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Running Head: SOCIAL VALIDATION IN GROUP DECISION-MAKING

Social Validation in Group Decision Making: Differential Effects on the Decisional Impact of
Preference-Consistent and Preference-Inconsistent Information

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Abstract

Shared information has a stronger impact on group decisions than unshared information. A prominent explanation for this phenomenon is that shared information can be socially validated during group discussion and, hence, is perceived as more accurate and relevant than unshared information. In the present study we argue that this explanation only holds for preference-inconsistent information (i.e., information contradicting the group members' initial preferences) but not for preference-consistent information. In Experiment 1 and 2 participants studied the protocol of a fictitious group discussion. In this protocol, we manipulated which types of information were socially validated. As predicted, social validation increased the decisional impact of preference-inconsistent but not preference-consistent information. In both experiments the effect of social validation was mediated by the perceived quality of information. Experiment 3 replicated the results of the first two experiments in an interactive setting in which two confederates discussed a decision case face-to-face with one participant.

Key words: social validation – preference consistency of information – group decision-making – common knowledge effect

Social Validation in Group Decision Making: Differential Effects on the Decisional Impact of Preference-Consistent and Preference-Inconsistent Information

Members of decision-making groups typically hold a certain amount of information that is not held by any other group member. This uniquely held information is referred to as unshared information and contrasted with shared information, which all group members hold before discussion (Stasser & Titus, 1985). One benefit of group decision-making is that it permits members to pool their unshared information during discussion. Thereby, groups have the potential to make a more informed decision than would be possible if the decision were left to any individual group member (cf. Mojzisch & Schulz-Hardt, 2006).

Despite the presumed benefits of pooling unshared information, one of the most consistent findings in the group decision-making literature is that groups frequently fail to detect the correct decision alternative if the information supporting this alternative is unshared (for reviews, see Brodbeck, Kerschreiter, Mojzisch, & Schulz-Hardt, 2007; Stasser & Titus, 2003). Similarly, studies using multi-cue judgment tasks have observed that the influence of a cue on group judgment is positively related to the number of individuals who have knowledge of that cue before the discussion. This has been referred to as the *common knowledge effect* (Gigone & Hastie, 1993, 1997). In short, research clearly shows that shared information has a stronger impact on group decisions than unshared information.

The literature on group decision-making offers three explanations to account for the greater decisional impact of shared information. The first explanation posits that shared information has a stronger decisional impact than unshared information because groups discuss more shared than unshared information (Stasser & Titus, 1985). According to the second explanation, shared information can affect all group members' initial preferences whereas unshared information can affect only one member's preference. Thus, even if a shared item of information is not contributed to discussion, its impact on the group's decision

will be conveyed through the members' initial preferences (Gigone & Hastie, 1993). The third explanation, which will be the focus of the present study, rests on the idea that hearing that others possess the same information provides *social validation* of the information. Since shared information is, by definition, held by other group members, it can be socially validated during discussion. In contrast, unshared information cannot be validated in this way. Hence, it is proposed that shared information is trusted more than unshared information, and, in turn, is accorded more decision weight (Hinsz, 1990; Larson, Foster-Fishman, & Keys, 1994).

Previous research on social validation effects did not differentiate between different types of information. In contrast, the present research focuses on the differentiation between information supporting the group members' pre-discussion preferences (i.e., preference-consistent information) and information contradicting these preferences (i.e., preference-inconsistent information). In particular, we propose that the social validation explanation for the greater decisional impact of shared information holds for preference-inconsistent but not for preference-consistent information. Stated differently, we argue that social validation increases the decisional impact of preference-inconsistent but not of preference-consistent information. Additionally, albeit in a more exploratory vein, we examine whether the influence of social validation is stronger for information that group members learn from each other during discussion than for information individuals already know before discussion.

In the following sections we first briefly review previous research on the effects of social validation during group discussion and then explain why social validation should increase the decisional impact of preference-inconsistent but not of preference-consistent information. Thereafter, we report three experiments that were designed to test our ideas.

Empirical Support for the Social Validation Hypothesis

Although the social validation explanation for the greater decisional impact of shared information is intuitively appealing, a closer inspection of the literature reveals that few

studies have sought to test this hypothesis. What is more, none of these studies has examined whether preference-consistent versus preference-inconsistent information (or other types of information) differentially benefit from social validation.

Wittenbaum, Hubbell, and Zuckerman (1999) found that participants were more likely to rate information as accurate and relevant when it was shared than when it was unshared. Hence, this study provides some evidence for the first step of the social validation hypothesis. However, Wittenbaum et al. (1999) focused on the idea that individuals evaluate each other more positively when they discuss much of their shared information and, consequently, did not investigate whether the evaluation bias favoring shared information fuels the greater decisional impact of shared information.

This link has been tested in a study by Postmes, Spears, and Cihangir (2001). They replicated the finding that group members evaluate shared information to be more accurate and relevant than unshared information. More importantly, they showed that the more positive evaluation of shared as compared to unshared information was associated with an increased likelihood of choosing the alternative that was implied by the shared information. However, Postmes et al. (2001) distributed the information as a *hidden profile*. In this information distribution sharedness and preference-consistency of information are partially confounded, that is, most of the shared information supports the group members' initial preferences. To some extent the same confound was also present in the Wittenbaum et al. (1999) study (cf. Kerschreiter, Schulz-Hardt, Faulmüller, Mojzisch, & Frey, 2008). Thus, instead of showing effects of social validation, the results of these studies might be due to the fact that individuals evaluate preference-consistent information more favorably than preference-inconsistent information and, hence, accord less weight to preference-inconsistent information – a causal chain that has been shown by Greitemeyer and Schulz-Hardt (2003).

In the third study (Parks & Cowlin, 1996), group members in one experimental

condition could request written records during discussion, whereas in the other condition they could not. Results showed that the availability of written records increased the decisional impact of unshared information. This finding suggests that establishing the validity of unshared information, by making written records available, ensures that it is granted the same consideration as shared information in decision-making, thereby supporting the idea that social validation increases the decisional impact of information. Although sharedness and preference-consistency of information was not confounded in this study, Parks and Cowlin (1996) did not differentiate between social validation effects for preference-consistent versus preference-inconsistent information.

Other studies also investigated the effect of social validation during discussion but did not focus on decision-making as the dependent variable. One line of research has shown that the tendency of groups to refrain from discussing unshared items after they have been introduced can be reduced by social cues signifying source credibility. For example, Stewart and Stasser (1995) showed that labeling group members as experts in the domains associated with their unshared information increased the repetition of unshared information. Similarly, members with task expertise (Wittenbaum, 2000) and leaders (Larson, Foster-Fishman, & Franz, 1998) were found to be more likely than others to repeat unshared information. Another direction of theory and research has been proposed by Wittenbaum et al. (1999). This research shows that individuals who communicate shared information are judged as task capable because their contributions can be validated by others as accurate and relevant (see also Wittenbaum & Bowman, 2004). Similarly, Kameda, Ohtsubo, and Takezawa (1997) have found that "cognitive central" group members (i.e., members that share a large amount of information with others) are particularly influential, presumably because they play a pivotal role in validating other members' knowledge.

In sum, several studies indicate that the positive value placed on shared information

and its communicators is at least partially due to social validation. However, the fact that individuals generate a positive evaluation (of the source or of the information) when shared information is mentioned does not necessarily imply that they put more emphasis on this information when making a decision. The few studies indicating that social validation may enhance the decisional impact of information have either confounded social validation with the preference-consistency of information or, at best, not differentiated between social validation effects for preference-consistent compared to preference-inconsistent information.

Extending the Social Validation Hypothesis

Given that social validation is capable of enhancing the decision weight of information, can we expect all types of information to benefit equally from social validation? We suspect that the answer is "no". Specifically, we propose that the influence of social validation on the decisional impact of an item depends on whether the item supports or contradicts one's decision preference. Mounting evidence indicates that the processing of preference-consistent information (i.e., information that supports one's prior belief or decision preference) differs from the processing of preference-inconsistent information (i.e., information that contradicts one's prior belief or decision preference). Preference-inconsistent information is more likely to trigger an effortful cognitive analysis than preference-consistent information. In other words, people tend to carefully scrutinize preference-inconsistent information but accept preference-consistent information at face value (e.g., Edwards & Smith, 1996; Ditto & Lopez, 1992; Ditto, Munro, Apanovitch, Scepansky, & Lockhart, 2003; Ditto, Scepansky, Munro, Apanovitch, & Lockhart, 1998). When this line of reasoning is transferred to the domain of social validation, it yields a very interesting prediction: Because preference-consistent information is accepted at face value, individuals should accept preference-consistent information that cannot be socially validated as readily as preference-consistent information that can be validated. In contrast, the effortful analysis triggered by

preference-inconsistent information should make individuals particularly sensitive to whether an item is socially validated or not. Therefore, preference-inconsistent but not preference-consistent information should benefit from social validation.

For exploratory purposes we also examined whether the effect of social validation on the decisional impact of information is stronger for information learned from other group members during discussion than for information owned prior to discussion. Note that there is substantial evidence showing that individuals judge information that they own before the discussion to be more valid and relevant than information encountered for the first time during discussion (e.g., Chernyshenko, Miner, Baumann, & Snizek, 2003; Van Swol, Savadori, & Snizek, 2003). What are the implications of this *ownership bias* for the impact of social validation? Because individuals are aware of their information sources, we suggest that information owned prior to discussion will still be perceived as relatively accurate and relevant even if it cannot be socially validated. In contrast, because people tend to be skeptical of new information, we argue that the perceived validity and relevance of new information presented by other group members depends critically on whether it is socially validated or not. Hence, we tentatively argue that the decisional impact of information learned from other group members will benefit more from social validation than the impact of information owned prior to discussion.

In summary, we predict that social validation increases the decisional impact of preference-inconsistent but not preference-consistent information. Moreover, we explore whether the influence of social validation is stronger for information learned from other group members during discussion than for information owned prior to discussion.

Overview of the Experiments

An unequivocal test of our predictions requires a situation in which we can manipulate which type of information receives social validation while simultaneously

keeping constant which items of information are mentioned during discussion. Obviously, such a situation is hard to realize in a real group experiment without introducing rather artificial constraints. Hence, in Experiments 1 and 2 we used a paradigm similar to the one used by Greitemeyer and Schulz-Hardt (2003; see also Cruz, Henningsen, & Williams, 2000). In the first part of the experiments, during which participants received information about two hypothetical job candidates, the procedure was identical to typical group experiments on information pooling. However, instead of taking part in a real discussion, each participant received a protocol of a fictitious discussion, with herself and two other fictitious group members as protagonists. In the protocol, we manipulated which types of information received social validation. We distinguished between four types of information: (1) preference-consistent information owned before reading the protocol, (2) preference-consistent information added by the fictitious group members during discussion, (3) preference-inconsistent information owned before reading the protocol, and (4) preference-inconsistent information added by the fictitious group members during discussion. For ease of exposition, we will refer to the information participants owned before reading the protocol as own information and to the information added by the group members during discussion as new information.

In Experiment 3 we sought to replicate the results of the first two experiments in an interactive group situation in which two confederates discussed a decision case face-to-face with one participant. The confederates' task was to selectively validate a particular type of information. In all three experiments the only thing that differed between the experimental conditions was which type of information was socially validated and which was not.

Experiment 1

Participants individually received information about two hypothetical candidates applying for a teaching position at the university. After reading the information, participants

were asked to select the best candidate and rate the suitability of each candidate for the job. Subsequently, participants received the protocol of a fictitious discussion they supposedly had held with two other group members. The discussion protocol contained both own and new information. One half of the decision-relevant items was preference consistent, the other half was preference inconsistent. In the discussion protocol, we manipulated which of the four types of information received social validation. After participants had finished reading the protocol, they were again requested to rate the suitability of each candidate and to make a second decision about which candidate was best. Finally, they were asked to rate the perceived accuracy and relevance of each item discussed in the protocol.¹

To gauge the influence of social validation on the decisional impact of different types of information, we compared the suitability ratings of the two candidates before reading the protocol with the suitability ratings of the candidates after reading the protocol. To illustrate, if social validation increases the decision weight of *preference-consistent* information, then validating preference-consistent information in the protocol should cause participants to perceive the initially preferred candidate as even more suitable after reading the protocol than before reading it, whereas the initially non-preferred candidate should be rated as less suitable after reading the protocol than before reading it. Similarly, if social validation increases the decision weight of *preference-inconsistent* information, then validating preference-inconsistent information should cause participants to perceive the initially preferred candidate as less suitable after reading the protocol than before reading it, whereas the initially non-preferred candidate should be rated as more suitable after reading the protocol than before reading it. In sum, social validation of preference-consistent information should increase the difference in suitability ratings of the preferred and the non-preferred candidate, whereas social validation of preference-inconsistent information should decrease this difference.

Method

Participants and design. The sample included 177 female and 54 male students ($M = 22.36$ years, $SD = 3.78$) who participated in return for course credit. The experiment was based on a 2 (social validation of preference-consistent own information: yes vs. no) $\times$ 2 (social validation of preference-consistent new information: yes vs. no) $\times$ 2 (social validation of preference-inconsistent own information: yes vs. no) $\times$ 2 (social validation of preference-inconsistent new information: yes vs. no) between-subjects factorial design. Participants were randomly assigned to the experimental conditions.

Materials. The profiles described two candidates applying for a teaching position at the university. In total, 26 items were available. These items had been selected in a pretest where 153 items were rated by a sample of $N = 154$ students ($M = 24.95$ years, $SD = 6.31$). From this item pool those items that were rated as most unambiguously positive, neutral or negative were selected. An example of a positive item is "The candidate provides practical examples in his lecturing". An example of a neutral item is "The candidate wears glasses". An example of a negative item is "The candidate is not interested in new topics". The items were distributed such that the candidates were more or less equally attractive, based on both the items initially given to participants and the items included in the discussion protocol.

Prior to reading the protocol, participants were given 14 decision-relevant and 2 neutral items (4 positive, 3 negative, and 1 neutral item for each candidate). The protocol contained 12 decision-relevant and 4 neutral items (3 positive, 3 negative, and 2 neutral items for each candidate; see Table 1). Six of the 12 decision-relevant items were own items. Three of these six items were preference-consistent (one positive item for the preferred candidate and two negative items for the non-preferred candidate), whereas the other three items were preference inconsistent (one positive item for the non-preferred candidate and two negative items for the preferred candidate). The remaining six decision-relevant items of the protocol

were new items raised by the other group members. Three of these six items were preference consistent (two positive items for the preferred candidate and one negative item for the non-preferred candidate) and three were preference inconsistent (two positive items for the non-preferred candidate and one negative item for the preferred candidate). In sum, the protocol included three items for each of the four types of information.

Procedure. Participants received a booklet that included all materials, instructions, and questionnaires. A cover letter explained that the aim of the study was to investigate effective decision-making. On the second page of the booklet each of the two candidates applying for a teaching position at the university was characterized by seven attributes (distributed as described in the previous paragraph). Participants were free to take as much time as they wished to read and review this candidate information sheet. On the next page of the booklet, participants were asked to indicate which candidate they preferred and to rate the suitability of each candidate for the vacant teaching position on a scale from 0 to 100.

Subsequently, participants were informed that decisions like the one in question were usually made by groups following a discussion. To simulate such a situation, they would receive an excerpt from a protocol of a real discussion. The protagonists of this discussion were labeled as "you", "person 1" and "person 2". The instructions noted that the group members did not have identical information. Participants were informed that their task was to select the candidate that was best suited for the job once all information had been considered.

In the discussion protocol, all pieces of information were mentioned without any evaluations tied to them. Moreover, no inferences about who might be the best candidate were made. The wording of the statements and the order of the information mentioned were identical in all experimental conditions. The experimental conditions hence differed only with regard to which type of information was socially validated and which was not.

In the case of validating own information, the protocol contained a passage about the

participant mentioning one piece of information and the two group members confirming that they held the same item (e.g. "You: I've heard that Candidate A provides practical examples in his lecturing. Person 1: Yeah, that's exactly what I heard; Person 2: Me too."). In contrast, if own information was not socially validated, the other members noted that this information was new to them (e.g. "You: I heard that Candidate A provides practical examples in his lecturing; Person 1: Oh, really? I never heard that before. Person 2: Me neither."). In the case of validating new information, the protocol contained a passage about one group member mentioning an item that was not part of the participant's initial information set and the other member confirming that she held the same item (e.g. "Person 1: I heard that Candidate B is not interested in new topics. Person 2: Yeah. That's the same information I got."). Finally, if new information was not validated, the protocol contained a passage about one member mentioning an item that was not part of the participant's initial information set and both the other member and the participant noting that this item was new to them (e.g. "Person 1: I heard that Candidate B is not interested in new topics. Person 2: Really? That's new for me. You: That's new for me, too"). In sum, information that was not socially validated constituted unshared information; own information that was validated constituted shared information, whereas new information that was validated constituted partially shared information.

After reading and reviewing the protocol, participants were again asked to rate the suitability of each candidate on a scale from 0 to 100. Additionally, they were asked to make a final decision about which candidate was best. Thereafter, participants were requested to rate the perceived accuracy and relevance of each item on 11-point scales ranging from 0 (*not accurate /not relevant at all*) to 10 (*very accurate /very relevant*). Finally, the experimenter thanked the participants and explained the purpose of the study.

Results

There were no significant effects of participants' age, gender, or initial decision on the

dependent variables.

Perceived suitability of candidates. As noted above, the influence of social validation on the decisional impact of different types of information was measured by comparing the suitability ratings of the candidates before reading the discussion protocol with the suitability ratings of the candidates after reading the protocol. As the dependent variable, we computed a difference score by subtracting the difference between the suitability ratings of the preferred and non-preferred candidate before reading the protocol from the difference between the suitability ratings of the preferred and non-preferred candidate after reading the protocol. Hence, this measure indicates whether the perceived suitability advantage of the initially preferred candidate had increased (positive values) or decreased (negative values) in the course of reading the protocol. We dubbed this difference score Δ suitability.² The means and standard deviations of the actual candidate ratings are given in Tables 2 and 3.

To test our predictions, we conducted a 2 (social validation of preference-consistent own information: yes vs. no) $\times$ 2 (social validation of preference-consistent new information: yes vs. no) $\times$ 2 (social validation of preference-inconsistent own information: yes vs. no) $\times$ 2 (social validation of preference-inconsistent new information: yes vs. no) ANOVA using Δ suitability as the dependent variable. In this analysis (and in all subsequent analyses), the preference consistency of information referred to participants' decision preference prior to reading the protocol. The results of the ANOVA are depicted in Figure 1.³ For the sake of clarity, in the following we report only those effects that are relevant for our hypotheses. A report of all effects can be obtained from the first author.

The ANOVA revealed a highly significant main effect for social validation of preference-inconsistent new information, $F(1, 215) = 25.99, p < .001, \eta_p^2 = .11$. The difference in perceived suitability between the initially preferred and the initially non-preferred candidate decreased if preference-inconsistent new information was socially

validated ($M = -9.73$, $SD = 20.27$), whereas it increased slightly if no such validation took place ($M = 2.07$, $SD = 17.33$). Similarly, a significant main effect for social validation of preference-inconsistent own information emerged, $F(1, 215) = 10.94$, $p = .001$, $\eta_p^2 = .05$, reflecting that the difference in perceived suitability between the initially preferred and the initially non-preferred candidate decreased if preference-inconsistent own information was socially validated ($M = -7.90$, $SD = 19.92$), whereas this difference remained more or less stable if no such validation took place ($M = -0.16$, $SD = 18.92$). In contrast, there was neither a significant main effect for the social validation of preference-consistent own information, $F(1, 215) = 0.95$, $p = .33$, $\eta_p^2 = .004$, nor for the social validation of preference-consistent new information, $F(1, 215) = 1.64$, $p = .20$, $\eta_p^2 = .01$. Thus, the results suggest that the decisional impact of preference-inconsistent but not of preference-consistent information benefits from social validation.⁴

Next, we explored whether the effect of social validation on the decisional impact of information is more pronounced for new than for own information. Because there were no significant effects of social validation on the decisional impact of preference-consistent information, we only compared the effect sizes of the two significant main effects for preference-inconsistent own and preference-inconsistent new information. As predicted, the effect size of the main effect for preference-inconsistent new information was more than twice as high ($\eta_p^2 = .11$) as the effect size of the main effect for preference-inconsistent own information ($\eta_p^2 = .05$). To provide a more direct test, we compared the mean values of Δ suitability in the experimental conditions in which preference-inconsistent own but not preference-inconsistent new information was socially validated with the mean values of Δ suitability in the conditions in which, inversely, preference-inconsistent new but not preference-inconsistent own information was validated. As predicted, Δ suitability was more negative in the conditions in which preference-inconsistent new but not preference-

inconsistent own information was socially validated ($M = -5.89$, $SD = 20.58$) than in the conditions in which preference-inconsistent own but not preference-inconsistent new information was validated ($M = -1.98$, $SD = 18.92$). However, this difference failed to reach significance, $t(118) = 1.08$, $p = .28$. Hence, though the means were in the predicted direction, the results provide only a weak indication that the effect of social validation on the decisional impact of information might be more pronounced for new than for own information.

Evaluation of information. The analyses thus far support the idea that social validation increases the decisional impact of preference-inconsistent but not of preference-consistent information. However, we do not yet know whether the decisional impact of preference-inconsistent information benefits from social validation because social validation affects the evaluation of information (i.e., increases its perceived accuracy and relevance). Thus, the next stage was to assess whether social validation increases the perceived accuracy and relevance of information and whether this effect is moderated by the type of information. Because the perceived accuracy and relevance of information were substantially correlated ($r = .49$; $p < .001$), we combined both variables to an index called "quality of information" (note that the same pattern of results emerged when the accuracy and relevance of information were analyzed separately). To test whether social validation has an effect on the perceived quality of information, we conducted simple effects analyses for each of the information types. As hypothesized, the quality of preference-inconsistent own information was perceived as higher if this type of information was socially validated ($M = 6.80$, $SD = 1.41$) than if it was not socially validated ($M = 6.06$, $SD = 1.53$), $F(1, 229) = 14.62$, $p < .001$, $\eta_p^2 = .06$. Moreover, we found that the quality of preference-inconsistent new information was perceived as higher if this type of information was socially validated ($M = 6.99$, $SD = 1.45$) than if it was not socially validated ($M = 5.44$, $SD = 1.60$), $F(1, 229) = 59.40$, $p < .001$, $\eta_p^2 = .21$. Notably, preference-inconsistent new information again seemed to benefit more from

social validation ($\eta_p^2 = .21$) than preference-inconsistent own information ($\eta_p^2 = .06$). No significant simple effects occurred for the social validation of preference-consistent own information and preference-consistent new information, both $F_s(1, 229) < 1$.

Mediation analyses. Finally, we tested the hypothesis that the effect of social validation on the decisional impact of information is mediated by the fact that social validation increases the perceived accuracy and relevance of information. Because the dependent variable Δ suitability is a difference score between the changes in suitability for the preferred minus the non-preferred candidate, we decided to use the difference score between the perceived quality of preference-consistent and preference-inconsistent information as the potential mediator. We labeled this mediator Δ information quality. Usually, Δ information quality has positive values because preference-consistent information is judged to be of higher quality than preference-inconsistent information (e.g., Greitemeyer & Schulz-Hardt, 2003). However, social validation of preference-inconsistent information should decrease this difference or even change the sign by increasing the perceived quality of preference-inconsistent information. Because we had found that social validation has a positive effect on the decisional impact of both preference-inconsistent own and preference-inconsistent new information, two mediation analyses were computed, one for preference-inconsistent own information, and the other for preference-inconsistent new information.

As predicted, social validation of preference-inconsistent own information had a significant effect on both Δ suitability, $\beta = -.20$, $t(229) = -3.03$, $p = .003$, and on Δ information quality, $\beta = -.20$, $t(229) = -3.07$, $p = .002$. When both social validation of preference-inconsistent own information and Δ information quality were entered into the regression, Δ information quality turned out to be a significant predictor of Δ suitability, $\beta = .66$, $t(229) = 13.19$, $p < .001$, whereas social validation was no longer a significant predictor, $\beta = -.07$, $t(229) = -1.47$, $p = .14$. According to a Sobel (1982) test, the mediation was

significant, $z = -2.99$, $p = .003$. The results of this analysis are summarized in Figure 2.

Similar results were obtained in the second mediation analysis. Social validation of preference-inconsistent new information had a significant effect on both Δ suitability, $\beta = -.30$, $t(229) = -4.74$, $p < .001$, and on Δ information quality, $\beta = -.32$, $t(229) = -5.16$, $p < .001$. When both social validation of preference-inconsistent new information and Δ information quality were used to predict Δ suitability, the relation between Δ information quality and Δ suitability was highly reliable, $\beta = .64$, $t(229) = 12.46$, $p < .001$, whereas the effect of social validation on Δ suitability was no longer significant, $\beta = -.09$, $t(229) = -1.79$, $p = .075$. The Sobel test was again significant, $z = -4.77$, $p < .001$. The results of this analysis are illustrated in Figure 3. In sum, the influence of social validation on the decisional impact of preference-inconsistent information was mediated by the perceived quality of information.

Discussion

The results provide evidence for our hypothesis that social validation increases the decisional impact of preference-inconsistent information but has no effect on the decisional impact of preference-consistent information. Furthermore, we found a weak indication that preference-inconsistent new information benefits more from social validation than preference-inconsistent own information – although, due to the lack of statistical significance, it is too early to draw any firm conclusions. Finally, the results revealed that the effect of social validation on the decisional impact of information is mediated by social validation increasing the perceived quality (i.e., perceived accuracy and relevance) of information.

Experiment 1 has two methodological limitations. First, the influence of social validation on the decisional impact of information was measured indirectly by comparing the suitability ratings of the candidates before reading the protocol with the suitability ratings of the candidates after reading it. Although it is plausible to assume that ratings of suitability are related to final decisions about the candidates, this link need not necessarily be very close.

Conceivably the use of such an indirect measure may explain why we did not find a clear moderation effect for own versus new preference-inconsistent information.

A second limitation of Experiment 1 is that the perceived quality of information (i.e., the mediator) was measured *after* participants had rated the suitability of the candidates for the second time. We used this procedure (instead of instructing participants to evaluate the items while reading the protocol) to avoid alerting participants to whether an item was socially validated or not. However, due to this procedure we cannot exclude that the results of the information evaluation are subsequent rationalizations of how the participants rated the candidates, rather than accurate reflections of how they evaluated the information when reading it in the protocol. Experiment 2 was designed to overcome these limitations.

Experiment 2

Experiment 2 sought to test the idea that social validation increases the decisional impact of preference-inconsistent but not of preference-consistent information more directly. To this end, we modified our paradigm slightly. As in Experiment 1, participants first made a decision about which job candidate they thought was best, and then read a protocol of a fictitious discussion. In contrast to Experiment 1, however, participants received the protocol *page by page*. After reading each page, they were asked to make a decision about which candidate they thought was best based on the information they had read so far. Importantly, each page of the protocol contained three preference-inconsistent new items but only one preference-consistent new item. Thus, because participants learned more new preference-inconsistent than preference-consistent items during the course of reading the protocol, the probability of them revising their initial decision should increase from page to page.

The protocol contained the same four types of information as in Experiment 1. Again, we manipulated which types of information were socially validated. In order to examine the stability of the mediation effects obtained in Experiment 1, we now also varied whether

participants evaluated the quality of information while reading the protocol or after they had finished reading it. The main dependent variable was the number of pages of the protocol participants read before they revised their decision. The rationale was as follows: If preference-consistent items are accorded more decision weight due to social validation, then social validation of preference-consistent items in the discussion protocol should cause participants to read more pages of the protocol before revising their decision (compared to a condition in which preference-consistent items were not socially validated). Conversely, if preference-inconsistent items are accorded more decision weight due to social validation, then social validation of preference-inconsistent items should cause participants to read fewer pages before revising their decision (compared to a condition where preference-inconsistent items are not socially validated).

Method

Participants and design. The sample included 113 female and 50 male students ($M = 22.78$ years, $SD = 2.87$) who participated in return for course credit. They were run in groups of up to four. The experiment was based on a 2 (social validation of preference-consistent own information: yes vs. no) $\times 2$ (social validation of preference-consistent new information: yes vs. no) $\times 2$ (social validation of preference-inconsistent own information: yes vs. no) $\times 2$ (social validation of preference-inconsistent new information: yes vs. no) $\times 2$ (time of information evaluation: while vs. after reading the discussion protocol) between-subjects factorial design. Participants were randomly assigned to one of the experimental conditions.

Materials. A decision task similar to that in Experiment 1 was used. The profiles described two candidates applying for a job as a travel agent. All in all, there were 48 decision-relevant and 16 neutral items characterizing the two candidates. These items had been selected in a pretest where 166 items were rated by a sample of $N = 76$ students. From this item pool those items that had been rated as unambiguously positive, neutral, or negative

were chosen. An example of a positive item is "The candidate is said to be absolutely reliable". An example of a neutral item is "The candidate used to play piano". An example of a negative item is "The candidate cares less about teenage clients than about adult clients".

Prior to reading the protocol, participants received five positive and three negative items for each candidate. Consequently, participants should have perceived the two candidates as more or less equally suited for the job. The protocol comprised eight pages. Each page contained two neutral and six decision-relevant items: one preference-consistent own item, one preference-inconsistent own item, one preference-consistent new item, and three preference-inconsistent new items (see Table 4). The 24 preference-inconsistent new items were distributed among the eight pages of the protocol such that the first page contained two disadvantages of the preferred candidate and one advantage of the non-preferred candidate, the second page contained one disadvantage of the preferred candidate and two advantages of the non-preferred candidate, the third page again contained two disadvantages of the preferred candidate and one advantage of the non-preferred candidate (like the first page) and so forth. Items were not repeated within the eight pages of the protocol. This was possible because there were 16 own items and each page contained two own items.

Procedure. The first part of Experiment 2 (until participants received the protocol) was identical to Experiment 1. Participants received a protocol of a fictitious discussion after having made their first decision. In the protocol, we manipulated which of the four types of information was socially validated. The most important difference to Experiment 1 was that participants received the protocol page by page. In total, they received eight pages. At the bottom of each page, participants were asked to make a decision about which job candidate they preferred based on all the information they had read so far. No explicit time constraints were imposed for reading each page. Nevertheless, if participants had not reached a decision

after five minutes, the experimenter asked them to make a decision within the next minute.

The main dependent variable was the number of pages participants read before revising their initial decision. Consequently, it would have been sufficient to give participants only as many pages of the protocol as they needed to revise their decision. However, because we wanted to record whether participants maintained a stable preference for one candidate after having revised their decision, participants always received the total eight pages.

In contrast to Experiment 1, we varied whether participants evaluated the quality of information while or after reading the protocol. In the first case, each item in the protocol was followed by two questions regarding the item's accuracy and relevance. In the second case, the protocol contained no evaluation scales. Instead, after participants had finished reading it, they received a list of the items from the protocol and were asked to rate the accuracy and relevance of each item. Finally, participants were thanked and debriefed.

Results

One participant repeatedly changed his candidate preference while reading the protocol and was hence excluded from all analyses. Two other participants were excluded because their questionnaires were incomplete. There were no effects of participants' age, gender, or initial decision on the dependent variables.

Pages read before decision revision. To test our hypotheses, we conducted a 2 (social validation of preference-consistent own information: yes vs. no) $\times$ 2 (social validation of preference-consistent new information: yes vs. no) $\times$ 2 (social validation of preference-inconsistent own information: yes vs. no) $\times$ 2 (social validation of preference-inconsistent new information: yes vs. no) $\times$ 2 (information evaluation: while vs. after reading the protocol) ANOVA using the number of pages participants read before revising their initial decision as the dependent variable. The results are depicted in Figure 4.

As predicted, the main effect for social validation of preference-inconsistent new

information was significant, $F(1, 128) = 36.45, p < .001, \eta_p^2 = .22$, reflecting that participants read fewer pages before revising their decision when preference-inconsistent new information was socially validated ($M = 2.00, SD = 0.78$) than when preference-inconsistent new information was not validated ($M = 2.73, SD = 0.85$). There was also a main effect for social validation of preference-inconsistent own information, $F(1, 128) = 10.06, p = .002, \eta_p^2 = .07$, reflecting that participants read fewer pages before revising their decision when preference-inconsistent own information was socially validated ($M = 2.18, SD = 0.76$) than when preference-inconsistent own information was not validated ($M = 2.56, SD = 0.98$). Neither of the two main effects was moderated by whether participants evaluated the information while or after reading the protocol (both $ps > .47$). There was neither a significant main effect for social validation of preference-consistent own information, $F(1, 128) = 0.51, p = .48, \eta_p^2 = .004$, nor for social validation of preference-consistent new information, $F(1, 128) = 2.36, p = .13, \eta_p^2 = .02$.⁵

As in Experiment 1, we compared the effect sizes of the two significant main effects for preference-inconsistent own and preference-inconsistent new information. In line with our expectation, the effect size of the main effect for preference-inconsistent new information was about three times as high ($\eta_p^2 = .22$) as the effect size of the main effect for preference-inconsistent own information ($\eta_p^2 = .07$). Again, we sought to provide a more direct test. Therefore, we compared the condition in which preference-inconsistent new but not preference-inconsistent own information was socially validated with the condition in which preference-inconsistent own but not preference-inconsistent new information was validated. As predicted, participants in the first condition read significantly fewer pages before revising their decision ($M = 2.08, SD = 0.83$) than participants in the latter condition ($M = 2.43, SD = 0.71$), $F(1, 78) = 4.11, p = .046, \eta_p^2 = .05$. Thus, preference-inconsistent new information benefited more from social validation than preference-inconsistent own information did.

Evaluation of information. As in Experiment 1, we examined whether social validation increases the perceived accuracy and relevance of information. Because both variables were again substantially correlated ($r = .48$; $p < .001$), we combined them to the same information quality index as in the previous experiment (again, the same pattern of results emerged when the accuracy and relevance of information were analyzed separately). In the following analyses, we included only the evaluation of those items that participants had read *before* revising their decision. This was done because those items which participants had read after revising their decision logically could not have had any impact on the prior process of decision revision. As in Experiment 1, the preference-consistency of information referred to participants' initial decision preference prior to reading the discussion protocol.

Simple effects analyses for each type of information revealed that the quality of preference-inconsistent new information was perceived as higher when this information type was socially validated ($M = 6.93$, $SD = 0.88$) than when it was not socially validated ($M = 6.09$, $SD = 0.82$), $F(1, 158) = 38.98$, $p < .001$, $\eta_p^2 = .20$. Similarly, the quality of preference-inconsistent own information was perceived as higher when this information type was socially validated ($M = 6.84$, $SD = 0.74$) than when it was not validated ($M = 6.44$, $SD = 0.79$), $F(1, 158) = 10.92$, $p = .001$, $\eta_p^2 = .07$. Neither of the two simple effects was moderated by whether the information was evaluated while or after reading the protocol (both $ps > .16$)⁶. As in Experiment 1, no significant effects emerged for the social validation of preference-consistent own items, $F(1, 158) = 0.69$, $p = .41$, and preference-consistent new items, $F(1, 158) = 2.16$, $p = .14$.

Mediation analyses. As outlined above, one limitation of Experiment 1 is that the perceived quality of information was measured after participants had rated the suitability of the candidates for the second time. In contrast, in Experiment 2, half of the participants evaluated the information in the course of reading the protocol. By including only these

participants in our mediation analyses (and only those items evaluated before the decision was revised), we were able to provide a clear-cut test for the idea that the information evaluation mediates the effect of social validation on the decisional impact of information. It should be noted that the subsequently reported results were similar to those obtained when the data of all participants were included in the analyses.

As in Experiment 1, two mediation analyses were computed, one for preference-inconsistent own information and the other for preference-inconsistent new information. In both analyses, we used Δ information quality (i.e., the difference score between the perceived quality of preference-consistent and preference-inconsistent information) as the mediator and the number of pages participants read before revising their decision as the dependent variable.

Social validation of preference-inconsistent own information had a significant effect on both Δ information quality, $\beta = -.23$, $t(79) = -2.06$, $p = .043$, and the number of pages participants read before decision revision, $\beta = -.23$, $t(79) = -2.08$, $p = .041$. When social validation of preference-inconsistent own information and Δ information quality were simultaneously entered in a multiple regression analysis, Δ information quality was a significant predictor of the number of pages, $\beta = .70$, $t(79) = 8.61$, $p < .001$, whereas social validation was no longer a significant predictor, $\beta = -.07$, $t(79) = -0.87$, $p = .39$. The Sobel test was significant, $z = -2.51$, $p = .01$. The results of these analyses are illustrated in Figure 5.

Similar results were obtained for the second mediation analysis. Social validation of preference-inconsistent new information had a significant influence on both Δ information quality, $\beta = -.32$, $t(79) = -3.02$, $p = .003$, and on the number of pages participants read before decision revision, $\beta = -.37$, $t(79) = -3.55$, $p < .001$. When both social validation of preference-inconsistent new information and Δ information quality were entered in a multiple regression analysis, the relation between Δ information quality and the number of pages was highly reliable, $\beta = .67$, $t(79) = 8.09$, $p < .001$, whereas the effect of social validation on the number

of pages was no longer significant, $\beta = -.16$, $t(79) = -1.92$, $p = .058$. The Sobel test for mediation was significant, $z = 2.83$, $p = .005$. The results are illustrated in Figure 6. In sum, Experiment 2 again provides support for the idea that the effect of social validation on the decisional impact of information is mediated by the perceived quality of information.

Discussion

Employing a newly developed paradigm, Experiment 2 replicates and extends the results of Experiment 1. In contrast to Experiment 1, participants received the discussion protocol page by page. Each page of the protocol contained more preference-inconsistent new information than preference-consistent new information. Therefore, the probability that participants would revise their initial decision should increase from page to page.

As predicted, participants revised their decision earlier (i.e., read less pages before revising their decision) when preference-inconsistent information was socially validated than when it was not validated. This was true for social validation of both own and new information. In contrast, social validation of preference-consistent information did not lead to significant delays in decision revision, thereby supporting our hypothesis that the decisional impact of preference-consistent information does not benefit from social validation.

The results of Experiment 2 also show that the decisional impact of preference-inconsistent *new* information benefits more from social validation than the impact of preference-inconsistent *own* information: If preference-inconsistent new but not preference-inconsistent own information was socially validated, participants revised their decision earlier than if, inversely, preference-inconsistent own but not preference-inconsistent new information was validated. In contrast to Experiment 1, where the same tendency could be observed but failed to reach statistical significance, this time this finding could be statistically substantiated. Given that in Experiment 2 we used a more direct indicator for the decisional impact of information, we consider the findings of Experiment 2 to be more representative of

the differences between validating own versus new preference-inconsistent information than the findings of Experiment 1.

It may be argued that this finding is due to the fact that each page of the protocol contained three preference-inconsistent new items but only one preference-inconsistent own item. All other things being equal, increasing the decision weight of three preference-inconsistent items by social validation should have a stronger effect on decision revision than increasing the decision weight of only one preference-inconsistent item. Note, however, that the same finding was obtained with regard to information evaluation, that is, social validation had a stronger effect on the perceived quality of preference-inconsistent new information than on the perceived quality of preference-inconsistent own information. Because each item had to be evaluated on its own, the latter finding cannot be explained by the differences in the number of items per page but seems rather to be due to the fundamental difference between perceiving new and own information. Therefore, we tentatively conclude that the differential impact of social validation on the decision weight of preference-inconsistent new compared to preference-inconsistent own information was not due to the way we distributed the information in the protocol.

Finally, Experiment 2 demonstrates that the evaluation of information quality mediates the influence of social validation on the decisional impact of information even when participants evaluated the items in the course of reading the protocol (i.e., before revising their decisions). Thus, the current results provide strong evidence for the hypothesis that socially validated information is accorded more decision weight because social validation increases the perceived quality (i.e., accuracy and relevance) of information.

Although the first two experiments yielded largely consistent results, a possible methodological limitation has to be taken into account. In both experiments participants read a protocol of a fictitious discussion. We used this procedure (instead of conducting a real

discussion) to manipulate the impact of socially validating different types of information while simultaneously keeping constant the items that were mentioned during discussion. Yet it would be premature to conclude that the results obtained using discussion protocols can be completely transferred to face-to-face discussions. In a face-to-face discussion, individuals actively engage in transmitting, receiving, and asking for information rather than passively perceiving a stream of information provided by others. Thus, in a real discussion group members may pay more attention to things like whether they have any pieces of information that have not yet been discussed. Furthermore, group members have to be attentive and monitor the discussion in order to express their arguments when it is their turn to speak. Consequently, in a face-to-face discussion individuals may tend to ignore or simply overlook whether items are socially validated or not. To test whether the findings of the first two experiments can be replicated in a more interactive group situation, we ran a third experiment using two confederates who together discussed the decision case with one participant.

There is another reason why a third experiment was necessary to substantiate our predictions. As noted above, Experiment 1 and 2 show that the influence of social validation on the decisional impact of information is mediated by the fact that social validation increases the perceived quality of information. However, there may be an additional or alternative mediating mechanism: Although the protocols contained no statements about the other group members' preferences, we cannot rule out that participants used the types of information that were socially validated as a cue to which candidate the group members favored. To illustrate, if both group members validated the advantages of Candidate A and the disadvantages of Candidate B, participants might have inferred that both group members favored Candidate A. These inferences may be considered as a potential mediating variable for the effect of social validation. To rule out this explanation, in Experiment 3 participants were asked to indicate after the discussion which candidate the confederates presumably favored.

Experiment 3

The first part of Experiment 3 (during which participants received their individual information set) was similar to the first two experiments. The most important difference to Experiment 1 and 2 was that participants did not receive a discussion protocol, but instead participated in a group discussion with two confederates. Similar to Experiment 2 participants learned more preference-inconsistent than preference-consistent new information during discussion, which means that given all the information the best choice would be to revise their initial decision. Depending on the experimental condition, the confederates socially validated either preference consistent information, preference inconsistent information, both types of information, or no information at all. We no longer distinguished between own and new information in order to keep the expenditure of the confederate experiment in check (if we had distinguished all four types of information, the confederates would have had to distinguish between 16 different conditions with regard to which type of information they had to validate; this, however, seemed impossible to accomplish).

After the confederates had mentioned their information, so that the participants were in possession of the full information set indicating that their initial preference was incorrect, the experimenter (who was aware of the total number of items) interrupted the discussion. The main dependent variable was whether or not the participants revised their decision after the discussion. In line with our hypotheses, we predicted that social validation of preference-inconsistent information increases the likelihood of decision revision whereas validation of preference-consistent information has no effect on the likelihood of decision revision.

Method

Participants and design. The sample included 47 female and 33 male students ($M = 25.84$ years, $SD = 7.73$) who either participated in return for course credit or received 8 Euros (approximately 12 US Dollars) for participation. The experiment was based on a 2 (social

validation of preference-consistent information: yes vs. no) $\times$ 2 (social validation of preference-inconsistent information: yes vs. no) between-subjects factorial design.

Participants were randomly assigned to one of the four experimental conditions.

Procedure and Materials. One naive participant and two confederates (one female, one male) participated in each experimental session. When the participant and the confederates assembled in the laboratory, the experimenter explained that the study was concerned with group decision-making. To this end, a personnel selection case would be used. The participants were asked to imagine they were the owners of a travel agency and were looking for a new travel agent. Their task was to choose between two candidates, A and B, who had applied for the job.

The participant and the confederates were seated at three different tables which were separated from each other by a partition wall. The experimenter handed out a candidate information sheet and an information evaluation questionnaire. On the candidate information sheet each candidate was characterized by four positive, two negative, and two neutral items which were selected from the items used in Experiment 2. The naive participant and the confederates were asked to memorize the candidate information because they would have no access to the information sheets during the discussion. To support this fixation phase, they had to write down the items on the evaluation questionnaire and rate each item regarding how positive or negative it was. Eight minutes were allocated for this task. Thereafter, they were given an additional eight minutes to memorize the information. Finally, they had to indicate on a separate questionnaire which candidate they individually preferred.

All information sheets and questionnaires were then collected by the experimenter. In doing so, the experimenter inconspicuously glanced at the questionnaires to find out which of the candidates the naive participant favored. The experimenter then gave the confederates a pre-arranged signal indicating this preference. This was necessary because the confederates

predominantly had to mention items that were *inconsistent* with the naive participant's choice preference. Hence the confederates needed to know which candidate the participant preferred.

Next, the naive participant and the confederates were seated at a table in the middle of the room. The experimenter handed out a sheet containing the instructions for the upcoming group discussion. These instructions emphasized that only a part of the group members' individual information was identical and that each member hence might have information of which the other members were unaware. Moreover, it was stressed that one of the two candidates was clearly superior based on the entire information set held within the group.

Next, the participant and the two confederates were instructed that their task would be to exchange all information available. During this information exchange phase, they should avoid stating a preference for one of the candidates. Thereafter, they would be given a respite to individually reconsider the decision case and again decide which candidate is best. Finally, they should again work together as a group and reach a unanimous decision. The last part of the instruction was given because the experimental setting should exhibit as many similarities to a group experiment as possible. Hence participants should anticipate a final group decision (as in a real group experiment). In reality, there was no final group decision.

The discussion lasted about ten minutes. The wording and the order of the items mentioned by the confederates were identical in all experimental conditions. The only thing that differed between the experimental conditions was the type of information that was socially validated by the confederates. The confederates socially validated both items mentioned by the naive participant and items mentioned by each other. In the case of social validation, the confederates confirmed that they held the same item. In the case of lack of social validation, the confederates noted that the item mentioned was new to them. All discussions were videotaped. The first author subsequently checked whether the confederates socially validated the correct items corresponding to the experimental condition.

In summary, the two confederates mentioned 16 items. All 16 items were new for the participants. There were two positive and two negative items for each of the two candidates. Hence, of these eight items four were preference-consistent and four were preference-inconsistent. The remaining eight items mentioned by the confederates were always inconsistent with the initial decision preference of the naive participant. This was realized as follows: If the experimenter gave the confederates a signal that the participant favored Candidate A, the confederates mentioned four positive items about Candidate B and four negative items about Candidate A. Inversely, if the experimenter gave a signal that the participant favored Candidate B, the confederates mentioned four positive items about Candidate A and four negative items about Candidate B (see Table 5).

After the confederates had mentioned their information, the experimenter interrupted the discussion and announced that the group members would now receive a brief respite to reconsider the information. During this respite the group members were seated at different tables and were asked to make a second individual decision about which candidate was best based on all the available information. Next, they received a questionnaire requesting them to indicate on 11-point scales ranging from 0 (*Candidate A*) to 10 (*Candidate B*) what they thought the candidate preference of each of the other two group members was. For data analysis, we recoded the scale such that lower values meant that the participants thought the confederates favored the same candidates as they did. Since the values for both confederates were strongly correlated ($r = .71$; $p < .001$), they were averaged and combined to one scale. After finishing the questionnaire, participants were probed for suspicion (none indicated deception by the confederates or awareness of the hypotheses), debriefed, and dismissed.

Results

Two participants had to be excluded from data analysis because it transpired during the debriefing that they had already participated in Experiment 2. Two other participants had

to be excluded because the confederates made validation errors during the discussion. There were no effects of participants' age or gender.

Likelihood of decision revision. The likelihood of decision revision was examined in a 2 (social validation of preference-consistent information: yes vs. no) by 2 (social validation of preference-inconsistent information: yes vs. no) logit-loglinear analysis. As predicted, the only significant effect was a main effect for social validation of preference-inconsistent information, $Z = 2.20$, $p = .028$, reflecting that 79% of the participants in the conditions with social validation of preference-inconsistent information revised their initial decision, whereas only 50% of the participants in the conditions without social validation of preference-inconsistent information did so. Neither the main effect for social validation of preference-consistent information nor the interaction effect was significant (both $ps > .54$). These results are displayed in Figure 7.

Inferences about the other group members' preferences. So far our results replicate the results of Experiment 1 and 2 in a real group setting. Although in Experiment 1 and 2 we presented evidence showing that the social validation effects are mediated by socially validated information being judged more accurate and relevant, we noticed that there may be an alternative explanation, namely that participants used the types of information that were validated as a cue to which candidate the other group members favored. To check whether the inferences participants made about the confederates' candidate preferences were affected by social validation, participants were asked to indicate which candidate the confederates presumably favored. The resulting data were submitted to a 2 (social validation of preference-consistent information: yes vs. no) $\times$ 2 (social validation of preference-inconsistent information: yes vs. no) ANOVA. The only significant effect to emerge was a main effect for social validation of preference-consistent information, $F(1, 72) = 4.24$, $p = .04$, $\eta_p^2 = .06$, such that participants in the condition in which preference-consistent information was

socially validated were more likely to think that the confederates preferred the same candidate as they did ($M = 5.82$, $SD = 2.16$) than participants in the condition in which preference-consistent information was not socially validated ($M = 6.79$, $SD = 1.95$). There was neither a significant main effect for social validation of preference-inconsistent information, $F(1, 72) = 0.05$, $p = .83$, $\eta_p^2 = .001$, nor a significant two-way interaction, $F(1, 72) = 2.82$, $p = .10$, $\eta_p^2 = .04$.

In summary, the results show that social validation of preference-consistent but not preference-inconsistent information had an influence on the inferences participants made about the other group members' decision preferences. Because only the decision weight of preference-inconsistent information benefits from social validation, we can exclude the possibility that the effect of social validation on the decisional impact of information is mediated by individuals inferring what preferences the other group members might have.

Discussion

Experiment 3 sought to test whether the results of the first two experiments can be replicated in an interactive group setting. As predicted, participants in the conditions in which preference-inconsistent information was socially validated by the confederates revised their decision more frequently than participants in the conditions in which preference-inconsistent information was not validated. In contrast, social validation of preference-consistent information had no significant effect on decision revision. Experiment 3 hence replicates the results of the first two experiments. Moreover, social validation of preference-inconsistent information had no effect on the inferences participants made about the confederates' choice preferences. Therefore, the greater decisional impact of socially validated information is not mediated by individuals inferring what preferences the other group members might have.

Notably, Experiment 3 was quite similar to a hidden profile experiment. There was a superior alternative but its superiority was hidden from participants prior to the discussion

because they held only a portion of the information that supported this alternative. Specifically, the situation for our participants was similar to that for group members in a hidden profile experiment in which all information is exchanged. Note that in the case of a hidden profile, all, or at least most, of the preference-inconsistent information is unshared, whereas all, or at least most, of the preference-consistent information is shared. Hence, the experimental condition of Experiment 3 that was most similar to a hidden profile situation was the one in which preference-inconsistent information was not socially validated whereas preference-consistent information was socially validated. In this condition, only 42% of the participants picked the correct alternative after the information exchange phase, although the information exchanged was sufficient to detect the correct alternative. If preference-inconsistent information was socially validated, the percentage of participants who chose the correct alternative almost doubled to 79%. Thus, the failure of groups to solve hidden profiles can at least partially be explained by the fact that in the case of a hidden profile preference-inconsistent information lacks social validation. Stated differently, our results indicate that even if groups succeed in discussing all the preference-inconsistent unshared information, the lack of social validation prevents this type of information from gaining sufficient decision weight to enable the group members to reliably overcome their suboptimal initial preferences.

General Discussion

There is strong evidence that preference-inconsistent information is scrutinized intensively and critically, whereas preference-consistent information is accepted more or less at face value (e.g., Ditto et al., 1998; Edwards & Smith, 1996). In the present study, we tested whether this idea can be transferred to the domain of social validation during group decision-making. Because preference-consistent information is accepted at face value, we predicted that individuals accept preference-consistent information that cannot be socially validated as readily as preference-consistent information that can be socially validated. In contrast,

because preference-inconsistent information initiates a more effortful cognitive analysis, individuals should be sensitive to whether a piece of preference-inconsistent information is socially validated or not. Hence, we hypothesized that the decisional impact of preference-inconsistent but not of preference-consistent information benefits from social validation.

In Experiment 1 and 2, participants studied the protocol of a fictitious discussion. As predicted, social validation increased the decisional impact of preference-inconsistent but not of preference-consistent information. We also investigated *why* social validation increases the decisional impact of preference-inconsistent information. In both experiments, the effect of social validation was mediated by social validation increasing the perceived quality of information. In an exploratory fashion, we also examined whether social validation effects depend on whether the information is learned from other group members or is owned prior to discussion. In summary, the effect of social validation was stronger for new than for own information (although these differences were only statistically significant in Experiment 2). Nevertheless, even the decisional impact of own information was affected by the lack of social validation when this information was preference-inconsistent. In Experiment 3, the central results of the first two experiments were replicated in an interactive group setting. Moreover, we were able to exclude the possibility that the effect of social validation is mediated by individuals inferring what preferences the other group members might have.

In sum, our results provide clear-cut evidence for the idea that the decisional impact of preference-inconsistent but not of preference-consistent information benefits from social validation. Confidence in this finding is bolstered not just by its replication in three experiments but especially by the fact that different experimental paradigms and different dependent variables were used.

Theoretical Implications

In the present study we challenged the notion that all types of information benefit

equally from social validation. What are the implications of our finding that the decisional impact of preference-inconsistent but not preference-consistent information benefits from social validation? According to a prominent explanation, groups fail to solve hidden profiles both because they focus too much on discussing shared information and because shared but not unshared information can be socially validated (cf. Stasser & Birchmeier, 2003). However, note that in case of a hidden profile all or at least most of the shared information is preference-consistent, whereas all, or at least most, of the unshared information is preference-inconsistent. Thus, one important implication of our results is that in the case of a hidden profile all or at least most of the shared information does *not* benefit from social validation. In other words, unshared information needs to be socially validated for it to have an impact on the group's decision, whereas social validation does not matter for shared information. A similar idea has been proposed by Wittenbaum and Bowman (2004) with regard to *mutual enhancement*, but has yet to be tested.

The findings of our study also tie in with results from Greitemeyer and Schulz-Hardt (2003) who found that individuals tend to stick to their initial decision because they judge preference-consistent information to be more compelling than preference-inconsistent information. In our opinion, the processes outlined in the two studies complement each other. Preference-inconsistent information is generally perceived as less accurate and relevant than preference-consistent information. If preference-inconsistent information lacks social validation, as in the case of a hidden profile, its decisional impact suffers even more. Hence, in the case of a hidden profile, the critical information needed to discover the correct solution is discredited both because it is preference-inconsistent *and* because it lacks social validation.

Importantly, the implications of our results extend well beyond the hidden profile paradigm. For example, there is ample evidence that minority members who argue in favor of the position consistent with a shared representation are more influential than those who argue

against such a position (e.g., Smith, Dykema-Engblade, Walker, Niven, & McGough, 2000; Smith, Tindale, & Steiner, 1998). This effect has been proposed to result from the shared representation creating a context within which information favoring a particular alternative is seen as valid and compelling. On the basis of our present findings, we suspect that this effect critically depends on whether the argument supports or contradicts the recipients' position. For minority members it is important to communicate arguments that are consistent with a shared representation because the arguments of the minority are preference-inconsistent with regard to the recipients' position and, hence, are intensively scrutinized. In other words, arguments of minority members need to be consistent with a shared representation to have an impact during discussion. In contrast, if an argument is preference-consistent with regard to the recipients' position, it should not matter whether it is consistent or inconsistent with a shared representation because it is accepted at face value. Testing this hypothesis represents an interesting topic for future research.

What are the implications of our finding that the effect of social validation is stronger for new than for own information? Note that shared information is, by definition, own information for all group members. In contrast, information that is new to one or more members but which still can be socially validated is *partially shared* (known by some but not all members). As we know from previous studies, the decisional impact of partially shared information is somewhat lower than that of shared information, but considerably higher than the impact of unshared information (e.g., Gigone & Hastie, 1993). Hence, social validation is particularly relevant for explaining the higher decisional impact of partially shared compared to unshared information.

Limitations and Future Directions

At this point, one important limitation of our study should be taken into account: the setting we used in all our experiments was somewhat artificial as compared to a natural group

discussion. Experiments 1 and 2 did not involve any group interaction at all. In Experiment 3, participants discussed the decision case face-to-face with two confederates. However, in Experiment 3 discussion was somewhat constrained since individuals were instructed to avoid stating a preference for one of the candidates. Moreover, each time a piece of information was mentioned, it was followed by a statement indicating whether or not the other individuals also held that item. Apparently, in a natural discussion, such statements may be far less frequent. Finally, in all our experiments the statements indicating social validation or nonvalidation were unambiguous. In contrast, in natural discussions group members may often not get such clear-cut validation or nonvalidation of their information, but rather are confronted with more ambiguous statements (e.g., “I don't remember that item, but I probably just forgot it”).

We decided to use these settings to gain full control over the pieces of information exchanged during discussion while simultaneously being able to manipulate which type of information receives social validation. Nonetheless, the most important task for future research is to examine whether our results can be replicated with interacting groups without confederates. One research strategy may be to conduct a hidden profile study with interacting groups and to manipulate whether individuals are instructed to respond with statements indicating social validation every time they encounter a shared piece of information or to respond with statements indicating non-validation every time they encounter an unshared piece of information. In the control condition, group members would receive no such instructions. Since in case of a hidden profile most or all of the shared information is preference-consistent, we hypothesize that instructing group members to explicitly validate shared information has no impact on the solution of hidden profiles (compared to the control groups). In contrast, since in case of a hidden profile most or all of the unshared information is preference-inconsistent, we predict that instructing group members to explicitly non-

validate unshared information will reduce the likelihood of solving hidden profiles.

Furthermore, with regard to the control groups we propose that, when controlling for the amount of unshared information exchanged during discussion, the number of spontaneous non-validation statements in response to unshared information should be negatively correlated with the solution of hidden profiles. In contrast, the number of spontaneous validating statements in response to shared information should be not correlated with group decision-quality.

Another promising avenue for future research is to investigate *why* the decisional impact of preference-inconsistent but not preference-consistent information benefits from social validation. Consistent with previous studies (e.g., Ditto et al., 1998) we proposed that this finding is due to different amounts of cognitive resources being allocated to processing preference-consistent and preference-inconsistent information. Whereas preference-consistent information is accepted (more or less) at face value, preference-inconsistent information is tested more intensively and critically. Hence, the presence or absence of social validation should be much more salient in the case of preference-inconsistent than preference-consistent information. Although our findings are consistent with this view, they do not provide direct evidence for the mediating role of differential allocation of cognitive resources. This could be tested in future studies by examining how accurately participants remember which items were validated and which were not. If the above-mentioned processes operate, participants should have a more accurate representation of the presence or absence of social validation in the case of preference-inconsistent information (as compared to preference-consistent information).

Finally, future research should be conducted to examine which variables moderate the differential effects of social validation observed in the present study. For example, previous research has found that pre-discussion dissent and a high degree of epistemic motivation lead to an intensified discussion and a thorough analysis of the information exchanged (e.g.,

Scholten, Van Knippenberg, Nijstad, & De Dreu, 2007; Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006). Because increasing the intensity of information processing in general may increase the likelihood that even preference-consistent information is analyzed in a deep and thorough fashion, pre-discussion dissent and a high degree of epistemic motivation may attenuate or even eliminate the differential effects of social validation on the decisional impact of information. Furthermore, the relative attractiveness of the decision alternatives may have a moderating effect on social validation processes. For example, if two candidates for a job are both perceived as being employable, then social validation processes may work differently than if they are both perceived as being fairly unemployable.

Clearly, further research is called for to fully understand the effects of social validation on decision making. Our results suggest that new insights can be gained by considering the differences in the way individuals process preference-consistent and preference-inconsistent information during group discussion.

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Footnotes

¹ In a pretest, we also examined on an exploratory basis whether the perceived valence of information is affected by social validation (using the same materials as in Experiment 1). The results showed that there was no such effect. Furthermore, we investigated whether valence of information had a moderating effect on the decisional impact of social validation. To illustrate, it is conceivable that a socially validated negative piece of information could be more hurtful to a candidate than a socially validated positive piece of information could be helpful. To test this idea, we introduced valence of information (positive vs. negative) as an additional factor in the experimental design. In short, the results revealed that social validation effects were not moderated by valence of information. We therefore dropped this variable from all subsequent analyses.

² We decided to use Δ suitability as the dependent variable for ease of exposition. However, the same results emerged when we computed a six-factorial ANOVA with social validation of the four information types as between-subjects factors, and time of measurement (prior vs. after reading the protocol) and candidate (suitability of the preferred candidate vs. suitability of the non-preferred candidate) as within-subjects factors.

³ Note that Δ suitability, on average, showed negative values indicating that the suitability advantage of the initially preferred candidate had decreased after discussion. This may be explained as follows: Prior to reading the protocol, participants received an equal number of positive and negative attributes for each candidate. Hence, participants presumably decided for the candidate whose positive attributes seemed particularly important to them and whose negative attributes seemed rather unimportant to them. In the protocol participants received additional information which was balanced regarding the idiosyncratic weighting of the attributes on which participants' initial decision was based. Consequently, the suitability advantage of the initially preferred candidate decreased during the reading of the protocol.

⁴ Another possibility to measure the influence of social validation on the decisional impact of information would have been to examine the effect of social validation on the frequency with which participants revised their initial decision. Yet, we decided to focus on the suitability ratings for two reasons: First, suitability ratings provide a more fine-grained measure of the impact of social validation than decision revision. Second, the frequency with which participants revised their decision is only an appropriate measure for social validation of preference-inconsistent information but not for social validation of preference-consistent information. To illustrate, if we assume that preference-consistent information benefits from social validation, then validating this type of information should make participants even more confident about their initial decision but should have no impact on the participants' final decision after having read the protocol. Nonetheless, we tested whether social validation had any effects on the frequency of decision revision. The results support our predictions, that is, participants in the conditions with social validation of preference-inconsistent new information revised their decision more frequently (30.3%) than participants in the conditions in which preference-inconsistent new information was not socially validated (9.8%), $\chi^2(1, N = 231) = 14.86, p < .001$. Similarly, participants in the conditions with social validation of preference-inconsistent own information revised their decision more frequently (27.0%) than participants in the conditions in which this type of information was not socially validated (13.8%), $\chi^2(1, N = 231) = 6.17, p = .01$. In contrast, neither social validation of preference-consistent new information nor social validation of preference-consistent own information had a significant influence on the likelihood of decision revision (both $ps > .19$).

⁵ There was, however, a two-way interaction between social validation of preference-consistent new information and time of information evaluation, $F(1, 156) = 6.54, p = .01, \eta_p^2 = .05$. Decomposing this interaction revealed that there was no effect of social validation if participants evaluated the information after reading the protocol, $F(1, 78) = 0.37, p = .55$. In contrast, if participants evaluated the information while reading the protocol, social validation

had a significant effect, $F(1, 78) = 7.00, p = .01, \eta_p^2 = .08$. Thus, participants who evaluated the information while reading the protocol read more pages before revising their decision if preference-consistent new information was socially validated ($M = 2.63, SD = 0.81$) than if it was not validated ($M = 2.13, SD = 0.88$). Though we did not explicitly predict this interaction, it fits in with our theoretical account. As outlined in the introduction, preference-consistent information is proposed to benefit less from social validation than preference-inconsistent information because it is accepted at face value whereas preference-inconsistent information is tested more critically. Now, if participants are instructed to evaluate each item while reading the protocol, preference-consistent information should be scrutinized more intensively than in the usual situation where such an instruction is lacking. Hence, the probability that preference-consistent information benefits from social validation increases.

⁶ Again, there was a two-way interaction between social validation of preference-consistent new information and the time of information evaluation, $F(1, 156) = 4.12, p = .04, \eta_p^2 = .05$. One-way ANOVAs showed that social validation had a significant effect on the evaluation of preference-consistent new information if participants evaluated the information while reading the protocol, $F(1, 78) = 5.60, p = .02, \eta_p^2 = .07$, yet had no effect if they evaluated the information after reading it, $F < 1$.

Table 1

Information Distribution in Experiment 1

Initial Information Set		
Information Type	Candidate A	Candidate B
Positive items	4	4
Neutral items	1	1
Negative items	3	3
Discussion Protocol		
	Candidate A	Candidate B
Positive own items	1	1
Negative own items	2	2
Positive new items	2	2
Negative new items	1	1
Neutral items	2	2

Table 2

Perceived Suitability of the Candidates as a Function of Social Validation of Preference-Inconsistent Own Information (Experiment 1)

	perceived suitability of the candidates			
	before reading		after reading the	
	the protocol		protocol	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
validation of preference-inconsistent own items				
initially preferred candidate	66.00 _a	10.67	62.87 _b	14.08
initially non-preferred candidate	46.19 _a	14.00	50.95 _b	16.47
no validation of preference-inconsistent own items				
initially preferred candidate	65.78 _a	10.30	65.96 _a	13.10
initially non-preferred candidate	48.65 _a	13.72	48.55 _a	16.16

Note. Means in the same row that do not share subscripts differ at $p < .01$

Table 3

Perceived Suitability of the Candidates as a Function of Social Validation of Preference-Inconsistent New Information (Experiment 1)

	perceived suitability of the candidates			
	before reading the protocol		after reading the protocol	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
validation of preference-inconsistent new items				
initially preferred candidate	67.06 _a	10.55	61.92 _b	15.06
initially non-preferred candidate	47.37 _a	14.59	52.73 _b	16.21
no validation of preference-inconsistent new items				
initially preferred candidate	64.93 _a	10.19	66.81 _a	15.98
initially non-preferred candidate	48.01 _a	13.41	47.43 _a	16.16

Note. Means in the same row that do not share subscripts differ at $p < .01$

Table 4

Information Distribution in Experiment 2

	Initial Information Set			
Information Type	Candidate A		Candidate B	
Positive items	4		4	
Neutral items	1		1	
Negative items	3		3	
	Discussion Protocol			
	If candidate preference = A		If candidate preference = B	
Information Type	Candidate A	Candidate B	Candidate A	Candidate B
Page 1 of the protocol				
Positive own items	1	1	1	1
Negative own items	0	0	0	0
Positive new items	0	1	1	0
Negative new items	2	1	1	2
Neutral items	1	1	1	1
Page 2 of the protocol				
Positive own items	0	0	0	0
Negative own items	1	1	1	1
Positive new items	1	2	2	1
Negative new items	1	0	0	1
Neutral items	1	1	1	1

Note. The protocol includes 8 pages. The information distribution on page 3 is identical to page 1, the information distribution on page 4 is identical to page 2 and so on.

Table 5

Information Distribution in Experiment 3

Information Type	Initial Information Set	
	Candidate A	Candidate B
Positive items	4	4
Negative items	2	2
Neutral items	2	2

Information Type	Information mentioned by the two confederates			
	If candidate preference = A		If candidate preference = B	
	Candidate A	Candidate B	Candidate A	Candidate B
Positive items	2	6	6	2
Negative items	6	2	2	6

Note. All items mentioned by the confederates were new for the participants

Figure captions

Figure 1. Main effects of socially validating each type of information on Δ suitability.

Figure 2. Mediation analysis for Experiment 1 with social validation of preference-inconsistent own information as the independent variable, Δ information quality as the mediator, and Δ suitability as the dependent variable. Path coefficients are standardized beta coefficients. The number in parenthesis represents the direct effect of the independent variable on the dependent variable prior to the inclusion of the mediator.

Figure 3. Mediation analysis for Experiment 1 with social validation of preference-inconsistent new information as the independent variable, Δ information quality as the mediator, and Δ suitability as the dependent variable. Path coefficients are standardized beta coefficients. The number in parenthesis represents the direct effect of the independent variable on the dependent variable prior to the inclusion of the mediator.

Figure 4. Main effects of socially validating each type of information on the number of pages participants read before revising their initial decision.

Figure 5. Mediation analysis for Experiment 2 with social validation of preference-inconsistent own information as the independent variable, Δ information quality as the mediator, and the number of pages read before decision revision as the dependent variable. The number in parenthesis represents the direct effect of the independent variable on the dependent variable prior to the inclusion of the mediator.

Figure 6. Mediation analysis for Experiment 2 with social validation of preference-inconsistent new information as the independent variable, Δ information quality as the mediator, and the number of pages read before decision revision as the dependent variable. The number in parenthesis represents the direct effect of the independent variable on the dependent variable prior to the inclusion of the mediator.

Figure 7. Percentage of decision revision as a function of social validation of preference-consistent information and preference-inconsistent information (Experiment 3).













