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Differential effects of majority and minority influence on argumentation strategies

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Confirmatory bias in argumentation—i.e., the tendency to generate arguments that support one's own claims, rather than rebuttals that challenge alternative standpoints—is a widespread tendency that can be harmful to the quality of argumentation. In the present study we hypothesized that, depending on issue relevance to the targets, majority and minority sources of influence may differentially reduce this bias. Results provided partial support to the contention, showing that when the issue was of low relevance, participants exposed to the minority developed more rebuttals than participants exposed to the majority, whereas no difference between the impacts of the two sources emerged when the issue was of high relevance. Findings suggest that, in low-relevance circumstances, minority influence may exert beneficial effects on argumentation.

Keywords: Social influence; Argumentation; Confirmatory bias.

Literature on social influence has often focused on the different and specific cognitive processes induced by majority and minority sources of influence (Crano & Prislin, 2006; Wood, 2000; Wood, Lundgren, Ouellette, Busceme, & Blackstone, 1994). The aim of this study is to explore whether, depending on the relevance of the issue to the recipients, the exposure to majority vs minority influence may also affect the argumentation strategies through which individuals sustain their claims in informal reasoning.

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SYSTEMATIC TENDENCIES IN ARGUMENTATION

Argumentation can be conceived as a verbal, social, and rational activity aimed at convincing a reasonable critic of the acceptability of a standpoint (Van Eemeren, 2003; Van Eemeren, Grootendorst, Jackson, & Jacobs 1996). Argumentation scholars suggest that arguers may justify the acceptability of a standpoint *either by providing justifications in favor of their point of view, or by rebutting alternative standpoints* (Van Eemeren, 2003). From Aristotle and Quintilianus on, *confirmatio* (i.e., providing evidence in favor of one's claims) and *refutatio* (i.e., providing evidence against competing standpoints, in order to rebut them) have been considered as holding a comparable function in argumentative discourses (cf. Mosconi, 1990; Toulmin, 1958; Van Eemeren, 2003). Contemporary models of good-thinking, mostly rooted in Karl Popper's (1962) conception of conjectures and refutations, prescribe likewise that skilled arguers should be equally able either to seek support for their own claims, or to undermine the opponents' positions by showing weaknesses in their arguments (Baron, 1988; Ennis, 1993; Kuhn & Udell, 2007; Van Eemeren et al., 1996; Walton, 1985). Nonetheless, it can be questioned whether these two alternative argumentation strategies may be conceived as equivalent from a socio-cognitive point of view.

Empirical research on argumentation demonstrates that arguers share a strong preference for the choice of arguments that support their own points of view, and hardly ever engage in rebutting possible alternative claims (Kuhn, 1991). Pontecorvo and Girardet (1993), reported that sixth-grade pupils devoted more than 80% of their utterances to espousing and/or justifying their own claims during history classes, whereas only 14% of the utterances conveyed rebuttals to alternative claims put forth by classmates. Kuhn (1991) obtained comparable evidence when interviewing adults about real-life issues, and also studies carried out on group discussions in a laboratory setting found that challenges and objections to alternative statements were virtually absent from discursive productions (Meyers, Brashers, & Hanner, 2000).

This general tendency has been labeled as *confirmatory bias* in argumentation (Kuhn, 1991; see also Klaczynski, 2000; Perkins, Farady, & Bushey, 1991), due to the evident parallel with the confirmatory biases repeatedly found in formal reasoning (see, for instance, Kahneman, 2003; Wason, 1960), as well as in many domains of social cognition (e.g., in selective exposure to information, Fisher, Jonas, Frey & Schulz-Hardt, 2005; in social perception, Zuckerman, Knee, Hodgins, & Miyake, 1995; in stereotypes, Leyens, Dardenne, Yzerbyt, Scaillet, & Snyder, 1999).

Although the preference for arguments in support of one's own claims persists even among highly educated adults (Means & Voss, 1996; Sandoval

& Millwood, 2005), experimental studies have documented that the confirmatory bias in argumentation is reduced by factors that enhance the arguers' ability and/or motivation to engage in deep cognitive scrutiny of the subject at hand (Ferretti, McArthur, & Dowdy, 2000; Mason & Scirica, 2006; Nussbaum & Kardash, 2005; Page-Voth & Graham, 1999). With respect to ability, it has been demonstrated that the rate of rebuttals increases with age and education (Felton & Kuhn, 2001; Kuhn, 1991; Kuhn & Udell, 2003; Piolat, Roussey, & Gombert, 1999), as well as with the acquisition of specific expertise in good-thinking strategies (Hidi, Berndorff, & Ainley, 2002; Knudson, 1992; Kuhn, 1991; Kuhn, Shaw, & Felton, 1997). With respect to motivation, it has been documented that interest and personal relevance of the issue increase the rate of rebuttals (Kuhn & Udell, 2003), even in the absence of training or specific instructions.

Considering that argumentation is in essence a social activity, we contend that not only intra-individual factors—such as ability and personal interest—but also specific contextual conditions linked to social interaction (e.g., social influence processes) may reduce the confirmatory bias in argumentation.

SOCIAL INFLUENCE AND COGNITIVE PROCESSES

In the last few years, some studies have investigated whether majorities and minorities, when acting as sources of influence, generate arguments of different type (Meyers et al., 2000) and quality (Kenworthy, Hewstone, Levine, Martin, & Willis, 2008). Nevertheless, to the best of the authors' knowledge, no previous work has investigated whether the exposure to a majority vs minority influence modifies *recipients*' tendency to use confirmatory rather than rebutting argumentative strategies.

Most of the abundant literature concerning the differential effects of majority and minority influence on recipients' cognitive processing originates in two main theoretical approaches: Moscovici's *conversion theory* (1980), and Mackie's *objective consensus approach* (1987).

Moscovici's conversion theory (1980) states that majority and minority influences differ not only in their outcome—majorities lead to *compliance*, whereas minorities induce *conversion*—but also in the quantity and quality of cognitive activity they induce. When exposed to a majority, recipients engage in a comparison process with the source and, because agreeing with a majority is desirable, they conform to the position of the source without the need for a detailed scrutiny of the content of the message. Conversely, when exposed to a minority, individuals are unlikely to engage in a social comparison process, since being categorized as a minority member is often perceived as threatening (or undesirable), and therefore influence targets have no need to conform to the position of the source. Hence, recipients

may engage in a deep scrutiny of the message, in order to see and understand what the minority says and why.

Important models derived from Moscovici's conversion theory framework have explored not only the processes underlying attitude change, but also the effects of majority and minority influence on other cognitive activities, such as problem solving, creativity, and formal reasoning (De Dreu & De Vries, 1993; Huguet, Mugny, & Pérez, 1991–1992; Mucchi-Faina, Maass, & Volpato, 1991; Nemeth, 1986; Nemeth & Wachtler, 1983).

Minority influence has also been found to have a very specific beneficial effect on the reduction of confirmatory biases in inductive reasoning (Butera, Mugny, Legrenzi, & Pérez, 1996; Legrenzi, Butera, Mugny, & Perez, 1991) and in information seeking (Maggi, Butera, Legrenzi, & Mugny, 1998). For instance, individuals confronted with a majority mainly seek examples that validate (i.e., confirm) the hypotheses under testing, whereas those confronted with a minority are more likely to generate more diagnostic disconfirmatory examples (Butera et al., 1996). It is worth noting that majorities were found to induce the use of confirmatory strategies even when the strategy proposed by the source was disconfirmatory (Legrenzi et al., 1991), and regardless of the targets' awareness that the solution proposed by the source was incorrect (Butera & Mugny, 1992).

At odds with Moscovici's conversion theory, Mackie's *objective consensus approach* predicts that majority sources instigate more extensive scrutiny of their arguments than do minority sources (Mackie, 1987). According to this approach, recipients infer that a position held by a majority source is more likely to be valid than a position shared only by a minority. Therefore, because of its presumed validity, people generally expect to agree with the majority's message. There is evidence that when this expectation is violated, recipients of influence are motivated to engage in careful scrutiny of the content of the majority's message (De Dreu & De Vries, 1996; Mackie, 1987). Indeed, these findings demonstrate that not only minorities but also majorities can foster extensive and careful information processing (Shuper & Sorrentino, 2004).

PERSONAL RELEVANCE AS A MODERATOR

Faced with contradictory predictions and findings, in the last two decades research has started exploring the role of a number of situational variables which may act as potential moderators of the effects of the source on recipients' cognitive activities, thus acknowledging that both majorities and minorities can induce, under given circumstances, extensive message scrutiny (Crano & Chen, 1998; Erb & Bohner, 2001; Erb, Bohner, Rank, & Einwiller, 2002; Mackie & Hunter, 1999; Martin & Hewstone, 2003a; Mugny, Butera, Sanchez-Mazas, & Pérez, 1995).

Many researchers have observed that majority and minority influence on cognitive processing differ according to the relevance of the topic at hand for the recipients. For instance, Trost and Ybarra (1994, cited by Trost & Kenrick, 1994), as well as Kerr (2002), found that in low-relevance conditions an active minority elicits more extensive scrutiny than the majority. Mucchi-Faina and Cicoletti (2006) found that relevance moderates the quality of cognitive processing that a minority—but not a majority—promotes. The authors found that while in high personal relevance conditions a minority source of influence induces divergence—in the forms of a more extensive production of alternative and original thoughts—in low personal relevance conditions a minority is more likely to induce a validation process—assessed by ambivalence towards the issue under debate. Finally, Martin and Hewstone proposed and found that personal relevance determines which of the two sources (minority vs majority) will elicit the higher cognitive processing (Martin & Hewstone, 2003a, 2003b). Their "contingency model" makes it possible to predict that both a majority and a minority, under specific circumstances, may foster careful processing of controversial issues, depending on the personal relevance of the issue for influence recipients. When the issue is personally relevant and potentially threatening to participants, a majority induces more careful processing than a minority. By contrast, when the issue does not entail negative personal outcomes to the recipients, the minority message is not considered threatening and may be scrutinized in depth because the minority is perceived as being distinctive. However, the position of the majority may be taken for granted (i.e., consensus heuristic) without the need for any deeper scrutiny. In sum, a minority source may promote more careful processing than a majority, as predicted by the conversion theory (i.e. validation; Moscovici, 1980), but not on issues that are highly relevant for recipients.

THE PRESENT RESEARCH

Martin and Hewstone's contingency model (2003a) predicts that either a majority or a minority, depending on the personal relevance of the issue to recipients, may foster a careful processing of a controversial issue. We expected similar effects of source (majority vs minority) and personal relevance (high vs low) on the choice of argumentation strategies. Indeed, an increase in the arguers' motivation to engage in cognitive processing leads to a reduction in the confirmatory bias, i.e., to an increased use of rebuttals (Ferretti et al., 2000; Mason & Scirica, 2006; Nussbaum & Kardash, 2005; Page-Voth & Graham, 1999). Since majority and minority sources could motivate their target differently according to the personal relevance of the topic, we expected to observe a differential use of rebuttals according to these two factors.

The aim of the present research was to bring a preliminary support to this idea. To this end we used experimental manipulations of influence source and personal relevance, and we asked participants to argue about a controversial issue. Participants were free to choose between developing arguments in support of their point of view or rebutting the opposite standpoint. We predicted that:

(a) When the issue was of high relevance to the recipient, arguers exposed to a majority source would generate more rebuttals than those exposed to a minority source. In this condition the majority advocacy is perceived as more important than the minority advocacy and potentially threatening. Therefore, people exposed to the majority should be more motivated to use an effortful argumentation strategy than people exposed to the minority.
(b) When the issue was of low relevance, arguers exposed to a minority would generate more rebuttals than those exposed to a majority. In this condition, the source's message does not entail any threatening outcomes to recipients and then the minority distinctiveness promotes more cognitive effort than the majority consensus.

METHOD

Design and participants

A total of 114 undergraduate students from the University of Chieti-Pescara (94 women, 16 men, 4 missing; mean age=20.4, SD=1.97) were recruited at the beginning of a social psychology class, and invited to take part in a research study in the Social Psychology Lab. Participants attended small group sessions and were randomly assigned to one of the four conditions resulting from a 2 (Source: *Majority* vs *Minority*) $\times$2 (Relevance: *High* vs *Low*) between-participants factorial design.

Pilot study

In order to find eight bogus arguments with similar persuasive strength, a pilot study was carried out. In this, 45 undergraduates (43 women, 2 men, age: M=22.98, SD=2.16) were asked to rate a set of pro or con arguments regarding the introduction of a final exam at the university, indicating to what extent these arguments were *pertinent*, *reasonable*, *coherent*, *convincing*, or *superficial* (reverse coding for the last score). Participants were asked to express their evaluation on a scale ranging from 1 (= *not at all*) to 13 (= *very much*). Since the five adjectives showed an acceptable internal reliability (Cronbach α ranging from .67 to .94), they were combined for each argument. We chose for the experiment four pro (e.g., "*A final exam would*

help to synthesize and memorize acquired knowledge''; $\alpha = .89$) and four con arguments (e.g., ''*A final exam would be a useless repetition of already passed tests*''; $\alpha = .82$). Pro and con arguments did not differ in their average persuasive strength, $F(1, 44) = 2.13$, *ns*.

Procedure

Participants were accommodated in separate cubicles and asked to complete a questionnaire booklet. In the booklet participants were informed that the Faculty of Psychology was conducting a survey into students' attitudes towards the possibility of requiring students to pass a comprehensive exam prior to graduation. Thus, participants were exposed to a message that has been consistently found to be highly counter-attitudinal among Italian students (e.g., Mucchi-Faina & Cicoletti, 2006; Mucchi-Faina & Pagliaro, 2008).

After reading the message, participants had to rate on a 6-point Likert scale (from 0=*totally disagree*; to 5=*totally agree*) whether or not they were in favor of the exam.

At this stage, the two independent variables were introduced. With regard to the manipulation of the *source* of influence, participants were informed that previous (bogus) polls had reported that either 80% of students (majority influence condition) or 20% of students (minority influence condition) were in favor of the introduction of the final supplementary exam. With regard to the *personal relevance* of the issue, in the high-relevance condition a bogus message informed participants that the final exam, if approved, would immediately be introduced, thus concerning students already enrolled at university; in the low-relevance condition, the same bogus message assured participants that such reform would require at least 10 years to be implemented, and therefore students already enrolled at university would not be affected by its consequences.

The eight bogus arguments (four pro and four con the introduction of the final exam) were then presented as drawn from previous students' debates on the same issue. Participants were asked to develop three of these eight arguments, in order to express as effectively as possible their own point of view on the issue. Therefore, for each of the three arguments they were asked to develop, participants were free to choose between enforcing a statement that supported their point of view and rebutting a statement that supported the alternative standpoint. All the arguments developed by participants were subsequently classified by two independent coders, blind to the experimental conditions, as *statements supporting the participants' point of view*, or *rebuttals of the alternative standpoint*. Agreement between the two coders was satisfactory (Cohen's $K = .97$); only four discrepancies in argument coding occurred, which were subsequently discussed and resolved

between coders. The proportion of rebuttals of the three arguments generated by each participant was computed and used as dependent measure, with values ranging from 0 (*all the arguments further enforce the student's viewpoint*) to 1 (*all the arguments rebut the opposite viewpoint*).

The final section of the questionnaire contained socio-demographic information, although the procedure was totally anonymous, and manipulation checks. The correct perception of the source of influence was checked by means of a single question that asked participants to indicate whether the majority or the minority of students supported the supplementary exam. The manipulation of personal relevance was checked by a single item that asked participants to indicate to what extent they believed that the final comprehensive exam would affect them during their academic career. Participants responded on a 6-point Likert response scale ranging from 1 (*not at all*) to 6 (*surely*).

After completion of the questionnaire, participants were thanked and extensively debriefed.

RESULTS

Manipulation checks

With respect to the perception of the source, two participants gave an incorrect response and six others left the answer unmarked; considering that these eight participants were evenly distributed across experimental conditions, $\chi^2=0.116$; $df=3$; *ns*, we maintained all participants within the dataset for subsequent analyses.

Concerning the perception of personal relevance of the issue, analysis indicates that participants in the high personal relevance condition perceived the exam as more relevant to them ($M=5.10$; $SD=.99$) than did participants in the low personal relevance condition ($M=2.57$; $SD=1.06$), $t(100)=12.464$; $p<.001$.

Proportion of rebuttals

A 2 (source: majority vs minority) $\times$ 2 (personal relevance of the issue: high vs low) Analysis of Covariance (ANCOVA), controlling for participants' prior agreement with the proposal at hand, was run on the proportion of rebuttals generated by participants. Because in previous research the discrepancy between the source's and the recipient's prior position was found to induce more careful processing of the issue (Erb et al., 2002), participants' prior agreement with the proposal was inserted as a covariate.

Neither the effect of the covariate nor the main effects of influence source and personal relevance was significant (all Fs<1). Results showed a significant interaction between source and personal relevance of the issue,

$F(1, 109)=4.143$; $p<.05$; $\eta^2=.04$. Simple effect analyses showed that when the issue relevance was low the minority induced a higher use of rebuttals ($M=.46$; $SD=.28$) than did the majority ($M=.29$; $SD=.22$), $F(1, 109)=5{,}758$; $p<.02$; $\eta^2=.05$, as expected. By contrast, when the issue relevance was high the difference in the use of rebuttals between the minority ($M=.38$; $SD=.26$) and the majority condition ($M=.42$; $SD=.29$) was not significant, $F<1$. The difference in the use of rebuttals in conditions of high rather than low issue relevance was marginally significant when participants were exposed to the majority, $F(1, 109)=5{,}758$; $p<.09$, but not significant when they were exposed to the minority, $F<1$.

DISCUSSION

When debating a controversial issue, arguers should assure themselves not only that their own claims are valid, but also that alternative positions are not more sound or more correct than their own. Nonetheless, prior research observed systematic confirmatory tendencies in argumentation (Kuhn, 1991) that lead arguers to generate many more arguments that justify and enforce their own points of view, rather than rebuttals that undermine the acceptability of alternative standpoints. However, prior research has also found that increase in the motivation to scrutinize an issue in depth significantly reduces such confirmatory tendency. The present study explored the effects of majority vs minority influence on the use of argumentation strategies. In particular, we hypothesized that, when the issue was of high relevance to the arguers, people exposed to a majority would show less confirmatory bias (i.e., would more frequently rebut alternative positions) than those exposed to a minority. Vice versa, when the issue was of low relevance, arguers exposed to a minority would show less confirmatory bias than those exposed to a majority.

Results provide partial support to the contention. As expected, when the issue was not relevant—i.e., it did not entail any direct consequence to the arguers—participants exposed to the minority source developed a higher proportion of rebuttals than participants exposed to the majority source. This result is in line with previous findings showing that, in this condition, a minority facilitates effortful information seeking (Nemeth & Rogers, 1996) and information processing (Martin & Hewstone, 2003b; Mucchi-Faina & Cicoletti, 2006) more than a majority. However, when the personal relevance of the issue was high, the difference between the effects of the two sources was not significant. In this case, the proportion of rebuttals generated by arguers exposed to majority or to minority influence was comparably high (approximately 40%). So the result concerning the high relevance condition does not support our hypothesis. Future research should clarify whether this finding is specifically related to the confirmatory

bias in argumentation. In fact, while there is now cumulative evidence showing that minorities foster more extensive scrutiny than majorities in low-relevance conditions (Martin & Hewstone, 2003b; Mucchi-Faina & Cicoletti, 2006), data showing that majorities foster more extensive scrutiny than minorities in high-relevance conditions are less consistent (e.g., Kerr, 2002; Martin, Hewstone & Martin, 2007). Moreover, research on persuasion has repeatedly found that when personal relevance is high the so-called peripheral cues (in this case, the source status) have little effect because recipients are focused on the content of the message (Petty, Cacioppo, & Goldman, 1981). Although there is a need for replication in follow-up studies, this finding provides support to the contention advanced by Martin and colleagues (2007) that conversion theory does not apply in high-relevance conditions.

At least three additional questions arise from the present research, which may be pursued in the future. First, even though the identification of the cognitive processes underlying social influence is a very important matter, the final result of this influence cannot be overlooked. Therefore, future research should consider the relationship between argumentation and more traditional measures of social influence (i.e., attitude or behavior change). Second, in this study we adopted a highly binding procedure, forcing participants to choose between predetermined (pro- or counter-attitudinal) arguments and limiting the quantity of arguments to develop. It would be useful in the future to use a more open procedure, which would make it possible to observe whether the two sources have a differential impact both on the choice of the argumentation strategies and the quantity of arguments to elaborate. Furthermore, a possible methodological limitation of the present study is that we did not specify whether or not participants' point of view about the issue under investigation would have any implication for the bogus decision about the final exam. This could be an intriguing question to be disentangled in the future, in that it would be interesting to understand whether participants' motivation—namely the feeling that they may or may not concur with the final decision—may affect their processing strategies.[1]

In conclusion, the present research suggests that, when the relevance of the topic to the targets is low, minority influence may have a beneficial effect on the reduction of confirmatory biases not only in inductive reasoning (Butera et al., 1996; Legrenzi et al., 1991) and in information seeking (Maggi et al., 1998), but also in the choice of argumentation strategies.

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[1] We are grateful to the reviewer who suggested this intriguing possibility.

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