

Research article

Looking for honesty: The primary role of morality (vs. sociability and competence) in information gathering

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Abstract

Research on the two fundamental dimensions of social judgment, namely warmth and competence, has shown that warmth has a primary and a dominant role in information gathering about others. In two studies we examined whether the sociability and morality components of warmth play distinct roles in such a process. Study 1 (N = 60) investigated which traits were mostly selected when forming impressions about others. The results showed that, regardless of the task goal, traits related to morality and sociability were differently processed. Furthermore, participants were more interested in obtaining information about morality than about sociability when asked to form a global impression about others. Study 2 (N = 98) explored the adoption of asymmetric/symmetric strategies when asking questions to make inferences on others. As predicted, participants adopted an asymmetrically disconfirming strategy on morality traits, while they looked for more symmetrical evidence on sociability or competence traits. Overall, our findings indicated a distinct and a dominant role of the moral component of warmth in the information-gathering process. Copyright © 2010 John Wiley & Sons, Ltd.

There is growing evidence in the literature that two basic content dimensions underlie the judgments of social targets, including groups, cultures, other individuals, and the self (Abele, Cuddy, Judd, & Yzerbyt, 2008; Cuddy, Fiske, & Glick, 2008; Judd, James-Hawkins, Yzerbyt, & Kashima, 2005; Peeters, 1992, 2008; Peeters & Czapinski, 1990; Rosenberg, Nelson, & Vivekananthan, 1968; Wojciszke, 2005). These dimensions are referred to by different names, depending on the specific strand of work examined. Despite differences in names there is wide agreement on the common core of these dimensions (Abele & Wojciszke, 2007; see also Abele et al., 2008). Following Fiske, Cuddy, Glick, and Xu (2002), we use the labels warmth and competence. Whereas warmth pertains to functioning in social relations and involves qualities such as friendliness, kindness, and trustworthiness, competence refers to task functioning and involves qualities such as efficiency, competence, and capability (Abele et al., 2008; Cuddy et al., 2008).

The relevance of the warmth and competence dimensions stems from their correspondence to two critical questions basic to surviving in the social world (Fiske, Cuddy, & Glick, 2007). First, actors need to anticipate others' intentions toward them; the warmth dimension, comprised of such traits as honesty and kindness, assesses whether other intentions are beneficial or harmful. Second, actors need to know others' capability to pursue their intentions; the competence dimension, comprised of such traits as efficacy and skill, relates to perceived capability to enact intents (Cuddy et al., 2008; Fiske et al., 2002).

Recent experimental work by Leach, Ellemers, and Barreto (2007) on the positive evaluation of ingroups, pointed out that

the warmth dimension encompasses two distinct aspects: sociability and morality. Whereas sociability pertains to cooperation and to forming connections with others (e.g., friendliness, likeability), morality refers to perceived correctness of social targets (e.g., honesty, sincerity and trustworthiness). In making this argument, Leach et al. (2007) referred to previous work at the interpersonal level (Anderson & Sedikides, 1991; see also Ashton & Lee, 2001; De Raad & Peabody, 2005; Trafimow, Reeder, & Bilsing, 2001; Trafimow & Trafimow, 1999) showing that people treat personality traits related to morality as distinct from traits related to sociability. Moving from these results, Leach et al. (2007) pointed out that sociability and morality traits are distinct also at the group level. Specifically, morality traits turned out to be more important in positive ingroup evaluation than sociability and competence traits. In line with these findings, previous studies showed that morality is central in determining how people feel about themselves (Rodríguez Mosquera, Manstead, & Fischer, 2002). Moreover, morality is an important guide for individual behavior (e.g., Manstead, 2000; Schwartz, 1992). Specifically, it has been shown that people view morality as the most important guiding principle in their lives (Schwartz, 1992) and a crucial predictor of motivated behavior (Manstead, 2000).

Therefore, although morality and sociability traits are all prosocial traits (Fiske et al., 2002) and can be seen as falling along the same general dimension of evaluation (i.e., warmth), they are conceptually distinct characteristics and play different roles at the group and at the individual level (Leach et al., 2007).

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The present paper is concerned with the role of sociability and morality as well as of competence in the information-gathering process. Though it has been shown that sociability and morality are conceptually distinct characteristics at the individual as well as at the group level, to date, research on impression formation, and more specifically on information search, has tended to conflate morality and sociability into one broader dimension (i.e., warmth¹) (e.g., Vonk, 1996; Wojciszke, 2005; Wojciszke, Bazinska, & Jaworski, 1998; Ybarra, Chan, & Park, 2001). The present paper aimed to fill this gap. We intended to explore the distinct roles played by morality, sociability, and competence in gathering information about others.

FUNDAMENTAL DIMENSIONS OF SOCIAL JUDGMENT AND INFORMATION GATHERING

In a series of studies, Wojciszke et al. (1998) demonstrated the primacy of warmth traits in global evaluations of others. First, participants who were asked to list the most important personality traits listed significantly more warmth than competence traits. Second, warmth was a significantly stronger predictor than competence of global impressions of familiar others. In addition, and most important for the purpose of the present research, when asked to select traits that would help them to decide whether a target person deserved their generally positive opinion, participants selected significantly more warmth than competence traits. Therefore, when forming global impressions of others, people are more interested in gathering information on warmth than on competence. Several other authors have also found that global evaluation depends to a higher degree on warmth than on competence traits (for a review, see Wojciszke, 2005). These findings might be interpreted from a functionalist perspective. Indeed, knowing another's intentions for good or ill (i.e., warmth) turns out to be essential for survival even more than knowing whether a person can act on those intentions (i.e., competence) (Fiske et al., 2007). Accordingly, in social interactions, we are primarily interested in defining whether someone's intentions are beneficial or harmful, that is, whether they represent a material/psychological opportunity or a threat and, with respect to this, warmth is more informative than competence (Cuddy et al., 2008; Ybarra et al., 2001). Given that the main function of the impression formation process and of information search is to identify potential threats (Wojciszke et al., 1998), it is clear why warmth traits are dominant in the information-gathering process.

Moving from these findings, we aimed to investigate further how people acquire information about others by casting light on the relative roles played within the warmth dimension by sociability and morality. Specifically, we intended to determine whether sociability and morality are differently processed in the information search about others, highlighting which of the two subcomponents might play a primary role. Our perspective is

not to question the validity and the usefulness of the dual-dimension view of social judgments; warmth and competence are clearly two fundamental dimensions of social perception. Rather, we wish to explore the role of the sociability and morality components of warmth in the information-gathering process. Indeed, it is possible that the dominance of warmth suggested by previous studies on information search might be better explained in terms of a greater effect of one of the two subcomponents over the other. By contrast, it is also possible that sociability is just as important as morality in the information-gathering process, as previous studies have implicitly suggested (for a review see Cuddy et al., 2008; Wojciszke, 2005). However, it should be noted that both hypotheses have not been empirically investigated yet. As a matter of fact, previous studies have conflated sociability and morality into the broader dimension of warmth and did not question to what extent both characteristics explain the dominance of warmth in impression formation in general, and in information gathering in particular. The present paper specifically aimed at clarifying this point, considering sociability and morality as distinct characteristics.

Following previous argumentations, we conceptualized morality as a domain that refers to the perceived correctness of social targets involving traits such as honesty, sincerity, and trustworthiness² (see Leach et al., 2007; Martijn, Spears, Van Der Pligt, & Jakobs, 1992). Sociability instead would be more related to forming connections with others. Based on the results of several studies, we argued that morality should be more relevant than sociability and competence in order to define whether someone represents an opportunity or a threat, that is, whether he or she is beneficial or harmful for the material and psychological well-being of the perceivers. Specifically, previous research that has assessed morality free of sociability has suggested that moral traits (e.g., honesty) could be more relevant than any other concept to define whether someone is beneficial or harmful (Van Lange & Kuhlman, 1994). Further, the evolutionary approach and the socio-biological model (see Alexander, 1987) suggest that morality is fundamental in promoting group cohesion and in protecting the group from intergroup threats. In addition, it has been shown that morality might shape social reasoning, in that people spontaneously recruit reasoning schemata meant to detect threatening behaviors (i.e., the cheater-detection algorithms; see Cosmides & Tooby, 1992). Another strand of work, based on functional neuroimaging, showed that the detection of trustworthiness in a face is a spontaneous, automatic process linked to activity in the amygdala (Winston, Strange, O'Doherty, & Dolan, 2002), a subcortical brain structure implicated in the detection of potentially harmful stimuli (Amaral, 2002; see also Engell, Haxby, & Todorov, 2007). Research has also demonstrated that individuals detect trustworthiness in a face faster than sociability and competence due to the crucial role of moral traits in establishing the intentions of others (Willis & Todorov, 2006). Therefore, given that the identification of potential threats is crucial in the information-gathering process (Wojciszke et al., 1998), we hypothesized that morality should have a distinct and a dominant role relative to sociability and

¹Research on impression formation has tended to use the label "morality" instead of "warmth" (e.g., Vonk, 1996; Wojciszke, 2005; Wojciszke et al., 1998; Ybarra et al., 2001). However, such a dimension comprised sociability traits (e.g., kind and cheerful) as well as morality (e.g., honest and sincere) traits. Therefore, the morality dimension used in these studies overlaps substantially with the construct of warmth. In our paper, morality is intended as an aspect of warmth distinct from sociability that comprises characteristics relevant to perceived correctness of social targets.

²Such an operationalization of morality is widespread in Western cultures (see Haidt, Koller, & Dias, 1993). Therefore, in the present research, we confined our understanding of morality to this conceptualization.

competence in information search. In other words, we hypothesized that the evolutionary argument used to explain the primacy of warmth over competence in the information-gathering process (see Fiske et al., 2007) might be better conceived as a theoretical interpretation mostly referring to the morality component of warmth.

OVERVIEW OF THE STUDIES

Two studies aimed to highlight the distinctive and dominant role of moral traits (vs. sociability and competence traits) in the information-gathering process about others. Study 1 investigated whether participants selected more moral traits than sociability and competence-related traits when asked to form a global impression about other individuals. Study 2 investigated whether people adopted different information-search strategies when inquiring about morality rather than about sociability and competence dimensions. In both studies, we also checked the possible effects of the target membership, investigating whether people differentially looked for information when they were faced with an ingroup member (i.e., Italian) vs. an outgroup member (i.e., Indian³).

STUDY 1

Study 1 experimentally investigated which traits are primarily selected when forming impressions about others. We predicted that the perceivers should be more interested in gaining information about the target's morality (vs. sociability and competence) when forming a global impression, i.e., when functioning under an unclearly specified goal. However, in line with previous arguments (Wojciszke et al., 1998), we hypothesized that when social interaction is driven by specific goals, the domain of the goal determines the information selection (see also De Bruin & Van Lange, 2000; Hilton & Darley, 1991). In other words, when the perceiver's goal pertains to the target's competence (e.g., in employment decision making), competence traits should be selected more than those for sociability and morality. Similarly, under a sociability-relevant goal (e.g., inviting someone to a party), participants should select more sociability traits than morality and competence traits. Finally, as for the global impression, under the morality-relevant goal (e.g., revealing a secret to someone), participants should select more morality traits than sociability and competence traits.

In order to test these hypotheses, we set up a study in which participants were asked to judge the relevance of certain trait selection to accomplishing four goals (i.e., global impression, sociability-relevant goal, competence-relevant goal, and morality-related goal).

³Thirty-one students (age: $M = 25.29$; $SD = 5.29$) of the university of Milano-Bicocca were asked to rate six relevant ethnic outgroups (i.e., Africans, Chinese, Indians, Argentines, Israelis, Turks) on competence, sociability, and morality. Participants provided their answers on a 5-point scale, ranging from 1 (*not at all*) to 5 (*extremely*). As expected the within-subjects ANOVA yielded a significant trait \times target interaction effect, $F(10,30) = 4.63$, $p = .004$, $\eta_p^2 = .24$. We chose Indians as a target group because they were rated as equally competent ($M = 3.39$; $SD = 1.05$), sociable ($M = 3.19$; $SD = .91$) and moral ($M = 3.10$; $SD = .87$), all $p > .19$. Moreover, the scores did not differ significantly from the scale's midpoint (all $p > .24$).

Method

Participants

Sixty students at the University of Milano-Bicocca voluntarily took part in the study (34 females, 26 males; $M = 22.37$; $SD = 2.11$). All participants were Italian citizens.

Materials and Procedure

Participants were approached in various libraries of the University of Milano-Bicocca. They were asked to participate in a study on the information-gathering process, and those who accepted were given a questionnaire to fill out. On a cover page, participants' demographic data (i.e., age, gender, nationality) were collected.

The first page of the booklet presented the target picture, supplemented with some biographical information (i.e., name, age and nationality). The pictures, which represented males, were balanced by favorability on the basis of a previous pretest⁴. Participants were randomly exposed either to the outgroup member (i.e., Durjaya, 28 years old, Indian), or to the ingroup member (i.e., Daniele, 28 years old, Italian), or to the control condition, namely they were not exposed to any specific target (i.e., participants were asked to gather information on an unknown person. Neither a picture nor biographical information was provided). After the target was presented, participants were told that they would carry out a trait-selection task to judge which traits were most important in their evaluation of the target in the context of specific goals. In particular, participants were required to judge the relevance of selecting certain traits to accomplish four goals (see Wojciszke et al., 1998): (a) to form an evaluative impression of the target (i.e., global goal); (b) to decide if they would reveal an important secret to the target (i.e., morality-relevant goal); (c) to decide if they would invite the target to a party (i.e., sociability-relevant goal); (d) to decide if they should employ the target for a research programme (i.e., competence-relevant goal). The order of goals was randomly varied between participants.

After each goal manipulation, participants were presented with a list of 15 positive traits outlined in a pretest⁵, including

⁴Twenty students (age: $M = 22.35$; $SD = 4.53$) of the university of Milano-Bicocca were asked to rate the pleasantness of two pictures representing either an outgroup (i.e., Durjaya, 28 years old, Indian) or an ingroup (i.e., Daniele, 28 years old, Italian) member. The pleasantness was judged on a scale ranging from 1 (*very unfavorable*) to 7 (*very favorable*). Results showed that the picture representing the ingroup member was rated as positive ($M = 3.10$; $SD = .88$) as the picture representing the outgroup member ($M = 2.80$; $SD = 1.62$); $t(19) = .515$, ns.

⁵A pool of 28 traits was rated by 22 students for their competence-, sociability-, and morality-relatedness on a scale ranging from 1 (*not at all*) to 5 (*extremely*). As expected the within-subjects ANOVA yielded a significant trait \times dimension interaction effect, $F(54,19) = 25.11$, $p = .001$, $\eta_p^2 = .57$. For competence, we selected five items for which the score on the competence-relatedness scale ($M = 4.32$, $SD = .62$) was higher than that on the sociability-relatedness ($M = 2.54$, $SD = .69$) and on the morality-relatedness scale ($M = 2.28$, $SD = .86$), $p = .001$. For sociability, we considered five items for which the score on the sociability-relatedness scale ($M = 4.26$, $SD = .57$) was higher than that on the competence-relatedness ($M = 2.30$, $SD = .69$) and on the morality-relatedness scale ($M = 2.80$, $SD = .74$), $p = .001$. For morality, we included five items for which the score on the morality-relatedness scale ($M = 4.27$, $SD = .73$) was higher than that on the sociability-relatedness ($M = 3.46$, $SD = .56$) and on the competence-relatedness scale ($M = 2.18$, $SD = .59$), $p = .001$.

five morality traits (i.e., sincere, honest, righteous, trustworthy, respectful), five sociability traits (i.e., kind, friendly, warm, likeable, helpful) and five competence traits (i.e., intelligent, competent, efficient, skillful, capable). Participants evaluated the traits' relevance on a 7-point scale (from 1 = *absolutely no* to 7 = *absolutely yes*). At the end of the questionnaire, participants were properly debriefed, thanked, and released.

Results

As a first step, to confirm that sociability, morality and competence operated as distinct characteristics in this study, we ran a confirmatory factor analysis (CFA). Across the four task-goals, the three-factor model fitted better than both the two-factor model and one-factor model⁶.

After verifying that the three-factor model represents more adequately the data, we explored the participants' information-search process on these three different characteristics. For each goal-condition, three composite scores were computed: the first (M traits) on the items of morality (Cronbach's $\alpha = .88$ ⁷); the second (S traits) on the items of sociability (Cronbach's $\alpha = .76$); and the third (C traits) on the items of competence (Cronbach's $\alpha = .89$).

Then, we performed a 3 (trait content: morality, sociability, competence) \times 4 (task-goal: global goal, morality-relevant, sociability-relevant, competence-relevant) \times 3 (target: ingroup, outgroup, control) analysis of variance (ANOVA), with the first two factors varying within participants and the last factor varying between participants.

The analysis yielded neither a main effect of target nor interaction effects between the target and the other two factors, $F_s < 1.81$, ns. Hence, participants' information-search process proved to be unaffected by the membership of the person about whom they were collecting data.

However, the ANOVA revealed a main effect of trait content, $F(2,56) = 21.79$, $p = .001$, $\eta_p^2 = .28$: As the post-hoc

Table 1. Means (standard deviations) of moral-related, sociability-related and competence-related traits relevance under different goals (Study 1)

Task-goal	Trait content		
	Sociability	Morality	Competence
S relevant	6.10 (.77) _a	4.70 (1.32) _b	4.81 (1.49) _b
M relevant	4.47 (1.06) _a	6.42 (.77) _b	4.19 (1.31) _c
C relevant	4.52 (1.10) _a	5.36 (.99) _b	6.55 (.77) _c
Global	5.35 (1.07) _a	6.13 (.90) _b	4.54 (1.24) _c

Note: Means with different subscripts in a given row are significantly different from each other at $p < .05$ as revealed by the Bonferroni post-hoc multiple comparisons.

analyses showed, independently of the goal assignment, for their judgement, participants considered the M traits more relevant ($M = 5.65$, $SD = 1.03$) than both the S traits ($M = 5.12$, $SD = 1.19$), $p = .001$, and the C traits ($M = 5.03$, $SD = 1.76$), $p = .001$.

Moreover, the results did not reveal a main effect of task-goal, $F(3,56) < 1$, $p = .36$, $\eta_p^2 = .01$. However, there was a significant two-way interaction between trait content and the task-goal, $F(6,56) = 92.79$, $p = .001$, $\eta_p^2 = .64$. As we can see in Table 1, participants under the S-relevant goal were more interested in S traits than in C traits or in M traits; C and M traits did not differ from each other. Under the M-relevant goal, participants were more interested in M traits than in S traits, and in S traits more than in C traits. Under the C-relevant goal, participants valued the C traits more than the M traits, and the M traits more than the S traits. Although the matching between trait content and the goal of evaluation is unsurprising, the noteworthy result is the divergence between morality traits and sociability traits, which is significant in the three goal conditions.

Furthermore, in the global goal condition, when participants were asked to form a global impression on the target, they proved to be more interested in obtaining information on M traits than on S traits; the C traits engendered even less interest.

Discussion

The present study yielded a coherent set of findings. First, traits related to morality and those related to sociability were processed differently, regardless of the task goal. Replicating previous studies (see Wojciszke et al., 1998) we showed that, when social interaction was driven by specific goals, the domain of the goal determined the information selection. This result confirmed that the information-gathering process is highly flexible and depends on perceiver's cognitive and motivational goals (Wojciszke, 2005). Despite the interaction between the task-goal and trait content, the robust main effect of trait content we found seems to suggest that the moral traits are crucial in the information-gathering process. Moreover, in line with our hypothesis, participants were more interested in obtaining information about morality than about sociability and competence when asked to form a global impression. Further, participants' information-search process was not affected by the group membership (ingroup vs. outgroup) of the person about whom they were forming an impression.

⁶In the analysis each item was specified to indicate only its hypothesized factor and the three hypothesized latent factors of morality, competence, and sociability were allowed to correlate with each other. Three different factor models were tested for each task-goal (i.e., global goal, morality-relevant, sociability-relevant, competence-relevant). In Model 1, all 15 items loaded on one factor. In Model 2, the items loaded on two different factors (i.e., competence; morality combined with sociability). In Model 3, the items loaded on three different factors (i.e., competence, sociability and morality). In the global-goal condition, the three-factor model fitted better ($\chi^2/df = 1.71$; RMSEA = .10; CFI = .91; NNFI = .90) than both the two-factor model ($\chi^2/df = 2.29$; RMSEA = .17; CFI = .84; NNFI = .81) and the one-factor model ($\chi^2/df = 4.36$; RMSEA = .30; CFI = .52; NNFI = .49). Considering the competence-goal condition, the three-factor model fitted better ($\chi^2/df = 1.91$; RMSEA = .11; CFI = .89; NNFI = .87) than both the two-factor model ($\chi^2/df = 2.32$; RMSEA = .15; CFI = .84; NNFI = .81) and the one-factor model ($\chi^2/df = 3.50$; RMSEA = .28; CFI = .70; NNFI = .65). Considering the sociability-goal condition, the three-factor model fitted better ($\chi^2/df = 2.59$; RMSEA = .10; CFI = .85; NNFI = .82) than both the two-factor model ($\chi^2/df = 3.51$; RMSEA = .22; CFI = .76; NNFI = .71) and the one-factor model ($\chi^2/df = 4.74$; RMSEA = .28; CFI = .63; NNFI = .57). Finally, in the morality-goal condition, the three-factor model fitted better ($\chi^2/df = 2.00$; RMSEA = .11; CFI = .88; NNFI = .86) than both the two-factor model ($\chi^2/df = 2.73$; RMSEA = .17; CFI = .80; NNFI = .76) and the one-factor model ($\chi^2/df = 4.36$; RMSEA = .29; CFI = .60; NNFI = .53). Although the model fit indexes are not ideal, they show that across the four tasks the three factor solutions fit better the data than the two-factor and the one-factor solutions. Such results may be affected by the relatively small number of participants ($N = 60$) combined with the large number of observed variables ($N = 15$ items) (see Jöreskog & Sörbom, 1993).

⁷The reported Cronbach's α s are the means of the scales α s in the four different goal conditions.

Taken together, these findings confirmed that sociability and morality are processed differently in information gathering and that morality has a dominant role in such a process.

STUDY 2

Study 2 aimed to replicate and extend the findings of the first study by considering a different aspect of information gathering, that is, the question-asking process. Research on information selection in abstract or social contexts has analyzed the different information-search strategies and the conditions in which they occur (e.g., Cameron & Trope, 2004; Devine, Hirt, & Gehrke, 1990; Klayman & Ha, 1987; Skov & Sherman, 1986; Trope & Bassok, 1982; Trope & Thompson, 1997). One of the strategies that people tend to adopt when engaged in social-inference tasks is asymmetric testing. This strategy refers to the preference for asking questions to which the possible answers (i.e., “yes” or “no”) convey a different amount of information. In particular, a question is asymmetric when the answer that confirms the focal hypothesis and the answer that disconfirms it are not equally diagnostic. Specifically, a query is asymmetrically disconfirming when a hypothesis-disconfirming answer weakens the hypothesis more than a hypothesis-confirming answer supports it. Conversely, a question is asymmetrically confirming when a confirmation favors the hypothesis more than a disconfirmation refutes it. It has been argued that this latter kind of question has a potential confirmatory effect on the beliefs that people hold. For instance, in order to determine whether a new acquaintance is extrovert, people might formulate an asymmetrically confirming question by asking “Is she or he always the life of the party?”. The confirming answer regarding extroversion (i.e., “yes”) is more informative than the disconfirming response because a person who answers “yes” is almost certainly extrovert, while if she or he answers “no”, it does not necessarily mean that she or he is introvert (Trope & Thompson, 1997). More generally, the asymmetric search is typically preferred when the hypothesis to test is backed by previous knowledge and particularly salient. Asymmetric testing turned out to play a key role when seeking information about social categories and stereotyped individuals (Cameron & Trope, 2004; Trope & Thompson, 1997). Specifically, studies have shown that stereotypes may affect impression formation even in the stages preceding contact and evidence processing. Indeed, people proved to adopt an asymmetric strategy when category-based expectancies were cognitively available, namely on stereotype-consistent traits.

Based on this evidence, we wanted to investigate how people search for information on ingroup and outgroup members when inquiring about traits related to sociability, morality, and competence. In line with the results of Study 1, we expected people to use different strategies in searching for information on different traits. Previous studies have shown that people tend to use asymmetric strategies in information search on stereotypical traits and on cognitively salient hypotheses (Trope & Thompson, 1997). Based on this finding, we hypothesized that participants would select asymmetric questions when seeking information about moral traits. Indeed,

the primary role of morality should lead people to search for highly diagnostic information on others’ moral/immoral characteristics. Conversely, we expected people to be less asymmetric in searching for information on sociability and competence attributes because of the lower cognitive and motivational strength of the hypotheses associated with these attributes.

More specifically, we hypothesized that people would adopt an asymmetrically disconfirming strategy in searching for information on the morality dimension. The rationale underlying this hypothesis is twofold. First, from a cognitive point of view, our prediction is in line with previous findings on the confirming and disconfirming process of trait concepts (Reeder & Brewer, 1979; Rothbart & Park, 1986; Skowronski & Carlston, 1987; Trafimow & Trafimow, 1999). Indeed, Reeder and Brewer (1979) in their insightful paper proposed the distinction between partially restrictive and hierarchically restrictive trait dimensions. Partially restrictive traits imply a symmetric relation between dispositions and possible behaviors, while hierarchically restrictive traits imply an asymmetrical relation, that is individuals at one dispositional extreme are associated with a wider range of behaviors than are individuals at the other extreme. As a case in point, moral traits are hierarchically restrictive traits: For instance, honest individuals are expected to engage almost exclusively in honest behaviors, whereas dishonest individuals could engage in both honest and dishonest behaviors (see Trafimow & Trafimow, 1999). Accordingly, a single dishonest behavior is more diagnostic and leads to a stronger correspondent inference than a honest behavior. For this reason, people should use an asymmetrically disconfirming strategy in searching for information on moral traits due to the greater informational strength of the negative pole than the positive one.

Second, when evaluating people, individuals might be motivated to question the others’ morality and to falsify the traits concerning the moral domain in order both to detect those behaviors which might be threatening and to protect themselves. In other words, people might be prone to recruit an over-protecting strategy (see Hammond, 2007). This goal might be achieved by adopting an asymmetrically disconfirming search. Indeed, it has been shown that such a strategy increases the diagnosticity of the evidence disconfirming the hypothesis under consideration (e.g., testing whether someone is moral) and decreases the diagnosticity of the evidence confirming the hypothesis (Trope & Liberman, 1996).

Method

Participants

Ninety-eight students enrolled in various courses at the University of Milano-Bicocca participated in the study (37 male, 61 female; $M = 24$; $SD = 4.23$). All participants were Italian citizens.

Materials and Procedure

As in the first study, participants were approached in the campus libraries and were asked to participate in a study on the

information-gathering process. Those who accepted were given a questionnaire to fill out. On the first page of the questionnaire, participants were presented with the target's picture along with little biographical information (i.e., name, age, and nationality). Participants were randomly assigned to one of the two experimental conditions. Specifically, 49 participants were exposed to the outgroup member (i.e., Indian) and the remaining 49 were exposed to the ingroup member (i.e., Italian). After being presented with the picture, participants were shown, one at a time in a randomized order, a series of nine traits, including three morality traits (i.e., sincere, honest, trustworthy), three sociability traits (i.e., friendly, warm, likeable), and three competence traits (i.e., intelligent, competent, skillful). The traits were selected from those used in the first study and overlapped with those used by Leach et al. (2007). Participants were told that they would investigate whether the target had that characteristic or not. To accomplish the goal, they were instructed to select from a defined list the three questions they thought to be most helpful to judge the target on that attribute. For each trait (e.g., sociability), the list included two asymmetrically confirming questions (e.g., "Is he always the life of the party?"), two asymmetrically disconfirming questions (e.g., "Is he always rude to other people?"), and two symmetric questions (e.g., "Does he like staying with other people?")⁸

After the selection phase, participants were instructed to rank the chosen questions in order of importance from 1 (*most important*) to 3 (*least important*). Upon completion of the questionnaire participants were properly debriefed, thanked and released.

Results

Asymmetry of Selection

To quantify asymmetric information search, we assigned to the three categories of questions the following scores: -1 to asymmetrically disconfirming questions, 0 to symmetric questions, and 1 to asymmetrically confirming questions. The information-search asymmetry was calculated as the sum of the scores. Thus, for example, if some participants selected two asymmetrically confirming questions and one symmetric question, we assigned them a score of 2 . Since participants were allowed to select a maximum of three questions per trait, the asymmetry index ranged from -2 up to $+2$: 0 indicates a symmetric strategy; the value of $+2$ indicates an asymme-

⁸A pretest had been carried out in order to choose the questions to administer on the basis of their asymmetric/symmetric value. Ninety-six students at the University of Milano-Bicocca (51 female, 45 male, $M = 22.43$; $SD = 2.41$) were asked to judge a series of questions. More precisely they were asked to estimate on a 7-point scale the probability of the occurrence of a trait given certain behaviors. We then computed an asymmetry index for each question on the basis of participants' evaluations, and we selected 54 queries based on their degree of asymmetry. Specifically, we considered as asymmetrically confirming questions the queries whose asymmetry index was closest to $+1$, as asymmetrically disconfirming questions those whose asymmetry index most approached -1 , and as symmetric questions the queries whose index was almost 0 . The degree of asymmetry of confirming and disconfirming questions was balanced across traits. The asymmetry index ranged from -1 to $+1$ and was calculated as a subtraction of posterior probabilities (Cameron & Trope, 2004; Trope & Thompson, 1997), specifically: $p(H|E) - p(\neg H|\neg E)$, where H stands for the hypothesis (i.e., the trait under consideration), E means any given piece of evidence (i.e., the behavior mentioned in the question participants had to judge), and the $|$ symbol indicates the conditional probability.

Table 2. Means (standard deviations) of information search a/symmetry by traits content and target (Study 2)

Target	Trait content		
	Sociability	Morality	Competence
Ingroup	.01 (.66) _a	-.60 (.64) _b	-.16 (.73) _a
Outgroup	.07 (.69) _a	-.54 (.68) _b	-.11 (.79) _a

Note: Means with different subscripts in a given row are significantly different from each other at $p < .05$ as revealed by the Bonferroni post-hoc multiple comparisons.

trically confirming strategy; and the minimum value of -2 indicates an asymmetrically disconfirming strategy. We averaged the asymmetry indexes of the traits pertaining to the same content dimension. Then, the asymmetry index was subjected to a 2 (target: ingroup vs. outgroup) \times 3 (trait content: morality, sociability, competence) ANOVA, with the first factor varying between-participants and the second factor varying within-participants. The results are reported in Table 2.

Consistent with the first study, the analysis yielded neither a main effect of target, $F(1, 96) < 1$, ns., nor an interaction effect between target and traits, $F(2, 96) < 1$, ns. The results showed that participants tended to use comparable hypothesis-testing strategies in searching for information on an ingroup and on an outgroup member. The ANOVA revealed a main effect of trait content, $F(2, 96) = 25.77$, $p = .001$, $\eta_p^2 = .21$. As the post-hoc analyses showed, in searching for information on the target attributes, participants used a more asymmetrically disconfirming strategy on M-related traits ($M = -.57$, $SD = .66$) than on either C-related traits ($M = -.13$, $SD = .76$) or on S-related traits ($M = .04$, $SD = .67$). More specifically, they proved to adopt a symmetric strategy when they searched for information on the target's sociability and competence attributes: The t -test revealed that the asymmetry index on M-related traits was the only one that significantly differed from 0 , i.e., the perfect symmetry, $t(97) = 8.59$, $p = .001$.

Ranking

Participants were also required to rank the three selected questions in order of relevance, from 1 to 3 . Based on the participants' rankings, we assigned to each category of questions the highest rank it obtained. When a type of question was not chosen, we assigned a rank of 4 . Let us consider the example of a participant who selected two asymmetric confirming questions, ranking them as the first and third choices, and one symmetric question, ranking it as the second choice. In this case, we would assign rank 1 to the asymmetric confirming category, rank 2 to the symmetric category, and rank 4 to the asymmetric disconfirming one. Then the Friedman test was computed on the ranks to compare the preference for asymmetric and symmetric questions across the three different categories of traits (i.e., M, C, and S traits). The results of the test are reported in Table 3.

The asymmetrically confirming questions proved to be more relevant when participants had to evaluate the target on S traits rather than on C and M traits, $\chi^2(2) = 27.43$, $p = .001$. On the contrary, the asymmetrically disconfirming questions were considered more relevant when the target had to be evaluated

Table 3. The rank comparison between morality-related traits, sociability-related traits and competence-related traits of asymmetric confirming, symmetric and asymmetric disconfirming questions relevance (Study 2)

Type of questions	Trait content		
	Sociability	Morality	Competence
Asymmetric confirming	1.64 _a	2.34 _c	2.02 _b
Symmetric	2.05 _a	2.02 _a	1.93 _a
Asymmetric disconfirming	2.21 _a	1.53 _b	2.26 _a

Note: Numbers refer to the ranking index according to Friedman nonparametric test: Lower ranks indicate greater relevance. _{a b c} Cells designate homogeneous groups by type of questions.

on M traits than on C and S traits, $\chi^2(2) = 37.43, p = .001$. The analysis did not reveal significant differences between traits on the preference for symmetric questions, $\chi^2(2) = 1.01, p = ns$.

Discussion

The results of the second study supported our hypothesis. Hence, perceivers used a different strategy in searching for information on different traits. Thus, morality traits were investigated by choosing more asymmetric questions than those selected for sociability and competence traits. More specifically, in line with our prediction, participants adopted an asymmetric disconfirming strategy when judging the target's (either the ingroup or the outgroup member) morality. Therefore, participants looked for highly informative evidence that could falsify the moral characteristics, whereas when inquiring about sociability-related traits, they were more prone to seek for information that confirm or disconfirm them to a similar degree.

While the asymmetric strategy on morality may be due to a greater salience of such a dimension (see Trope and Thompson, 1997), the disconfirming attitude may be justified by the structure of the moral dimension itself. Previous studies on trait ascription to social targets (Trafimow & Trafimow, 1999; Trafimow et al., 2001) showed that perceivers are particularly sensitive to evidence falsifying moral traits. Specifically, it has been shown that a single contrary morality behavior (e.g., a dishonest behavior) made participants unwilling to describe a person as still having the positive trait (honesty) due to the informational strength of negative information on such a dimension. In our study, we found the same greater interest in evidence falsifying moral traits, in a different process, i.e., information gathering.

This result is also consistent with the assumption that people should be more motivated to try to falsify moral attributes in others as a result of an over-protecting strategy (Hammond, 2007).

GENERAL DISCUSSION

In everyday life people are continually called upon to form impressions of others. Two fundamental dimensions, warmth and competence, have been found to affect the perceptions of

individuals and groups. Previous findings at the individual as well as at the group level (e.g., Anderson & Sedikides, 1991; Leach et al., 2007) have demonstrated that the warmth dimension encompasses sociability and morality components. We investigated the roles played by the sociability and morality components of warmth, as well as by competence, in the information gathering process, which is essential to impression formation.

The results of two studies provide converging evidence for the distinct and dominant role of morality, relative to sociability and competence, in the search for information during social interplay. Indeed, when participants were asked to form impressions of individuals from either the ingroup or an outgroup, moral traits were explored differently from sociability and competence traits. Furthermore, morality was the dimension that mainly affected participants when they looked for information in order to formulate a global judgment about an individual. The distinctive and primary role of morality was confirmed in a second study aimed at investigating the strategies adopted by people when asking questions about others. Participants asked different sorts of questions when inquiring about moral traits than when inquiring about sociability or competence traits. Participants preferred a more asymmetric strategy when inquiring about morality rather than about sociability and competence.

In particular, participants rated as more relevant the asymmetric falsifying questions concerning morality traits. The rationale underlying this strategy might be traced back to the survival value of avoiding the dangerous consequences of approaching potentially harmful persons, particularly in situations characterized by uncertainty as many are in the social environment (Hammond, 2007). If, on the one hand, this strategy could turn out to be particularly useful, on the other hand it might have serious consequences at a social level: Indeed, the denial of others' morality could elicit avoidance or exclusion behaviors.

The tendency to look for behaviors that strongly falsify positive moral traits or, in other words, confirm immoral traits is consistent with the literature on the negativity effect, that is the greater impact of negative evidence relative to positive information emerged both in studies that took into account only moral traits, such as honest and dishonest (e.g., Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Skowronski & Carlston, 1987), and in research investigating characteristics that can be ascribed to the broader dimension of warmth, such as warm-cold and considerate-inconsiderate (e.g., Singh & Teoh, 2000).

Our results suggest that, at least as far as the process of information search is involved, the tendency to focus on negative/disconfirming rather than on positive/confirming behaviors when judging the warmth of other individuals might be mainly accounted for by the influence of the subcomponent of morality rather than of sociability, because we found that when making inferences on sociability traits, participants used mostly symmetric strategies. This finding also shows the greater relevance of the moral compared to the sociability dimension in the question-asking process.

Our findings extend previous research on impression formation in three ways. First, we extended prior research that has focused almost exclusively on the broader dimension of warmth by showing that the sociability and morality

components of warmth are processed differently in information gathering.

Second, we provide evidence that the dominance of warmth in impression formation can be better explained by the greater effect of one of the two subcomponents (i.e., morality) over the other (i.e., sociability) at least in the information-gathering process.

Third, our findings showed that the information-search process is not affected by the group membership of the target. When asked to form impressions about others, people favored moral traits and used a more asymmetric strategy in searching for information on moral-related attributes to the same extent, whether the target was either an ingroup or an outgroup member. Thus, the irrelevance of the target membership might suggest that the primacy of morality is a stable effect, unaffected by the intergroup context. Nevertheless, different motives are likely to be hidden under the same relevance of moral-related traits in forming impressions of an ingroup rather than of an outgroup member. Considering that an immoral outgroup member is potentially harmful for both the individual's and the ingroup's survival and worldview (see Riek, Mania, & Gaertner, 2006), in the outgroup condition, the control of the target's morality may be functional to the ingroup defense and the reduction of intergroup threat. In a different way, people might be motivated to accurately verify the ingroup member's morality because the presence of an immoral affiliate within their own group is detrimental for the group as a whole. Indeed, an immoral member or someone disregarding the norms, is not functional to the goal's achievement, to the maximization of group benefits (De Waal, 1996; Leach et al., 2007), nor to the maintenance of a positive ingroup image (see Marques, Yzerbyt, & Leyens, 1988; see also Ellemers, Pagliaro, Barreto, & Leach, 2008). Future studies should explore these argumentations considering a wide range of intergroup contexts.

Future research should also explore the distinct and dominant role of morality traits (vs. sociability and competence) in other aspects of impression formation. It could be interesting to examine the role played by these three domains in predicting the general favorability of other individuals.

A further extension of the present research could also address the issue of whether and how the asymmetric/symmetric testing combines with other forms of asymmetry found in the literature on social perception, namely the positive-negative asymmetry (i.e., the greater impact of negative than positive information in the warmth domain as opposed to the greater weight given to positive than to negative information in the competence sphere; Singh & Teoh, 2000; Skowronski & Carlston, 1987), and the asymmetry due to the hierarchical restrictiveness of traits (i.e., the fact that one polarity of the trait dimension is associated with a wider or narrower range of behaviors than is the other polarity, Reeder & Brewer, 1979). In order to investigate whether and to which extent these two other kinds of asymmetry interact with the search strategy of maximizing the informational strength of sought evidence (i.e., with asymmetric testing) it would be necessary to ask participants to inquire about both the positive and the negative polarity of traits.

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