

Relevance of information and social influence in the pseudodiagnosticity bias*

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Two experiments investigated the socio-cognitive mechanisms intervening in the "pseudodiagnosticity bias". In Study 1 positive vs. negative anchoring information concerning one of four characteristics of two (A vs. B) political candidates or two cars were presented. Subjects' task was to decide which other single additional piece of information about A or B should be obtained in order to be able to choose between the two alternatives. Results show that diagnosticity is enhanced when the anchoring information is negative; and when the anchoring information bears on a characteristic that is highly relevant for the subjects. Study 2, conducted on the same tasks, investigated the influence of a majority vs. a minority, the effect of positive vs. negative anchoring information relative to a highly vs. low relevant characteristic, in a context where

the risk of error was either low or high (making salient the random character of the choice vs. the risk of error in the task). Results show an effect of the relevance of characteristic on which the information was given, as in Study 1, and an interaction effect between choice vs. error task, majority vs. minority source and positive vs. negative evaluation. Addition of these two effects reveals that subjects are more diagnostic to the extent that a negative evaluation is given by the minority source about a highly relevant characteristic in the task where the risk of error is salient.

Key words: Pseudodiagnosticity bias, information relevance, majority influence, minority influence

Traditional models of candidate evaluation and voters' decision making, such as the sociological approach (Lazarsfeld, Berelson & Gaudet, 1949), have portrayed the voting decision as a response to group affiliations and social pressure, and have failed to articulate these processes with the cognitive processes that underlie political decisions. More recent research on voting behaviour (e.g. Iyengar & Ottati, 1994; Lau & Sears, 1986; Legrenzi & Girotto, 1996) has explicitly integrated the cognitive perspective, as researchers shifted their attention away from attitudes and behaviour as such to the information-processing mechanisms that underlie them, and from explanations based on motivation to explanations based on the cognitive capabilities of individuals.

One of the most important aims in processing political information is to be able to choose

between candidates or political alternatives. In this respect, decision making theories that have been applied to the political sphere (e.g. Tversky & Kahneman, 1981; Quattrone & Tversky, 1988) have developed a line of research in which the assumption is that political behaviour is neither largely irrational (cf. Campbell, Converse, Miller & Stokes, 1960), nor completely rational (as economic decision making models would assume; cf. Edwards, 1954; Simon, 1957), but that its rationality is conditioned by the limited information-processing capability of individuals.

Indeed, a large amount of work has repeatedly shown that errors and biases seem to occur in human reasoning because of cognitive limitations; they operate when subjects seek information in order to make a judgement under uncertainty, and appear in a wide range of phenomena such as the failure to use statistical base-rate information (Tversky & Kahneman, 1974), the "confirmation bias" (Wason, 1960), and the failure to identify and select diagnostically relevant information (Doherty, Mynatt, Tweney & Schiavo, 1979). One of the typical

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problem-solving tasks studied by Doherty, Mynatt and colleagues, in which subjects are asked to select information in order to choose between two alternatives, is the following:

"Your sister has a car that she bought two years ago. You know that her car is a type X or a type Y, but you don't remember which. You just remember that it does more than 15 km/litre, and that it didn't have any engine problems during the first two years. You possess the following information:

1. *The percentage of type X cars doing more than 15 km/litre.
You can ask for one of the following three additional pieces of information:*
2. *The percentage of type Y cars doing more than 15 km/litre.*
3. *The percentage of type X cars that didn't have any engine problems during the first two years.*
4. *The percentage of type Y cars that didn't have any engine problems during the first two years.*

Knowing that you can obtain only one of these (2, 3 or 4), which one would you like to have, in order to decide which type of car (X or Y) your sister's is?" (from Girotto, Legrenzi & Sonino, 1996).

The subjects' task is to try to establish if the sister's car is type X or Y in asking for only one of the three pieces of information. In order to reach the correct solution, subjects should reason as follows: *"The most useful information is 2. At least, I can compare the consumption of X and Y. If I ask for the information described in 3 I will know everything about X cars, but nothing about Y cars. If I ask for that described in 4, I will know something about Y cars, their reliability, but I couldn't compare this information with the corresponding information about X cars, because I only know the consumption. In conclusion, I choose information 2, and I hope to establish which is my sister's type of car."*

Several experimental studies have demonstrated that in this kind of problem solving an overwhelming majority of subjects ask for the information described in 3 instead of that described in 2 (cf. Beyth-Marom & Fischhoff, 1983; Doherty et al., 1979; Mynatt, Doherty &

Dragan, 1993). In other words, in holding one piece of information about type X cars (fact 1, called "anchoring"), subjects try to complete it by asking for the information about its reliability. As a result, they know everything about type X cars but nothing about type Y cars, and they cannot compare the facts concerning both cars on at least one of the two criteria (either fuel consumption or reliability). This kind of answer is described by Mynatt and colleagues as a "pseudodiagnosticity effect", because the choice made by the majority of subjects is falsely diagnostic: they choose something that seems diagnostic, but under these circumstances it is not (cf. the "likelihood error" in the Bayesian concept of diagnosticity).

Girotto, Legrenzi & Sonino (1996) have stressed the importance of taking into account the links between reasoning and decision making research and describe the existence of a common mechanism underlying both processes (for a review see Girotto, 1994), the "focusing effect" (cf. Legrenzi, Girotto & Johnson-Laird, 1993; Legrenzi & Sonino, 1994), which they define as a tendency for individuals to restrict their thoughts to what is explicitly represented in their mental models (cf. the theory of mental models, Johnson-Laird, 1993). This "focusing effect" is a feature of strategies of information search underlying inductive inferences (producing a "confirmation bias" in hypothesis-testing, cf. Wason, 1960). However, it is also believed to operate in strategies of information search underpinning decision-making (here producing an effect of "pseudodiagnosticity"; cf. Mynatt et al., 1993). In focusing their attention on the alternative that is presented (the anchor), individuals do not fully evaluate other possible alternatives because these other alternatives are not made explicit in subjects' representation of the problem, and they select information concerning only one aspect of the problem (e. g. type X cars).

Given the importance to voting behaviour of being able to process political information in order to choose between two political alternatives, e. g. deciding to vote for one candidate rather than another in the next election, the question arises as to whether socio-cognitive factors may reduce the "focusing effect" in reasoning and decision making problems (respec-

tively, the "confirmation bias" and "pseudodiagnosticity"). Attempts to reduce the persistence of "biases" in reasoning experiments have mainly involved attempts to make the tasks more intelligible (cf. Legrenzi & Legrenzi, 1991) by linking the solution to familiar knowledge (Griggs & Cox, 1982) or by locating it within pre-existing cognitive structures (Cosmides, 1989; Girotto, 1991). However, as pointed out by Catellani (1996), the study of political psychology cannot be confined to the micro-dimension; it must also be extended to a macro-dimension that embraces relationships between mental functioning and social reality. The aim of the research described in this article is to study the search for information in the choice between candidates through a psychosocial approach to reasoning and decision making processes that takes into account the articulation between the study of basic cognitive processes and the social context. This article also serves a more general purpose: to provide additional evidence for the claim that biases in reasoning and decision making should not be viewed as errors occurring in the course of "rational" thinking, but instead as the result of an interaction between mechanisms of thinking and external pressures such as goals and/or social pressure. This approach has been proposed in a recent special issue of the *Swiss Journal of Psychology* on "Contexts and Biases", and refers to the fact that if context can produce "biases" insofar as it interferes with the course of reasoning, it may also produce valid thinking, since taking social constraints into account can lead to adaptive reasoning and decision making (cf. Butera, Legrenzi & Oswald, 1997).

Social factors in reasoning

The social psychology of influence in problem-solving tasks has shown that exposure to a majority's model induces conformity and cognitive functioning of a convergent type, i. e., one confined to the use of information at hand (Nemeth, Mosier & Chiles, 1992). On the other hand, the notion of divergent thinking (Nemeth, 1986) has been introduced to account for the cognitive processes occurring during problem solving when faced with a minority

source. Individuals exposed to minority influence are stimulated to attend to more aspects of the situation and to consider other alternatives (cf. De Dreu & de Vries, 1993; Nemeth & Kwan, 1985, 1987; Volpato, Maass, Mucchifaina & Vitti, 1990), as the source does not guarantee the validity of its proposals.

With this in mind, a research program was developed to study the effects of social influence on inductive reasoning and in particular on the "confirmation bias" (Wason, 1960). As reasoning occurs within a network of social influences (cf. Moscovici, 1993) and occurs most frequently when confronted with other people, this program represents a psychosocial approach to the problem of reasoning biases by studying hypothesis formulation and testing within the dynamics of social influence. As for hypothesis testing, these studies have shown that minority influence prompts the use of disconfirmation, whereas majority influence encourages the use of confirmation (Butera & Mugny, 1992, 1995; Legrenzi, Butera, Mugny & Pérez, 1991). The convergent thinking induced by a majority source in an influence context involves a focus only on the characteristics of its hypothesis and its elements, thus reinforcing a "confirmation bias"; in contrast, confrontation with a minority source increases the likelihood of considering alternatives and opens the search for possible alternative solutions, leading to disconfirmation, which can be an appropriate strategy (Butera, Mugny, Legrenzi & Pérez, 1996). If there exists a common mechanism (the "focusing effect", cf. Legrenzi et al., 1993) underlying the "confirmation bias" in inductive reasoning and the "pseudodiagnosticity effect" in selecting information for decision making, social influence should affect the focusing tendency in both cases.

In two experimental studies we considered the possible de-biasing effect of socio-cognitive factors on information selection strategies. The first study tested the parallel between a car choice task similar to that used in experiments by Mynatt and colleagues and a political decision making task involving candidate choice, in order to verify the existence of similar strategies in both decision making situations. The second study investigated more specifically the

effect of social influence on information selection strategies.

Study 1

The purpose of this preliminary study was to identify and compare the strategies of information selection in two decision making tasks, in order to validate the equivalence of a task involving a choice of cars and a task involving a choice of political candidates. Before undertaking a direct examination of the pseudodiagnosticity bias in the search for information about political candidates, it had to be established that when people are asked to decide about candidates, this bias takes the same form as when people are asked to reason about a less socially anchored task, such as used by Beyth-Marom and Fishoff (1983) or by Doherty et al. (1979). The present experiment was also designed to assess the importance of two factors in decision making that may moderate the effect of the pseudodiagnosticity bias, namely the valence of the available information and its relevance for the subject.

As noted earlier, the pseudodiagnosticity bias is considered to be based on a focusing effect (Legrenzi et al., 1993) elicited by the presence of "anchoring" information that organises the search for new information around the particular alternative (car or candidate) for which information is already held. The rationale of this effect is that giving information on one option (and not on the other) will set or 'anchor' the individual's mind on that option in terms of attention but also in terms of motivation. Thus, search for further information about the same option would be an attempt to confirm the hypothesis that this option is the better one. The hypothesis can be advanced that the pseudodiagnosticity effect mainly occurs when the information makes salient the positive quality of the option. Conversely, being confronted with negative anchoring information should reduce the focusing tendency during information selection.

We therefore tested the effect of the valence of the anchoring information on information selection strategies. Here the main hypothesis is that if subjects are confronted with information

involving a negative (rather than a positive) evaluation of a given object, this should reduce the focusing tendency on that object and favour consideration of the alternative object, ultimately leading to a more diagnostic choice.

This hypothesis supposes that focusing represents for an individual a less effortful strategy for reaching a decision. As pointed out by Sperber & Wilson (1996, p.vii) in their principle of relevance, "*Human cognitive processes [...] are geared to achieving the greatest possible cognitive effect for the smallest possible processing effort. To achieve this, individuals must focus their attention on what seems to be the most relevant information available*". It was further hypothesised that subjects would be more diagnostic when the information about one of the options was highly relevant. Individuals should process the task in a less biased manner when the information with which they are confronted is relevant enough to them to necessitate more accurate processing and diagnostic decision making.

Method

Participants

Thirty-two second-year psychology students volunteered for the experiment as part of an experimental demonstration during a laboratory class on methodology in social psychological research. The median age of the 22 women and 10 men was 22 years.

Materials and procedure

Participants filled in a questionnaire presenting them with two problems. In one they were asked to imagine having to choose between two cars, and in the other having to choose between two political candidates. The order of tasks (cars-candidates vs. candidates-cars) was counterbalanced.

In each task, subjects were told that they would be able to obtain information concerning some characteristics of the options. As regards cars these characteristics were fuel consumption, performance, price and reliability;

for political candidates they were competence, credibility, honesty and private life. Subjects had to rate the personal importance of each characteristic by ranking them from the most to the least important.

Next, subjects were informed that their task consisted in choosing between car A and B, vs. between candidates A and B. Accordingly, subjects were given anchoring information about one of the four characteristics for one of the cars vs. for one of the candidates (A or B), displayed on a 2X4 table (targets A and B in the columns, and criteria 1, 2, 3 and 4 in the rows; Figure 1 gives an example). To control for positional effects, half the subjects received the anchoring information about target A (car vs. candidate), and the other half about target B. To control for content effects, subjects were split into four groups each receiving the anchoring information about a different characteristic of the target.

The main independent variable was introduced by varying the evaluation of the anchoring information. Thus, subjects were informed whether a car or a candidate received a positive vs. negative evaluation on that particular characteristic.

The subjects' task was then to select just one additional piece of information to help make their choice between the two options. Since a diagnostic choice is one that allows comparison of the two targets on the same dimension, and that anchoring information was given about one characteristic of one target, selection of information concerning the same characteristic of the alternative target can be considered as a diagnostic choice, and all the other responses as nondiagnostic. For instance, if subjects received anchoring information relative to the competence of candidate A, a diagnostic choice would be to ask for information about the competence of candidate B.

Results

Overall, the proportion of nondiagnostic choices was higher than the proportion of diagnostic choices, and this was true both for the cars task (65.6% vs. 34.4%) and for the candidates task (62.5% vs. 37.5%). These results confirm

that diagnosticity is not a common strategy in these kinds of decision making tasks. Moreover, no significant effect of task order was observed.

For both tasks, a loglinear procedure revealed that a model combining the main effects of the characteristic evaluation (positive vs. negative) and that of type of target (A vs. B) with the effect of the two-level dependent variable (diagnostic vs. non-diagnostic choice) provided the best fit with the data (Cars: $X^2(29) = 29.340, p = .447$; $G^2(29) = 26.707, p = .587$. Candidates: $X^2(29) = 37.846, p = .126$; $G^2(29) = 31.694, p = .333$).

As results were similar across the two tasks, they were combined to show the number of diagnostic choices across the two tasks (never, in only one task or in both tasks; see Table 1). As predicted, subjects were more diagnostic when the anchoring information was negative than when it was positive (Mann-Whitney test: $z = 1.839; p < .04$, one tailed hyp.). Moreover, and unexpectedly, subjects were more diagnostic when the anchoring information was relative to target B than when it was relative to target A (Mann-Whitney test: $z = 2.554; p < .02$, two tailed hyp.).

Results for the degree of importance of each characteristic revealed that for car choice the most important characteristic was price, followed by reliability, fuel consumption and performance (all paired t-tests yield significant differences, at least $p < .05$). For candidate choice the most important criterion was competence, followed by honesty, credibility and private life (all paired t-tests yield significant differences, at least $p < .05$).

In order to assess the role of relevance of information for diagnosticity, a further analysis considers the number of subjects who were diagnostic and nondiagnostic as a function of the

Table 1: Number of diagnostic choices across the two exercises (candidates and cars) as a function of the evaluation of the anchoring information (positive vs. negative).

	Positive (n = 16)	Negative (n = 16)
No diagnostic choice	9	6
Diagnostic in one task	7	4
Diagnostic in both tasks	0	6

rated importance of the characteristic mentioned in the evaluation (from the most to the least important). Results show that when the anchoring information was given about a characteristic considered important by the subjects, their choice was more diagnostic than in the case of a less important characteristic (cars: Mann-Withney test: $z = 1.643$; $p < .06$, one tailed hyp.; candidates: Mann-Withney test: $z = 2.051$; $p < .03$, one tailed hyp.).

Discussion

This pilot study confirmed that the two tasks elicit similar effects in information selection for decision making; it appears that diagnosticity is just as rare in political choice as in less socially anchored forms of decision making. It is thus possible to study the search for information in political choice on the basis of more general processes involved in decision making.

The study also revealed, as hypothesised, that the valence of the anchoring information had an impact on the information selection strategies: a negative evaluation favoured diagnostic choices in both tasks to a greater extent than did a positive evaluation. This result is consistent with and supports the idea that pseudodiagnosticity depends on a form of "focusing effect" that concentrates all the search activity on an attempt to confirm the impression that the target for which one possesses information is the better option. Indeed, when negative information contradicted this impression, subjects showed a diagnosticity rate significantly higher than when positive information confirmed it. This is a first step toward defining the pseudodiagnosticity bias as a motivational effect, since it can be reduced by inducing doubt as to whether the option, be it a candidate or a car, on which an individual is anchored is indeed the best choice.

The results unexpectedly revealed that when the anchoring information was about the B option (displayed on the right column of the table), subjects were led to choose the more diagnostic information to a greater extent. A tempting explanation of this effect is to consider it as a perceptual tendency to complete the empty space in the left column A. If this ef-

fect is attributable to a "Gestalt" necessity to fill a corresponding empty space, future research should compare conditions in which the choice is presented in a written form to conditions in which it is presented orally, with no visual anchoring. But this is beyond the scope of the present article. Thus, in the next experiment this problem was set aside and information was given only in the left column, in order to study pseudodiagnosticity and its reduction in the condition in which the bias is the strongest.

Finally, analysis of information relevance showed that subjects were more diagnostic in selecting information when the anchoring information concerned a characteristic that had been rated by the subjects as being more important than when it related to a characteristic considered less important. This result suggests that when the characteristic under examination in a decision making task is relevant to the individual, the information asked is more frequently the one that allows direct comparison of the two options, be they two cars or two candidates. Relevance of information thus appears to be an important factor in enhancing diagnosticity concerns. This was directly addressed in the second study.

Study 2

The purpose of the second experiment was to investigate the effect of social influence on information selection in a decision making task involving a choice between political candidates. Given the main findings of the studies discussed above on the articulation between social influence and inductive reasoning, it would be anticipated that individuals confronted with a pseudodiagnostic minority proposal (i. e. the kind of proposal that people are expected to favour spontaneously) will have greater conflict about adopting it and will be led to consider more carefully the available information in order to find an alternative response. From the information processing point of view, individuals exposed to minority influence are stimulated to attend to more aspects of the situation (Nemeth, 1986), and to consider the task as being of greater complexity (Nemeth, Mayseless, Sherman & Brown, 1990), leading to a form of in-

formation processing that can be described as more systematic (cf. Chaiken, 1980). Confrontation with minority influence is therefore expected to favour the emergence of a diagnostic choice more strongly than confrontation with a majority. Confrontation with a majority source is instead expected to lead subjects to accept its proposal without verifying it, as majorities are supposed to be more correct than minorities, thereby favouring focusing (cf. Legrenzi *et al.*, 1993).

According to Conflict Elaboration Theory (Mugny, Butera, Sanchez-Mazas & Pérez, 1995; Pérez & Mugny, 1996), decision making tasks are a form of aptitude task involving an ambiguous object. Error is highly relevant in this kind of task not only because a correct answer exists, but also because failure – or success – assigns people to a particular hierarchical category in terms of high vs. low assigned competence (experts or novices; people who succeed and people who fail). Expressing a judgement on such a task is a matter of knowledge as well as of personal identity. On the one hand, individuals must find the correct answer; they know it exists, but they do not yet know which alternative it is. On the other hand, to find the answer, individuals use various tools (e.g. logical rules) knowledge of which carries positive connotation. To the extent that the relevance of error in a particular kind of task is high rather than low, subjects will be especially motivated to find the correct solution as this allows a positive self-evaluation (cf. Kruglanski & Mayseless, 1987). This should favour more extensive and systematic information processing of a kind expected to lead more to a diagnostic choice. Changes in the representation of the task as regards the relevance of error are thus expected to have an impact on the way people select information for decision making, in the same way that they have an impact on people's reaction to social influence (cf. Pérez & Mugny, 1996). With this in mind, task representation was manipulated in study 2, by modifying the degree of relevance of error. In a high relevance of error task subjects should be more motivated to attend carefully to the existing information in order to find the correct answer. It was therefore expected that the minority source would induce more diagnostic

choices in this case than in the case of task characterised by low relevance of error.

As in study 1, the valence of the anchoring information (positive vs. negative evaluation) was also manipulated, as the predicted dynamics should be more pronounced when a negative evaluation is given. Moreover, the relevance of the information was this time manipulated, with the expectation that when information bears on an important characteristic, diagnosticity will be enhanced, compared to conditions in which the anchoring information is given about an unimportant characteristic. Therefore the experimental design was a 2 (type of source, majority vs. minority) X 2 (risk of error, relevant, vs. non relevant) X 2 (valence of the anchoring information, positive vs. negative) X 2 (relevance of the anchoring information, high vs. low) factorial design.

Method

Participants

Subjects participating in this experiment ($n = 224$) were recruited by our laboratory class students from among their acquaintances, as a requirement for their study of methodology. Subjects' age ranged from 15 to 78 years (median age = 24); 104 were men and 120 women.

Procedure and design

Participants were confronted with a candidate choice task presented either as a study of *probability of error* (high stakes associated with error) or of *probability of choice* (low stakes associated with error task). The leaflet subjects had to fill in specified either that "In choosing between candidate A or B, there is a probability of error of 50%. In other words, there is one chance out of two of choosing the wrong candidate" (high stakes) or that "In choosing between candidate A or B, there is a probability of 50%. In other words, there is one chance out of two of choosing one candidate rather than the other" (low stakes).

All subjects were then informed that they had one piece of anchoring information at their dis-

positional, specifying whether the candidate had a good or a bad evaluation on a certain characteristic. The information was displayed on a 2 (candidate A or B) X 4 (characteristics: competence, credibility, honesty, private life) table (see Fig. 1), as in the previous experiment, but this time the information concerned only candidate A (as it was assumed that displaying the anchoring information in the right hand column of the table could favour a diagnostic choice for perceptual reasons; see Study 1).

The importance of the anchoring information was then manipulated and half of subjects received – on the basis of the Study 1 results – information concerning the *competence* of candidate A (high importance), the other half information concerning *private life* (low importance). In addition, subjects were informed either that this candidate had received a *bad* evaluation (negative evaluation), or a *good* evaluation (positive evaluation) on this characteristic.

They were informed next that, in order to choose in the most appropriate way, they could ask for one further piece of information; again, as in the previous experiment, the information chosen by the subjects was coded as either diagnostic or non-diagnostic (depending on whether or not subjects chose information about candidate B on the same characteristic as

that given about candidate A – the anchoring information). This constituted the main dependent variable.

Subjects were then informed, allegedly for their own information, of the choice made by a fictitious *majority* (88%) – versus a *minority* (12%) – of people who had supposedly taken part in the same experiment. The choice attributed to the influence source always corresponded to a pseudodiagnostic alternative, namely a request for information about another characteristic of candidate A (i. e. credibility).

Finally, having rated the importance of the four proposed characteristics of the candidates, and having completed a manipulation check questionnaire concerning the representation of the source and the importance of the four characteristics of the candidates, subjects were presented with a car choice task to test for a possible generalisation effect.

Results

Manipulation checks

Representation of the source. When asked on a seven-point scale if the source was representative (7 = representative), subjects confronted

Figure 1: Example of part of the information display (condition minority influence, high relevance of error and negative evaluation on the highly important dimension concerning candidates).

In choosing between candidate A or B, there is a probability of error of 50%.
In other words, there is 1 chance out of 2 choosing the wrong candidate.

In order to reach a correct choice, you can obtain some other information. Write down the number "1" in the following table, in the case corresponding to the information you would ask for if you could get further information, but only a single one.

For your own information, we show you the choice made by a minority (12%) of people already interrogated.

Concerning the characteristic:	Candidate A receives a:	Candidate B receives a:
Competence	negative evaluation	
Credibility		
Honesty		
Private life		

12% have asked for this information

with the minority rated the source as less representative ($M = 3.09$) than those confronted with the majority source ($M = 3.77$; $F(1/206) = 7.971$; $p < .01$). Moreover, the minority was seen as a minority source ($M = 3.08$; 1 = minority, 7 = majority) more than the majority source ($M = 4.83$; $F(1/199) = 58.666$; $p < .001$). The manipulation of the influence source was therefore correctly perceived.

Relevance of the characteristics. The ratings of the four characteristics available for the candidates revealed that, as in the previous experiment, competence ($m = 1.63$; where 1 = most important, 4 = least important) was considered as the most important (for all paired t-tests, $p < .001$), and private life ($m = 3.79$) the least important (for all paired t-tests, $p < .001$). This result confirms the adequacy of using competence and private life to manipulate the relevance of the anchoring information.

Imitation of the source

Subjects were told what piece of information the source requested; in all conditions it requested pseudodiagnostic information about the credibility of candidate A. Results show that more subjects followed the source's proposal when confronted with a majority (12 out of 113) than when confronted with a minority (3 out of 111, $X^2(1) = 4.421$, $p < .04$). However, it should be noted that very few subjects followed the source's proposal (6.7%). This kind of result may be found in tasks where aptitudes are at stake (e. g. Butera & Mugny, 1992) and where independence is a way of affirming self-competence (cf. Lemaine, 1974).

Diagnosticity

Concerning information selection, a loglinear procedure revealed that for the candidate choice as well as for the generalisation exercise about cars a model combining the interaction of three independent variables (type of source, stakes associated with error in the task, and valence) with the main effect of the relevance of the characteristic provided the best fit with the

data (candidates: $X^2(13) = 14.236$, $p = .357$; $G^2(13) = 12.771$, $p = .466$; cars: $X^2(13) = 11.473$, $p = .571$; $G^2(13) = 10.279$, $p = .671$).

As the results were similar across the two exercises, a score was computed reflecting whether subjects were diagnostic never (0), in only one task (1) or in both tasks (2). Table 2 shows the mean diagnosticity across experimental conditions. Analysis of variance on this score confirms the results of the loglinear analysis as it first reveals a main effect of the relevance of the characteristic, showing that subjects were more diagnostic when the information was given about an important characteristic ($M = 0.71$) than when it was given on a less important one ($M = 0.23$; $F(1/208) = 32.686$; $p < .0001$).

There was a three-way interaction between type of source, stakes associated with error in the task, and valence ($F(1/208) = 6.441$; $p < .02$). Contrast analysis revealed that the interaction was due mainly to the fact that when the anchoring information was positive, the source – be it majority or minority – elicited the same diagnosticity rate whatever the risk associated with error on the task (M s between 0.59 and 0.32; for all relevant t s, $p > .10$). However, when the anchoring information was negative the minority source elicited a higher diagnosticity rate ($M = 0.71$) than the majority (0.36; $t(208) = 2.119$; $p < .04$) if the stakes involved in error were high, but not if the importance of error was low (respectively $M = 0.41$ and $M = 0.48$, n.s.). Also, in the negative information conditions, the minority tended to elicit a higher rate of diagnosticity when the stakes involved in error were high than when they were low ($t(208) = 1.857$; $p < .06$). Finally the minority elicited a higher diagnosticity rate under conditions of high stakes in error when the information was negative than when it is positive ($M = 0.37$, $t(208) = 1.970$; $p < .05$).

What the main effect and of the three-way interaction revealed was that subjects were more diagnostic to the extent that the anchoring information's criterion was relevant, the evaluation was negative, the task relevance of error was high and the source was a minority ($M = 1.14$; all relevant comparisons are significant, at least $p < .05$).

Table 2: Mean diagnosticity across the two exercises (0 = never; 2 = in both tasks).

Relevance of information	High				Low			
	Error		Choice		Error		Choice	
Type of task	Majority	Minority	Majority	Minority	Majority	Minority	Majority	Minority
Positive evaluation	0.86	0.62	0.57	0.80	0.21	0.14	0.07	0.36
SD	0.66	0.77	0.75	0.68	0.42	0.53	0.27	0.63
n	14	13	14	15	14	14	14	14
Negative evaluation	0.57	1.14	0.50	0.64	0.14	0.29	0.47	0.15
SD	0.75	0.86	0.51	0.63	0.36	0.61	0.83	0.38
n	14	14	14	14	14	14	15	13

Discussion

The results show that several socio-cognitive factors affect the general focusing tendency which leads to a nondiagnostic choice in information selection for decision making. As for the effect of information relevance, it appears that information about an important characteristic favours diagnostic choice to a larger extent than information about an unimportant one. Concerning the present study, it can be argued that when subjects had to choose a candidate on the basis of an important criterion (i. e. competence), they became particularly motivated to compare the available information about that criterion in order to detect differences in competence between candidates, and were thus led to ask for the diagnostic information. The relevance of the criterion under evaluation appears to be an important feature favouring the selection of diagnostic information for an accurate comparison between the two alternatives.

The interaction between the nature of the influence source, the risk of error, and the valence of the anchoring information modifies the information selection strategies in such a way as to suggest that the interaction between cognitive and social context factors can affect the emergence of more or less diagnostic choices. Thus, to the extent that the task involved a high risk of error, a negative evaluation and a minority influence, subjects were led to favour diagnostic choices. As reported in the results section, a positive evaluation of a candidate failed to elicit differential dynamics, rendering majority and minority influence equivalent, and leading subjects to solve the decision making task in the same way whatever the associated

risk. Clearly the expectation of a good candidate disengages the subjects from the representation of the task as well as from the representation of the source. However, a negative evaluation of the candidate serves to render subjects more sensitive to situational factors. On the one hand, the minority source elicits a higher diagnosticity rate when subjects are concerned with failure on the task than when they are not. On the other hand, when subjects are concerned with failure on the task, the minority source elicits a higher diagnosticity rate than the majority source. Hence it appears that minority influence benefits from both a conflictual representation of the task, and the activation of doubt concerning the value of the option. Clearly, minority influence necessitates an optimum level of conflict (Mugny & Pérez, 1991), and a frame of judgment under uncertainty (Pérez & Mugny, 1996). And the effects are stronger when information is relevant to subjects. It is worth noting that these dynamics operated in the experimental phase concerning the choice between candidates, but equally in the generalisation post-test concerning car choice.

General discussion

In exploring systematic errors and information selection biases in human decision making we are assuming that this can improve our insight into the socio-cognitive processes that govern decision making and indicate ways of enhancing the quality of decisions. The real world of politics offers the citizen countless opportunities actively to seek out or avoid certain polit-

ical messages and kinds of information. Citizens exercise this voluntary control over information exposure (cf. Frey, 1986) whenever they read particular articles while ignoring others, when they switch television channels, and so on. Given the importance in the realm of political decisions of being able (or motivated) to select the available information in a way that is diagnostic for choices between political alternatives, the application of decision making functioning to the political sphere can contribute to an increased likelihood of providing adequate solutions to a variety of political decisions. With respect to this aim, it is important to take into account that political knowledge is social in origin (cf. Catellani, 1996). It is created and reinforced through interaction and it is often acquired not directly but through intermediary sources strongly influenced by social and cultural context.

This comment is by all means too broad to be inferred from the results presented in this article. However, the results obtained in the two experiments reported here give some hints on general decision making processes that can clearly be applied to research in political psychology. First of all, individuals are seldom diagnostic, as is apparent in the low diagnosticity rates observed in studies one and two. Subjects are inclined to be satisfied with the first solution that comes to mind, reinforcing the already existing tendency for individuals to be cognitive misers or satisficers (cf. Simon, 1956). This mechanism of course could be used to manipulate the voter's behavior, insofar as by focusing attention on the (good) qualities of a candidate or political option it is possible to elicit a search for information on that option alone, thus making its choice more likely. However, these two studies show that these mechanisms are not inevitable, and that biases are the functioning of "default contexts", i. e. of situations in which no relevant search is activated. The main result is that information relevance elicits more diagnostic information selection: if subjects receive anchoring information on a characteristic that they value as very important, the focusing effect is counterbalanced and subjects are motivated to seek out the corresponding information for the other alternative (be it a candidate or a car). In other words, referring

to relevant information can allow individuals to reason in a diagnostic way, having in mind the goal (being able to compare two alternatives, and ultimately to choose) and not merely the procedure (accumulating information on a salient option).

As for social influence, a minority source can also elicit more diagnosticity, provided that individuals are uncertain about the valence of the option and that they fear being wrong (Kruglanski & Mayeseless, 1987). Indeed, it is known on the basis of minority influence research that minorities have an impact in conflictual contexts (Moscovici, 1980, 1985); the second study presented in this paper shows that individuals can decentrate from the focusing effect when they are exposed to minority influence in a situation involving conflict by virtue of both its uncertainty and the risks associated with error. Of course it would be an overgeneralization, but one can imagine that if pseudodiagnosticity (and the attention to just one candidate) can be produced by social sources that can induce focusing (e.g. through their control of the media), it is reassuring to know that under some specific circumstances social action and minority influence can counterbalance focusing by introducing conflict.

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