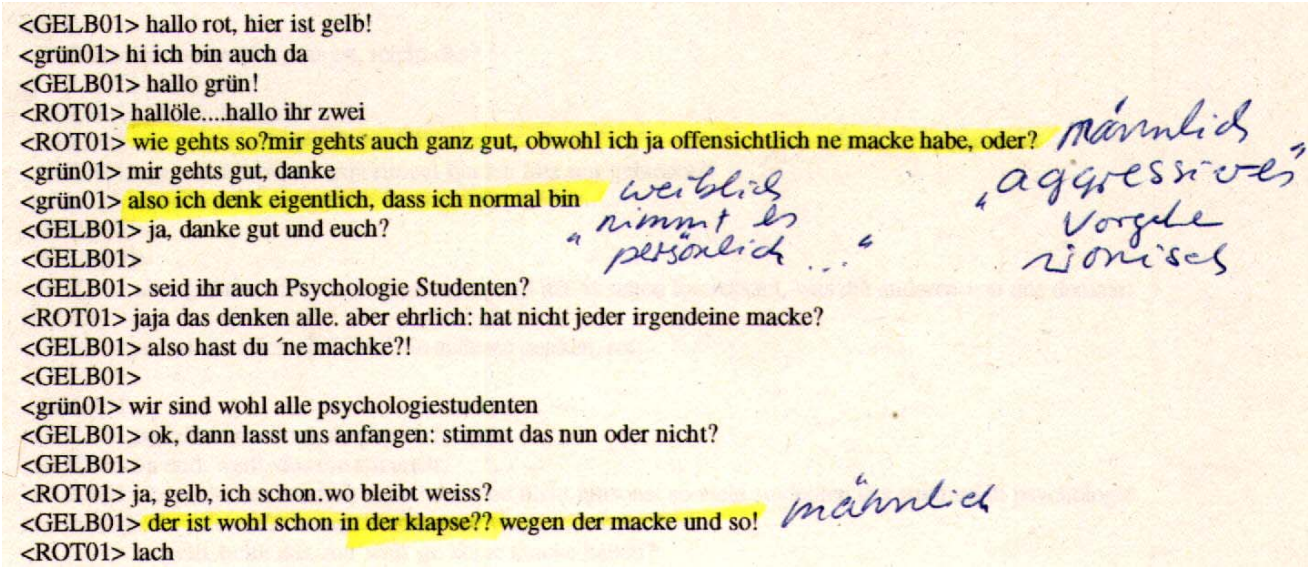
Results of Cue Analysis for all Anonymous Groups (n = 42): Cue Utilization and Percent Accurate within Each Type and for Women and Men Separately

	Use	**% accurate**	Men[a]	% accurate	Women	% accurate
Non-salient Condition						
Syntactic Cues	**12% (7)**	**86% (6)**	0% (0)	0% (0)	100% (7)	86% (6)
Semantic Cues	**11% (6)**	**50% (3)**	66% (4)	50%(2)	33% (2)	50% (1)
Pragmatic Cues	**77% (51)**	**61% (31)**	46% (23)	65%(15)	54% (28)	57% (16)
Salient condition						
Syntactic Cues	**17% (10)**	**90% (9)**	10% (1)	100% (1)	90% (9)	89% (8)
Semantic Cues	**20% (12)**	**50% (6)**	50% (3)	50% (3)	50% (3)	50% (3)
Pragmatic Cues[b]	**63% (40)**	**65% (26)**	48% (19)	79% (15)	52% (21)	52% (11)

Note: Percentages do not always sum up to 100 due to rounding; *n* are provided in parentheses; values have been computed from mean frequencies of two raters; agreement was 91%, Cohen's kappa =. 70, agreement on rank order of cue use was 100%; Non-salient condition: 40 of 64, i.e., 63% correct guesses for all groups; Salient condition: 41 of 62, i.e., 66% correct guesses for all groups; [a]percentage of use by men from total men and women (accordingly for women); [b]in a strict linguistic sense all cues here are pragmatic cues: syntactic-pragmatic, semantic-pragmatic, and pragmatic-pragmatic (cf. Merten, 1995).

Figure 1

Example of the Beginning of a Chat Text (Anonymous Non-salient Condition)



Note: Groups on average produced about 3-4 pages (DIN A4) of text in their chats, which were then re-provided to them to indicate the cues they had used to form their gender hypotheses. Translation of example: "Hi red, this is yellow – hi I am also there – hi green – hi the two of you – how are you guys? I am feeling fine despite I obviously study psychology to cure myself, don't I? (this last utterance was highlighted by participant B1 as a cue for *man*, the rationale given was: *proceeds aggressively, ironic*) – I am fine, thanks – well, I believe I am normal (this utterance was highlighted as a cue for *woman*, because: *takes it personally*) – etc.

[1] Following present gender research, we use the term *gender,* rather than *sex,* throughout the article (e.g. Lorber, 1994).

[2] According to *expectation states theory* (Berger, Connor & Fisek, 1974) men are expected to talk more and to have a higher competence in masculine tasks, women are expected to talk more and to have a higher competence in feminine tasks. Furthermore, there is a higher competence expectation for men in neutral tasks in the absence of other diagnostic cues. Under these circumstances gender functions as a diffuse status characteristic with higher performance expectations for the high status group.

[3] Two missing participants had additionally been replaced by research assistants to provide standardized conditions for all groups. The research assistants who replaced drop-outs in the last minute only participated in the chat and did not complete the questionnaires. A small number of judgments were missing in the questionnaires.