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Otten, S; Epstude, K

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Overlapping Mental Representations of Self, Ingroup, and Outgroup: Unraveling Self-Stereotyping and Self-Anchoring

Sabine Otten

University of Groningen, the Netherlands

Kai Epstude

University of Würzburg, Germany

Smith and collaborators presented strong response time evidence for overlapping mental representations of the self and relevant ingroups, and they interpreted their findings as reflecting that people define themselves in terms of their ingroups. Besides on inferences from ingroup to self (self-stereotyping) however, self-ingroup overlap could also be based on inferences from the self to the ingroup (self-anchoring). The present research tackled this interpretational ambiguity and empirically distinguished self-anchoring versus self-stereotyping as processes possibly underlying self-ingroup overlap. Results from three studies revealed stronger evidence for inferences from self to ingroup (self-anchoring) than the other way round (self-stereotyping).

Keywords: *self-anchoring; self-stereotyping; social identity; mental representations; social projection; intergroup differentiation*

An ingroup becomes part of the self—this theme has not only motivated the work by Smith and Henry (1996) but is also central to classical intergroup research, especially on minimal groups. Since the striking findings in the minimal group paradigm (Tajfel, Billig, Bundy, & Flament, 1971), a lot of research has investigated the basic processes underlying the typically favorable representations and the biased treatment of even novel and arbitrary ingroups. Why do group members show preference for an ingroup, right after category assignment, and although lacking any knowledge about its prototypical characteristics? As stated by Cadinu and Rothbart (1996), this question is still not convincingly answered. In line with Smith and collaborators (e.g., Smith, Coats, & Walling, 1999), we will argue that this effect goes along with overlapping mental representations of the self and the respective ingroup. Such overlap however can emerge

two ways: via assimilating the individual self to the ingroup (self-stereotyping; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) or via assimilating the ingroup to the individual self (self-anchoring; Cadinu & Rothbart, 1996; Otten, 2002). Different from previous research in this domain, the present set of studies disentangled the two processes and investigated whether there is distinct evidence for self-anchoring on one hand and self-stereotyping on the other hand.

Classical intergroup theories such as social identity theory (Tajfel & Turner, 1986) and especially self-categorization theory (Turner et al., 1987) have focused on how an ingroup becomes part of the self. Whereas social identity theory especially tries to understand the emergence of ingroup favoritism, self-categorization theory more generally addresses the conditions and consequences when people define themselves in terms of their group membership.

According to the principle of metacontrast, group memberships become salient in a certain context if the

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perceived differences between members of the own group and members of other groups exceed the perceived differences between members of the own group. Thus, the more similarity is perceived within a group and the more differences there are identified between groups, the higher the psychological relevance of the respective category. Moreover, self-categorization theory posits that when an individual categorizes as member of a certain group, he or she will attach less importance to unique, personal characteristics (depersonalization) but will rather describe himself or herself in terms of features that are prototypical for the group as a whole (self-stereotyping; Turner et al., 1987).

But can favoritism toward minimal, completely novel ingroups be properly understood in terms of self-stereotyping? How can a group member define himself or herself in terms of a novel ingroup that is not yet associated with any prototypical characteristics (except the feature that determined the categorization itself)? For these cases, models assuming that ingroup features are inferred from features that apply to the (individual) self seem more appropriate (Otten, 2002). Such approaches, such as the self-anchoring model by Cadinu and Rothbart (1996); the self-as-informational-base model by Gramzow, Gaertner, and Sedikides (2001); or the asymmetrical egocentric social projection as postulated and empirically shown by Clement and Krueger (2000, 2002), assume that ingroup favoritism emerges because the typically positive individual self is used as reference point to which the representation of the new ingroup is assimilated. Thus, quite different from the idea of depersonalization, the individual self-description provides a crucial input when the ingroup's prototype is initially determined.

Evidence for both self-stereotyping and self-anchoring is typically gathered via explicit measures: the former for example by asking how much someone feels like a group member or by assessing the perceived intragroup homogeneity (Simon & Hamilton, 1994) and the latter by calculating mean squared differences (e.g., Cadinu & Rothbart, 1996) or intraindividual regression weights on self- and ingroup evaluations (Otten & Wentura, 2001). As an implicit measure for a close association between self and ingroup, Smith and Henry (1996) used an adapted version of a paradigm initially used by Aron and collaborators (Aron, Aron, Tudor, & Nelson, 1991) to investigate closeness in intimate relationships. First, in a paper-pencil task, participants rate themselves, their relationship partner, and a third, non-self-related person (e.g., Bill Cosby) on a long list of traits. Second, the evaluations of the self are repeated at the computer. Closeness between two targets (self and significant other) is revealed by shorter response latencies when assigning traits to the self that matches both targets. Smith and Henry (1996) and Smith et al. (1999) demonstrated the same pattern

for closeness between the (individual) self and a salient ingroup. Evaluations were facilitated for those trait dimensions on which the evaluation of both targets matched. Matches or mismatches of either self or ingroup with the corresponding outgroup however did not significantly affect response latencies (Smith et al., 1999; Smith & Henry, 1996). The latter finding is somewhat at odds with both social identity theory and its claim that group members strive for positive ingroup distinctiveness and optimal distinctiveness theory (Brewer, 1991), which assumes that identification with social groups is driven by two needs: the need to belong—as supported by a high self-ingroup similarity—and the need to be distinct—as supported by differences between ingroup and outgroup. Rather, Smith and collaborators (Smith et al., 1999; Smith & Henry, 1996) interpret their findings as supporting self-categorization theory. To our opinion however, both the self-anchoring model (Cadinu & Rothbart, 1996; see also Clement & Krueger, 2002) and self-categorization theory (and here self-stereotyping, specifically) can account for the respective results. The present research offers an empirical approach to disentangle these two perspectives.

Self-Stereotyping Versus Self-Anchoring

The broader theoretical framework underlying the work by Smith and collaborators is a connectionist network model of memory (see Smith, 1996; Smith et al., 1999). In such network, not the direction of activation patterns is relevant but rather the frequencies with which certain elements are activated in conjunction. The more frequent the joint activation, the stronger the activation pattern spreading between the entities (Smith, 1996). However, when applying such a model to self-categorization theory, we need to take directionality into account: As stated earlier, self-categorization theory hypothesizes that when people self-categorize as a group member, they focus on group characteristics, and they define themselves in terms of the group prototype. Thus, the overlapping mental representations as indicated by the fast response latencies on dimensions on which self- and ingroup evaluations matched would be based on a process wherein the group prototype provided an anchor to which the self-judgment was assimilated. However, the same overlap and the same facilitation effect on dimensions matching both self and ingroup could also be based on another process: People may define their group in terms of features that are descriptive of themselves as an individual. In this logic, the self provides the judgmental anchor to which the ingroup is assimilated.

Self-anchoring as a relevant process in intergroup relations was first investigated by Cadinu and Rothbart (1996), who were seeking for a parsimonious explana-

tion for ingroup bias toward minimal groups. Given the lack of strong and consistent evidence for a positive ingroup distinctiveness striving as suggested by social identity theory (Tajfel & Turner, 1986), Cadinu and Rothbart (and similarly Clement & Krueger, 2000, 2002; Krueger, 1998) put forward a purely cognitive account: People use the individual self as a judgmental anchor to which they assimilate the cognitive representation of their new, minimal ingroup. Given that the self is typically evaluated as above average (e.g., Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995; Baumeister, 1998; Taylor & Brown, 1988), this process in itself can be sufficient to account for favorable ingroup evaluations (see Otten, 2002; Otten & Wentura, 2001).

Both self-stereotyping and self-anchoring imply that the representations of self and ingroup do overlap. Accordingly, it is problematic to distinguish between these processes empirically. As stated earlier, in typical experiments on self-anchoring and favorable ingroup evaluations, novel, minimal groups were investigated (Cadinu & Rothbart, 1996; Clement & Krueger, 2000, 2002; Otten & Bar-Tal, 2002; Otten & Wentura, 2001). Per definition, for minimal groups no prototype is specified other than the dimension that determined the categorization itself (e.g., being an over- or an underestimator); therefore, distances between self and ingroup can straightforwardly be interpreted as revealing the degree to which the ingroup representation is assimilated to the self-representation rather than the other way around.

In the case of well-established groups that are already defined by a prototype, distinguishing between self-stereotyping and self-anchoring as possible sources of self-ingroup similarity is much more difficult (see Otten, 2004). This applies not only to explicit measures (distances, difference scores) but also to the implicit evidence as provided by Smith and collaborators (e.g., Smith et al., 1999): We observe that responses on dimensions on which self and ingroup match are faster, but we cannot decide which process has been driving the self-ingroup overlap. Does the self match the ingroup or the other way around? In the present article, we not only extend previous findings by Smith and collaborators by empirically unraveling self-anchoring and self-stereotyping, but we also contribute to the more recent theoretical debate and the growing empirical evidence on the relevance of the individual self in intergroup behavior (see Otten, 2002, 2005; Sedikides & Brewer, 2001).

According to the self-anchoring model, people use their knowledge about the individual self to fill the cognitive gap (that is, the lack of already well-established mental representations) they experience when confronted with a new ingroup. With well-established groups, a similar situation may emerge, namely when a person does not know for sure whether a certain trait applies

to the ingroup or not (indicated by choosing the midpoint of a bipolar scale running from "trait does definitely not apply" to "trait does truly apply"), but he or she is forced to make a dichotomous decision ("tell me whether this trait rather applies or rather not applies to your group"). In line with the self-anchoring model, people should be prone to resolve this conflict by assimilating the group judgment to the self-rating. They should tend to use the self as a heuristic to fill the vacuum that they experience with respect to their ingroup representations. Thus, responses that match the self-rating should be faster. However, no such pattern can be straightforwardly derived from self-categorization theory, which assumes that the individual self will lose its relevance (i.e., depersonalize) in an intergroup context. Moreover, the individual self is not the only available exemplar from which group ratings could be derived in case of judgmental ambiguity pertaining to a real, already well-established group. Consequently, for trait dimensions on which the ingroup is not clearly defined, the match or mismatch with self-ratings should not predict the ease with which forced-choice responses are done.

In the studies by Smith and collaborators (e.g., Smith et al., 1999; Smith & Henry, 1996), all traits that were judged ambiguously in the paper-pencil task (that is, where participants chose the midpoint of the scale) for any of the three targets (self, ingroup, or outgroup) were excluded from further analysis. However, in our studies we took advantage of these ill-defined traits to find unambiguous response time evidence for self-anchoring and self-stereotyping, respectively.¹ Study 1 investigated whether there is distinct evidence for self-anchoring: In this case response times for ingroup ratings on ill-defined dimensions reveal whether participants are prone to adapt their ingroup judgment to their self-ratings. In Study 2, to isolate effects driven by self-stereotyping, we focused on response times for dichotomous self-ratings; here, the crucial question was whether in case of judgmental ambiguity people would tend to match their self-ratings to the ingroup ratings. Finally, Study 3 manipulated the target in the reaction time task as a between-subjects factor to replicate the effects from the first two studies in one bigger design.

To conclude, in the following we will report three studies, all of which rely on the paradigm whereby Smith and collaborators investigated links between self, ingroup, and outgroup (e.g., Smith et al., 1999). All studies refer to gender as categorization dimension and use the same list of traits, but they differ with respect to the target for the response time ratings (Study 1: ingroup; Study 2: self; Study 3: ingroup vs. self as between-subjects factor). In each study, we first analyze the effects for well-defined traits, excluding dimensions on which any of the three

targets was judged ambiguously. In a second step, we especially focus on traits that were rated ambiguously in the paper-pencil task.

STUDY 1

The aims of this first study were twofold. First, we wanted to replicate the findings of Smith et al. (1999) with a different social categorization. Second and more important, we wanted to show that participants who are uncertain about whether a trait applies to their ingroup or not but who are forced to make a dichotomous decision on this question will use the self as an anchor to make this judgment. Therefore, we expected a response time pattern similar to the one shown by Smith et al., namely, faster responses for forced answers matching both self and ingroup than for mismatching answers.

Method

PARTICIPANTS

In Study 1, 51 undergraduates of various majors (mainly law and English philology) participated in this experiment (41 women, 10 men). The mean age was 20.9 years. They received DM 10 (about \$6 at the time) for taking part in the experiment. To avoid disturbances during the response time measurement, in each session, a maximum of 2 participants took part.

DESIGN AND HYPOTHESES

The study comprised four within-subjects factors, with the single trait ratings as unit of analysis and response latencies as dependent variable: response (ingroup descriptiveness as indicated at the computer: yes, no),² self-descriptiveness (yes, no, as indicated in the questionnaire), outgroup descriptiveness (yes, no, as indicated in the questionnaire), and trait valence (positive, negative). Typically, yes responses are faster than no responses in response time measurements; hence, we expected a main effect of response type in the analysis. Moreover, response type (yes/no) is known to interact with the valence of the target word (e.g., Smith & Henry, 1996), especially when we assume that the evaluations of the ingroup are connected to evaluations of the self. Whereas yes responses should be faster for positive than for negative traits, the reverse should be true for negative traits. Most important however, we expected an interaction effect between the response factor and self-descriptiveness as measured in the questionnaire: The match or mismatch with the self-rating should determine how quickly a certain trait is assigned to the ingroup. Outgroup descriptiveness was also included in the analysis, but no effects were expected. Supporting the self-anchoring

model, the predicted pattern should occur similarly for both traits that according to the questionnaire data were well defined for the ingroup and traits that were only ill defined.

PROCEDURE

The procedure was fully adapted from Smith and collaborators (1999). Upon arrival in the lab, participants were seated in separate cubicles. They were informed that the study was about impression formation and consisted of several parts. Specifically, they were told that the study was designed to compare paper-pencil-based answers to computerized answers. Next, participants received three questionnaires. Each questionnaire comprised a list of 90 traits, and on each trait dimension participants had to rate a specific target on a 7-point scale ranging from *very untypical* (1) to *very typical* (7). The three targets were the self, the group of men in general, and the group of women in general. The order of the questionnaires was completely randomized.

After completion of the questionnaires, participants were asked to evaluate one of the targets once again but now at the computer. Seemingly at random, male participants were asked to judge the group of men, and female participants were asked to judge the group of women at the computer. This time only dichotomous answers (yes, trait is typical vs. no, trait is not typical) were allowed. The words appeared in the middle of a computer screen in random order. Responses were given on a small computer keyboard (response box) with two buttons. The left button was labeled with *no* and the right button with *yes*. Participants were told that it was important to press the respective button as soon as they had decided whether a word was typical for the target or not. After pressing a button, the screen went blank; 1500 milliseconds later the next word appeared.

To check whether the gender categorization was sufficiently salient for the participants, participants filled in a graphic measure on the perceived relation between self, ingroup, and outgroup (Schubert & Otten, 2002) at the end of the session. On three separate scales, participants chose one out of seven graphs representing best their perceived distance between (a) self and ingroup, (b) self and outgroup, and (c) ingroup and outgroup. A score of 1 on these scales indicates the greatest distance, whereas a score of 7 indicates the strongest overlap between the two entities. Finally, participants were debriefed, thanked, and paid.

Results

Category salience. In a first step we explored whether the gender categorization was sufficiently salient for the participants. The mean ingroup-outgroup distance was 4.42, indicating that the categories of men and women

were perceived as mostly distinct yet overlapping to a certain extent. Moreover, the perceived closeness between self and ingroup, $M = 5.07$, and between self and outgroup, $M = 4.02$, was significantly different, $t(51) = 4.27$, $p < .001$, indicating the expected higher self-ingroup as opposed to self-outgroup similarity.³

To analyze the response time data as a function of the overlap between representations of self, ingroup, and outgroup, we coded the questionnaire data for all three targets (self, ingroup, and outgroup) as follows: In line with Smith and collaborators (1999) we summarized all ratings from 1 to 3 as no responses and all ratings from 5 to 7 as yes responses. All responses at the midpoint of the scale (4) were coded as neutral/ambiguous. With these recoded questionnaire data, the factors Self-Descriptiveness, Ingroup Descriptiveness, and Outgroup Descriptiveness could be formed. The valence of the traits was determined using the subscales *pleasantness* and *social desirability* from the standardized word lists by Hager and colleagues (summarized in Hager & Hasselhorn, 1994). The response times served as the dependent variable in all analyses. We excluded response times differing more than two standard deviations from the mean (about 4.2% of all cases; see Bargh & Chartrand, 2000). Furthermore, the remaining latencies were log (ln)-transformed (Fazio, 1991). All statistical analyses are based on these log-transformed means. For ease of interpretation however, the untransformed means are reported.

REPLICATION OF THE ORIGINAL EFFECT

First, we wanted to show that the original effect found by Smith et al. (1999) could be replicated: Response times for traits that were either typical or nontypical for both self and ingroup should be faster than those for traits that applied to the one but not to the other entity. All traits that were evaluated as being neutral (i.e., traits that received a rating of 4 on the 7-point scale) for any of the targets (self, ingroup, outgroup) in the questionnaires were excluded from analysis. In line with Smith and collaborators, we conducted an ANOVA with the individual response times as units of analysis. Four within-subjects factors were included in the final model: Response (ingroup descriptiveness: yes, no, as indicated on the computer), Self-Descriptiveness (yes, no, as coded from the questionnaire data), Outgroup Descriptiveness (yes, no, as coded from the questionnaire data), and Valence (positive, negative). Consistent with Smith et al., we expected an interaction between Response and Self-Descriptiveness, indicating that judgments about the ingroup are connected to judgments about the self.

The analysis revealed three significant effects. A main effect of the type of response during the response time measurement, $F(1, 2074) = 27.09$, $p < .001$, $\eta_p^2 = .013$,⁴

Figure 1 Response latencies for dichotomous ingroup ratings, Response $\times$ Self-Descriptiveness interaction, well-defined traits (Study 1).

such that as hypothesized, yes responses were faster than no responses, $M = 1,263$ ms ($SD = 709$) and $M = 1,491$ milliseconds ($SD = 806$). Moreover, the expected Response $\times$ Valence interaction also occurred, $F(1, 2074) = 13.65$, $p < .001$, $\eta_p^2 = .007$; whereas yes and no responses did not differ in their speed when negative traits were involved, $M = 1,341$ milliseconds ($SD = 697$) and $M = 1,367$ milliseconds ($SD = 767$), $t(2074) = 1.13$, ns ; for positive traits, yes responses were considerably faster than no responses, $M = 1,225$ milliseconds ($SD = 712$) versus $M = 1,662$ milliseconds ($SD = 848$), $t(2074) = 5.98$, $p < .001$. Most important, replicating Smith et al. (1999), we found an interaction between Response and Self-Descriptiveness, $F(1, 2074) = 27.21$, $p < .001$, $\eta_p^2 = .013$. The average response time difference between matching and mismatching descriptions for self and ingroup was 247 milliseconds; the respective means for matching and mismatching answers were 1299 milliseconds and 1546 milliseconds (see Figure 1). There were no other significant effects. As expected, outgroup descriptiveness did not influence the response times for ingroup judgments ($F < 1$).

Taken together, the results fully confirm the findings by Smith et al. (1999). Most important, response times for ingroup evaluations were facilitated when matching self-evaluations.

DISTINCT EVIDENCE FOR SELF-ANCHORING

In a second step we inspected those traits that according to the questionnaire data were evaluated as neutral (score 4 on the 7-point scale) for the ingroup but that at the same time got distinct evaluations (that is, scores tending to either pole of the scale) for the self and the outgroup. We hypothesized that when participants are

forced to make a clear-cut decision about the ingroup evaluation on a previously ambiguous trait dimension, they would use the self as an anchor for their judgment. Accordingly, we expected the same response time pattern as in the previous analysis.

Again, response times while judging the ingroup were used as the dependent variable. The response during the computerized judgment (Ingroup Descriptiveness: yes, no), Self-Descriptiveness (yes, no), Outgroup Descriptiveness (yes, no), and Valence (positive, negative) served as within-subjects factors in a univariate analysis of variance.

Two significant effects emerged in this analysis. First, the expected Response $\times$ Self-Descriptiveness interaction was highly significant, $F(1, 373) = 12.12$, $p < .001$, $\eta_p^2 = .031$. Traits seen as typical for both ingroup and self were recognized faster ($M = 1,466$ milliseconds, $SD = 765$) than traits that were typical for the ingroup but not for the self ($M = 1,886$ milliseconds, $SD = 938$), $t(373) = 2.77$, $p < .01$. Conversely, traits rated as not typical for both ingroup and self were judged faster ($M = 1,350$ milliseconds, $SD = 629$) than traits perceived as nontypical for the ingroup but as applying to the self ($M = 1,751$ milliseconds, $SD = 870$), $t(373) = 2.16$, $p < .05$. Hence, on formerly ill-defined trait dimensions, a match between ratings for self and ingroup facilitated responses. The average response time difference between matching and mismatching descriptions for self and ingroup was 411 milliseconds.

Besides this theoretically expected interaction effect, there was a three-way interaction of Response $\times$ Valence $\times$ Self-Descriptiveness, $F(1, 373) = 3.85$, $p = .050$, $\eta_p^2 = .010$. This effect is due to the fact that the expected Response $\times$ Self-Interaction effect, although the pattern of means is fully comparable, is somewhat stronger for positive than for negative traits (see Figure 2). In addition, there was a marginally significant effect of Outgroup Descriptiveness, $F(1, 373) = 3.21$, $p = .07$, $\eta_p^2 = .009$; irrespective of the type of response, there was a tendency to respond faster if traits were typical rather than not typical for the outgroup ($M = 1,761$ milliseconds vs. $M = 1,822$ milliseconds).

Discussion

The present study fully replicated the findings reported by Smith et al. (1999). Matching responses for the self facilitate responses for ingroup evaluations. Moreover and more important, we could demonstrate the same effect for traits that were only ill defined for the ingroup. If participants had to decide whether a trait formerly classified as neutral (or not well defined) for the ingroup was ingroup descriptive or not, their responses were facilitated by using the self as a referential entity. In other words, the self seems to provide

Figure 2 Response latencies for dichotomous ingroup ratings, Response $\times$ Self-Descriptiveness $\times$ Valence interaction, ill-defined traits (Study 1).

clues for filling gaps in ingroup representations. Although this finding can be easily explained in terms of self-anchoring—the self is used as a heuristic to resolve judgmental ambiguity about the ingroup—it can hardly be accounted for from a self-stereotyping perspective. Self-stereotyping as a group member implies that there should be facilitation effects for traits matching both self and ingroup when these traits are perceived as stereotypical for the ingroup. If traits are not stereotypical for the ingroup (as is the case for traits rated on the midpoint of the scale), then we might infer

that the Response $\times$ Self-Descriptiveness interaction should rather diminish or even cease to exist. Obviously, this was not the case.

Although Study 1 provided clear and distinct evidence for the process of self-anchoring, it does not imply that self-stereotyping is generally irrelevant for overlapping mental representations of self and ingroup. In self-categorization theory, the focus of interest is the self as defined on various levels of more or less inclusive categorizations. Self-stereotyping is defined as assimilating the self-representation to the ingroup prototype; traits considered as descriptive for the ingroup are also seen as descriptive for the self. To translate this process properly into response time evidence and to get straightforward evidence whether the self-definition is assimilated to the group definition, we need to measure response latencies for describing the self rather than the ingroup.

STUDY 2

The second study aimed at clarifying whether self-stereotyping or self-anchoring are equally relevant processes in intergroup contexts. Study 1 strongly supports the assumption that self-anchoring is a relevant process not only for the definition of minimal ingroups (e.g., Cadinu & Rothbart, 1996; Otten & Wentura, 2001) but also for real, well-established ingroups. However, notwithstanding such distinct evidence for self-anchoring as mechanism underlying self-ingroup similarities, we still need to test whether there is similarly unequivocal evidence for self-stereotyping. To this end, we replicated Study 1 but measured response latencies for evaluations of the self as dependent variable. Again, we first analyzed only traits that according to the questionnaire data were rated as either rather descriptive or not descriptive for the respective targets; in a second step, we focused on all traits evaluated as neutral in the paper-pencil version of the self-questionnaire. If the assumption is correct that mental representations of the ingroup help to evaluate ill-defined dimensions for the self, a match-mismatch effect similar to the one in Study 1 should also be found for these traits.

To sum up, Study 2 was conducted to test the following hypotheses:

Hypothesis 1: For well-defined trait dimensions, the match-mismatch effect as found by Smith and Henry (1996) should be replicated: Traits similarly applying to both self and ingroup should be evaluated faster than traits applying only to either the self or the ingroup.

Hypothesis 2: The ingroup should be used to evaluate the self on ill-defined dimensions, thus resulting in the same match-mismatch effect as hypothesized under Hypothesis 1.

Method

PARTICIPANTS, DESIGN, AND PROCEDURE

In this study, 28 students (19 women, 9 men) participated in this study. The mean age was 19.75 years. Most participants studied business and administration at the University of Jena. They received DM 10 (about \$6 at the time) as compensation. To avoid disturbances during the response time measurement, a maximum of 2 participants took part in each session.

The design was the same as in Study 1 except for a different target—the individual self—for the measurement of response latencies. More specifically, the study comprised the following four within-subjects factors, with the single trait ratings as unit of analysis and response latencies as dependent variable: Response (self-descriptiveness as indicated at the computer: yes, no),⁵ Ingroup Descriptiveness (yes, no, as indicated in the questionnaire), Outgroup Descriptiveness (yes, no, as indicated in the questionnaire), and Trait Valence (positive, negative).

The procedure was identical to the one described in Study 1. The only difference was that this time the self served as target in the computer task.

Results

As in Study 1, we corrected the response times for the dichotomous evaluations of the self. Response latencies differing more than two standard deviations from the mean were excluded from further analysis. The remaining latencies were log (ln) transformed. For ease of interpretation, the untransformed means are reported. The questionnaire responses were recoded as described in Study 1.

REPLICATING THE ORIGINAL EFFECT

Our first aim was to replicate the results by Smith and Henry (1996): Matching ingroup answers should facilitate responses for the self. Only responses for well-defined traits were analyzed; traits rated as neutral for either the self, the ingroup, or the outgroup were excluded from this analysis. The final analytical model included the following four within-subjects factors: Response (self-descriptiveness as indicated in the computer task: yes, no), Ingroup Descriptiveness (yes, no), Outgroup Descriptiveness (yes, no), and Valence (positive, negative).

The univariate analysis of variance revealed four significant effects. First, there was a main effect of the type of Response, $F(1, 1235) = 18.94, p < .001, \eta_p^2 = .015$. Again, yes responses were faster than no responses, $M = 1,217$ milliseconds ($SD = 639$) versus $M = 1,430$ milliseconds ($SD = 743$). Second, a main effect of Valence

emerged, $F(1, 1235) = 7.74$, $p < .01$, $\eta_p^2 = .006$. Not surprisingly, responses to positive words were faster than those to negative words, $M = 1,304$ milliseconds ($SD = 691$) and $M = 1,306$ milliseconds ($SD = 686$). Third, the expected interaction of Response type and Ingroup Descriptiveness emerged, $F(1, 1235) = 6.96$, $p < .01$, $\eta_p^2 = .006$. Responses to traits that were rated as typical for both self and ingroup were faster ($M = 1,186$ milliseconds, $SD = 620$) than responses to traits only typical for the self but not for the ingroup ($M = 1,323$ ms, $SD = 692$), $t(1235) = 2.58$, $p < .01$. Responses to traits rated as not typical for both self and ingroup tended to be faster ($M = 1,339$ milliseconds, $SD = 702$) than responses to traits that were atypical for the self but typical for the ingroup ($M = 1,520$ milliseconds, $SD = 772$), $t(1235) = 1.78$, $p < .10$. Fourth, we found a significant interaction of Ingroup Descriptiveness and Valence, $F(1, 1235) = 16.19$, $p < .001$, $\eta_p^2 = .013$. This effect can be described as follows: Irrespective of the response (that is, irrespective of whether the trait was assigned to the self or not), latencies for positive traits rated as ingroup typical were faster than latencies for positive traits atypical for the ingroup, $M = 1,260$ milliseconds ($SD = 676$) versus $M = 1,508$ milliseconds ($SD = 724$), $t(1235) = 3.01$, $p < .01$. Conversely, negative traits rated as atypical for the ingroup were responded to more quickly than to those judged as typical for the ingroup, $M = 1,241$ milliseconds ($SD = 658$) versus $M = 1,396$ milliseconds ($SD = 715$), $t(1235) = 2.67$, $p < .01$. In short, this effect reflects a typical ingroup bias: Participants were eager to assign positive traits to the ingroup but were reluctant to describe it in terms of negative characteristics. No other effects were significant, $F_s < 2$.

DISTINCT EVIDENCE FOR SELF-STEREOTYPING

To test whether there was distinct evidence for self-stereotyping, in an additional analysis we included only traits that were rated as neutral for the self but as well defined for ingroup and outgroup in the questionnaire task. Response times for these formerly ill-defined traits were analyzed the same way as just described for the well-defined traits. Self-categorization theory would suggest that the ingroup would be used as an anchor to evaluate the self. Therefore, responses for traits matching the self should be faster than those not matching the self. However, the analysis revealed neither the crucial Response $\times$ Self-Descriptiveness interaction nor any other significant effects (all $F_s < 2$).

Discussion

For well-defined traits, the results of Study 2 mirror the findings in Study 1 and fully correspond to the empirical evidence reported by Smith and Henry (1996): a response speed advantage for traits that consistently apply or not apply to both self and ingroup. However, as

outlined in the introduction, such pattern does not allow disentangling the two possible underlying processes, self-anchoring and self-stereotyping. Therefore, the results for ill-defined traits are more relevant. Here, results of Study 2 show that if the self-evaluation is vague and/or ambiguous, then this ambiguity is not readily solved by relying on the ingroup as a judgmental anchor. Hence, whereas in Study 1 we found distinct evidence for self-anchoring when focusing on ambiguous ingroup traits, there is no comparable distinct evidence for self-stereotyping as a means to deal with ambiguous self-definitions. We will reflect in more detail about this finding in the general discussion but will first turn to our third study.

STUDY 3

The third experiment was designed to combine and replicate the first two studies in one larger design (see Cadinu & De Amicis, 1999, for a similar approach). Doing so, we wanted to make sure that the asymmetry with respect to the distinct evidence for self-anchoring on one hand and for self-stereotyping on the other hand cannot be traced back to possible sample characteristics in Studies 1 and 2, respectively. To this end, in Study 3 we introduced an additional factor that was varied between participants, namely, the judgmental Target during the response time measurement. For half of the participants, response latencies were measured for dichotomous ratings about the self. For the other half of the participants, response latencies for ingroup ratings served as the dependent variable. We expected to replicate the findings from Studies 1 and 2. Specifically, for well-defined traits we expected a match-mismatch effect, namely, facilitated response latencies for traits with matching judgments about both the self and the ingroup compared to the response latencies for traits where self and ingroup ratings do not match. This effect should emerge irrespective of whether the target in the response time task was the self or the ingroup. In contrast, based on the results of Studies 1 and 2 we expected an effect of the Target factor on ill-defined traits. Using the self as an anchor should facilitate judgments about ill-defined ingroup traits: Responses matching the self-ratings should be made faster than those mismatching the self-ratings. For ill-defined self-traits however, the ingroup should not be used as an anchor. Therefore, response latencies should not be affected by a match or mismatch with the ingroup ratings.

Method

PARTICIPANTS, DESIGN, AND PROCEDURE

For Study 3, 55 students from the University of Würzburg participated in the experiment, which was part of a larger

90-minute experimental session. The present experiment was the first one in that session. Participants received €9 (about \$11 at the time) as compensation; they were randomly assigned to one of the two between-subjects conditions of the experimental design.

To test our hypotheses for the two target conditions (self vs. ingroup as target for the response latency measurement) in one overall analysis we had to compute a new factor coding the potential anchor for each decision. In the case of evaluations of the self, the potential anchor is the ingroup, and in the case of ingroup evaluations the potential anchor is the self. So depending on the condition, the newly computed factor either coded responses made for the self (when response times were measured for the ingroup evaluations) or for the ingroup (when response times were measured for self evaluations). We will refer to this factor as Anchor. In addition, like in Studies 1 and 2, our design comprised the type of response (yes, no) in the computerized task and outgroup descriptiveness (yes, no) as independent variables.⁶ Hence, our analysis was based on a four-factorial mixed design with Target as a between-subjects factor and Anchor, Response, and Outgroup Descriptiveness as within-subjects factors.

The procedure was fully identical to Studies 1 and 2, respectively. Participants were randomly assigned to one of the two target conditions for the response time task.

RESULTS

Like in Studies 1 and 2, we corrected the response times for the dichotomous evaluations of the self. Response latencies differing more than two standard deviations from the mean were excluded from further analysis. The remaining latencies were log (ln) transformed. For ease of interpretation, the untransformed means are reported. The questionnaire responses were recoded as described in Studies 1 and 2.

REPLICATING THE ORIGINAL EFFECTS

The first goal of this study was to replicate the findings from the previous studies for the well-defined traits. To do so, as described earlier, we calculated a new factor to code the potential judgmental Anchor (the dichotomized self rating for the ingroup-target condition and the dichotomized ingroup rating for the self-target condition). The further factors in the design were the Response in the computer task (yes vs. no), the Target (self vs. ingroup), and Outgroup Descriptiveness (yes, no, as indicated in the dichotomized questionnaire judgments). As in Studies 1 and 2, the response latencies for single trait ratings were the unit of analysis. Depending on the experimental condition, these were either the response latencies for evaluations of the self or response latencies for evaluations of the ingroup.

A four-way mixed analysis of variance revealed four significant effects. First, replicating the previous studies, there was a significant main effect of the type of response (yes: $M = 1302$ milliseconds; no: $M = 1,390$ milliseconds), $F(1, 2512) = 7.88, p < .01, \eta_p^2 = .003$. Second, a significant main effect of the target factor emerged. Responses for judgments about the self were made faster ($M = 1,242$ milliseconds) than responses for judgments of the ingroup ($M = 1,455$ milliseconds), $F(1, 2512) = 56.06, p < .001, \eta_p^2 = .022$. Third, the expected interaction between type of Response and the trait descriptiveness for the potential Anchor emerged, $F(1, 2512) = 16.98, p < .001, \eta_p^2 = .007$. Traits that were seen as descriptive for both the Target and the Anchor were evaluated faster ($M = 1,279$ milliseconds) than traits that were seen as applying to the Target but not to the Anchor ($M = 1,379$ milliseconds), $t(1, 2512) = 3.03, p < .01$. Traits that were seen as nondescriptive for either the Target or the Anchor were rated faster ($M = 1,352$ milliseconds) than traits that were seen as not matching the Target but not matching the Anchor ($M = 1,435$ milliseconds), $t(1, 2512) = 2.82, p < .01$. Finally but not relevant to our hypotheses, a three-way interaction of Outgroup Descriptiveness, Condition, and Anchor was significant, $F(1, 2512) = 11.98, p < .001, \eta_p^2 = .005$.⁷

DISTINCT EVIDENCE FOR SELF-ANCHORING AND SELF-STEREOTYPING

In a second step we did the same analysis of variance as described earlier, but now only for those traits that were seen as ill defined for the judgmental target but well defined for the potential anchor and the outgroup were included in the analysis. We expected that the self would be taken as the basis for ingroup judgments in the case of ill-defined dimensions but that the corresponding process would not occur for self-ratings.

First, as already reported for the well-defined traits, the four-factorial mixed analysis of variance revealed a significant main effect of the Target factor: Evaluations of the self were made faster ($M = 1,534$ milliseconds) than evaluations of the ingroup ($M = 1,702$ milliseconds), $F(1, 401) = 5.28, p < .03, \eta_p^2 = .013$. Second and most important, the analysis indicated a marginally significant Response $\times$ Anchor interaction, $F(1, 401) = 3.56, p = .06, \eta_p^2 = .009$, which was further qualified by target condition: The expected interaction of type of Response, Anchor, and the Target condition was marginally significant, $F(1, 401) = 3.19, p = .07, \eta_p^2 = .008$; as can be seen in Figure 3 and as will be reported in more detail in the following paragraph, the data pattern completely fits the findings of Studies 1 and 2. Finally, an interaction of Outgroup Descriptiveness and Response reached marginal significance, $F(1, 401) = 2.96, p = .08, \eta_p^2 = .007$. Contradicting once again a differentiation heuristic, this

Figure 3 Response latencies for dichotomous ratings for self and ingroup, Response $\times$ Anchor $\times$ Target Interaction, ill-defined traits (Study 3).

effect was due to a response speed advantage of traits that were similarly applicable to both the target (irrespective of whether it was the self or ingroup) and the outgroup.

Next, to specifically test our assumptions that the Response $\times$ Anchor effect applies to the ingroup-target condition exclusively, we decomposed the three-way interaction and ran for each of the two levels of the between-subjects factor Target a separate two-way ANOVA with the factors Response and Anchor (i.e., self-ratings in the ingroup-target condition and ingroup-ratings in the self-target condition). This analysis confirmed our

expectations and replicated the findings of Studies 1 and 2: When the ingroup was target in the response time task, the expected Response $\times$ Anchor interaction effect was found, $F(1, 231) = 7.75$, $p < .01$, $\eta_p^2 = .034$. Traits that were seen as matching both the ingroup and the self were evaluated faster ($M = 1,550$ milliseconds) than traits that were applicable to the ingroup but not to the self ($M = 1,839$ milliseconds). Conversely, traits that were seen as neither descriptive for the ingroup nor for the self were evaluated faster ($M = 1,510$ milliseconds) than those not descriptive for the ingroup but descriptive for the self ($M = 2,031$ milliseconds). When the self was the judgmental target in the computerized task, no significant effects emerged, all F s < 2 .

GENERAL DISCUSSION

The present research investigated response time evidence for systematic links between the cognitive representations of self, ingroup, and outgroup. Building on previous research by Smith and collaborators (e.g., Smith et al., 1999; Smith & Henry, 1996), our studies enriched the already existing findings in this domain by not only documenting overlapping mental representations of self and ingroup but also investigating the judgmental process underlying this overlap. Specifically, as we will discuss in more detail next, we were able to provide a method that allows identifying distinct evidence for self-anchoring on one hand and self-stereotyping on the other hand. Both processes have not been disentangled in previous research. Focusing on trait dimensions that were ill defined for the judgmental target in the response latency task, we found evidence reflecting that the self is used as an anchor for ingroup judgments (Study 1) but no comparable response time evidence for the usage of the ingroup as an anchor for self-ratings (Study 2). Importantly, we varied the judgmental target not only between studies but were also able to replicate our pattern of findings within a larger design that introduced judgmental target (self vs. ingroup) as a between-subjects factor (Study 3).

Self-Anchoring or Self-Stereotyping?

Confirming previous findings by Smith and collaborators (Coats, Smith, Claypool, & Banner, 2000; Smith et al., 1999; Smith & Henry, 1996; see also Tropp & Wright, 2001), Studies 1, 2, and 3 provided strong evidence for overlapping mental representations of self and ingroup. If the judgments of self and ingroup matched, then response latencies were significantly shorter than in the case of mismatching evaluations, signaling that an assimilation heuristic guided the responses on either self or ingroup.

Evidence for a strong link between self and ingroup however typically does not allow one to decide whether this similarity is fueled by assimilating the representation of the ingroup to the self (i.e., self-anchoring) or by assimilating the representation of the self to the representation of the ingroup (i.e., self-stereotyping). To distinguish between these two processes, we did separate analyses for ambiguous traits. The rationale was that when participants had indicated an intermediate or undecided judgment in the paper-pencil questionnaire (a 4 on the 7-point scale), then forced dichotomous responses about the respective trait can be assimilated to or contrasted from the other two entities. Hence, the direction of the influence can be determined: By analyzing response latencies for ingroup descriptions on ill-defined trait dimensions, distinct evidence for self-anchoring can be obtained; by analyzing response latencies for self descriptions on ill-defined trait dimensions, distinct evidence for self-stereotyping can be shown.

Applying this rationale, Study 1 (with ingroup ratings as target in the computer task) did in fact reveal distinct evidence for self-anchoring. Dichotomous ingroup evaluations on ill-defined trait dimensions were faster when judgments matched the self-ratings. This effect implies that an assimilation to the self-rating was an easily applicable heuristic when group members were forced to resolve a judgmental ambiguity concerning their ingroup. At the same time, no evidence for either assimilation to or contrast from the outgroup representation emerged. In Study 2, response latencies for dichotomous self-ratings were the dependent variable, allowing us to test whether self-stereotyping is applied when participants are forced to clearly locate the self on a trait dimension on which initially a neutral, undecided response was given. However, response times did not indicate that participants tended to solve this task by assimilating the self to the ingroup, as self-stereotyping would have implied. Finally, Study 3 further validated this asymmetry in the available evidence for self-anchoring and self-stereotyping, respectively, by fully replicating the pattern of findings within a joint design that combined Studies 1 and 2.

Do these findings imply that self-anchoring is the more powerful process driving the degree to which self and ingroup overlap and thus also determining ingroup favoritism effects (see Otten, 2002; Otten & Wentura, 2001)? When confronting uncertainty or ambiguity in trait evaluations, our data do in fact imply that self-anchoring is more readily applied than self-stereotyping: Whereas originally ill-defined ingroup judgments are assimilated to the self when group members are forced to polarize their rating, representations of the ingroup obviously are not as readily used to determine judgments about the individual self. For the response time evidence on well-defined trait dimensions however, we cannot yet

make such a comparative statement. On these dimensions, to find similarly distinguishable evidence for the two possible processes underlying self-ingroup similarities, future research might systematically compare the effects on ingroup stereotypical as compared to nonstereotypical trait dimensions. Whereas on ingroup stereotypical dimensions a response latency advantage for traits matching both self and ingroup would indicate self-stereotyping, the same effect on nonstereotypical dimensions would reveal self-anchoring (see Otten, 2004).

Conclusions and Future Directions

When discussing their findings, Cadinu and Rothbart (1996) were wondering whether self-anchoring is a cognitive process only applying to artificial, minimal groups or also to real-life intergroup contexts (see also Otten, 2002). The present research shows that also for well-established groups overlapping mental representations of self and ingroup can—at least in part—be traced back to inferences from the individual self to the group as a whole. This is especially noteworthy as it is to our knowledge the first empirical demonstration of self-anchoring in real groups that can unambiguously be distinguished from self-stereotyping.⁸

Response latencies on dichotomous self-judgments on initially ill-defined dimensions did not provide distinct evidence for self-stereotyping. Moreover, we did not find any evidence for a systematic tendency to differentiate the outgroup from either the self or the ingroup. It would be premature however to conclude directly from our data that self-anchoring is generally more relevant than self-stereotyping or that people's interest in intergroup differentiation is generally weak. First, one might argue that our findings rest only on one specific social categorization, male versus female gender. Yet, the validity of our findings in Studies 1 and 2 is not only supported by the fact Study 3 fully replicated the general pattern of findings in one larger design but also by the fact that we fully replicated the basic findings by Smith and collaborators, who based their experiments on different social categorizations (Coats et al., 2000; Smith et al., 1999; Smith & Henry, 1996).

A more crucial point relates to the intergroup context we established in the present research. We did not give our participants any indication that we consider the relation between men and women as competitive or as characterized by conflict, and neither did we refer to any status or power distinctions between the two groups. Hence, typical conditions known to enhance the interest in intergroup differentiation (see e.g., Brown, 2000; Mullen, Brown, & Smith, 1992) were absent. It may well be possible that via introducing status or power differentials between ingroup and outgroup or via establishing

a competitive group context, distinct evidence for self-stereotyping and an advantage for mismatching responses between self and outgroup and between ingroup and outgroup, respectively, would emerge.

Future research realizing the present research paradigm in different intergroup settings should address these assumptions. At present, our results from a non-conflictual intergroup context alert us that the individual self in fact does matter when people think about their own group and that representations of the ingroup can be shaped by representations of the individual self. Thus, even though we do not conclude from our data that the individual rather than the collective self is primary (e.g., Gaertner, Sedikides & Graetz, 1999; see also Sedikides & Brewer, 2001, for an elaborate discussion of this topic), we think that the present research convincingly reveals that intergroup research is well advised to consider and further investigate the rich interplay between individual and collective self.

NOTES

1. We did only include trait dimensions that were rated ambiguously for the respective target in the response time task but were rated in a clear-cut way (i.e., > 4 or < 4 on a 7-point scale) for the two other targets. Otherwise, the logic of matching or mismatching responses can no longer be applied.

2. The number of errors (i.e., a discrepancy between nonneutral ingroup evaluations in the questionnaire and responses during the reaction time measurement) was small.

3. The results for category salience as indicated on these measures were fully consistent across the three studies (i.e., a medium distance between ingroup and outgroup and a distance between self and ingroup that was significantly smaller than the self-outgroup distance); therefore, in the following we will not further refer to these variables.

4. Partial eta-square as computed by SPSS 11.0.1

5. The number of errors (i.e., discrepancies between nonneutral ingroup evaluations in the questionnaire and responses during the reaction time measurement) was small.

6. To keep the design manageable and to enhance statistical power, we did not include Trait Valence as fifth factor in the design. Moreover, both our own Studies 1 and 2 and those of Smith and collaborators (Coats, Smith, Claypool, & Banner, 2000; Smith, Coats, & Walling, 1999; Smith & Henry, 1996) revealed that the Valence factor is not crucial with respect to our main hypotheses.

7. When the self was target in the reaction time task, responses matching both the ingroup and the outgroup were made faster than the mismatching combinations. In the ingroup-target condition however, a response time advantage emerged for traits on which self and outgroup evaluations did not match. Note however that this effect does not include the Response factor; therefore, it cannot be read as straightforward evidence for the application of a differentiation heuristic.

8. Otten (2004), using explicit evaluation measures, reported some tentative evidence for self-anchoring in real groups.

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