



Empower my decisions: The effects of power gestures on confirmatory information processing

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ARTICLE INFO

Article history:

Received 27 August 2010

Revised 5 June 2011

Available online 22 June 2011

Keywords:

Social power

Selective exposure

Biased assimilation

Confirmatory information processing

Embodiment

ABSTRACT

Recent research has shown that social power systematically influences information processing in many ways, and can be induced simply via powerful gestures or postures. The current studies investigated the impact of embodied power on confirmatory information processing after decision making. Based upon previous social power research, we hypothesized that individuals who posed in powerful ways (making a clenched fist or sitting in an open, expansive posture) would systematically prefer decision-consistent over decision-inconsistent information; an effect known as selective exposure, or biased assimilation. Four studies consistently indicated that bodily positioning associated with high levels of power induced greater confirmatory tendencies in the evaluation and search stages of a subsequent, decision-relevant information task (Studies 1–4). This tendency is unlikely to be due to mere physical strain (Study 4), and was mediated by differences in experienced decision certainty (Studies 3 and 4); indicating that the embodiment of high power makes people more confident regarding the validity of their decisions. Consequently, high-power posers systematically prefer information that is consistent with their decision preference.

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In September 2008, the 'Lehman Brothers' investment bank declared bankruptcy, providing the starting point for the biggest Western financial crisis since the Great Depression of 1929. Reasons for the economic downturn included the ungrounded financing of real estate, as well as managerial greed and the poorly performing security systems of many prominent financial markets. Importantly for the current research, there is also anecdotal evidence that financial decision makers had tended to neglect or downplay warning signs in the years preceding the crisis. It is especially disturbing to observe that this process seemed to be most pronounced in powerful individuals, such as bank managers and head financial decision makers. Managers may have been particularly involved in the poor decision making and biased, uncritical information processing that fostered these troubles. Therefore, it can be asked if powerful decision makers tend to neglect information that runs counter to their initial preferences and personal perspectives. Are these individuals really more selective in the processing of decision-relevant information than their less powerful equivalents? The present series of studies attempts to answer this question empirically.

The effects of power on information processing

Social power is defined as "the possibility [of] influenc[ing] others" (De Dreu & Van Kleef, 2004, p. 2; see also Kelley & Thibaut, 1978). Subjectively perceived social power has a strong impact on human lives. High power not only facilitates action (Galinsky, Gruenfeld, & Magee, 2003; Keltner, Gruenfeld, & Anderson, 2003) and (generally) leads to broader variability in behavior (Guinote, Judd, & Brauer, 2002), but is also clearly linked to approach versus avoidance tendencies (Smith & Bargh, 2008) if the power is perceived to be legitimate (Lammers, Galinsky, Gordijn, & Otten, 2008). Powerful participants consistently demonstrate more optimism in their perceptions of risk (Anderson & Galinsky, 2006), and display a more general positive view of both themselves and the world. For example, Anderson and Berdahl (2002) demonstrated that high-power individuals experience more positive than negative emotions, and frequently assume that their romantic partner likes them. However, power also increases moral hypocrisy: high-powered individuals show a tendency to impose strict moral standards on others while failing to personally adhere to them (Lammers, Stapel, & Galinsky, 2010). In negotiations, individuals with high levels of social power tend to make fewer concessions (De Dreu, 1995), and obtain more favorable outcomes (for a review, see Pruitt & Carnevale, 1993).

Importantly for our research, social power also seems to have a strong influence on human information processing. Research has shown that high power is linked to abstract thinking (Smith & Trope, 2006;

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Smith, Wigboldus, & Dijksterhuis, 2008) and placing less focus on details. For example, Guinote's (2007) findings suggest that the powerful show stronger inhibition of peripheral information compared to those with less power, and are better at focusing their attention on central information. Similarly, Lammers and Stapel (2009) demonstrated that moral judgments made by the powerful are more rule-based than outcome-based, provided that these judgments do not threaten their self-interests. Furthermore, the powerful seem to use more stereotypic information, at least if the task at hand is relatively unimportant (Fiske, 1992).

Finally, powerful individuals have also been shown to rely more on experiential information (Weick & Guinote, 2008) and to attain more behavioral confirmation in social situations (Copeland, 1994). Overall, most findings on power and information processing suggest that high power leads to changes in social perception and information processing, which help the powerful to maintain a positive and consistent view of both the world and their own self-concept. The present studies investigate whether a similar power effect can be found for confirmatory information processing in the context of decision making – which is clearly a less desirable effect in terms of poor decision outcomes (Kray & Galinsky, 2003). It is expected that high-power individuals will show greater confirmatory tendencies in the processing of decision-relevant information than control individuals. To investigate these questions we employ the embodied cognition paradigm, which assumes that not only psychological processes can affect bodily processes, but also bodily processes can affect psychological processes (Johnson, 1987). In other words, embodiment reflects various states of the body (e.g., arm movements, facial expressions), which can influence social information processing (Barsalou, Simmons, Barbey, & Wilson, 2003). For example, we know from research by Schubert (2004) and Schubert and Koole (2009) that making a fist activates the psychological concept of power for women and men. Especially for men, salient power leads also to more positive assessment of power in general and the personal hope to actually be powerful in the future (Barsalou et al., 2003).

Research on confirmatory information processing

Confirmatory information processing principally refers to two strongly related tendencies: selective exposure (Festinger, 1957) and biased assimilation (Lord, Ross, & Lepper, 1979). *Selective exposure* is a phenomenon that occurs when individuals search for information, and show systematic preferences towards that which is consistent with their a priori viewpoints (e.g. decisions, attitudes, expectations), as opposed to information that contradicts them (Festinger, 1957; Fischer, Greitemeyer, & Frey, 2008; Frey, 1986; Lundgren & Prislín, 1998). *Biased assimilation* occurs when individuals overestimate the quality, relevance and importance of viewpoint-consistent information compared to viewpoint-inconsistent information (Ditto & Lopez, 1992; Ditto, Scepansky, Munro, Apanovitch, & Lockhart, 1998; Greitemeyer, Fischer, Frey, & Schulz-Hardt, 2009; Lord et al., 1979). Recent research has shown that selective exposure and biased assimilation are strongly positively correlated; that is, the more individuals are found to have overestimated the quality of viewpoint-consistent information, the greater their tendency to demonstrate selective exposure effects in active information search becomes (Fischer, Jonas, Frey, & Schulz-Hardt, 2005; Schulz-Hardt et al., submitted for publication). Consequently, the current research follows a strategy employed by Fischer, Greitemeyer, and Frey (2008), and subsumes selective exposure and biased assimilation under the term 'confirmatory information processing'.

A broad variety of situational variables have been found to affect confirmatory information processing. For example, decision makers become more confirmatory under conditions of high commitment (Schwarz, Frey, & Kumpf, 1980); high choice (Frey & Wicklund, 1978); gain-framed decision problems (Fischer, Jonas, Kastenmüller, & Frey, 2008); when information availability is low (Fischer et al., 2005); when they have reduced self-regulatory resources (Fischer, Greitemeyer, &

Frey, 2008), and when they feel negative affective states (Jonas, Graupmann, & Frey, 2006). Most of this research has been conducted within the classic dissonance paradigm (see Fischer et al., 2005; Frey, 1981a,b,c; Frey, 1986; Jonas, Schulz-Hardt, Frey, & Thelen, 2001).

The effects of confirmatory information processing have been explained by both motivational and cognitive models. For example, dissonance theory (a classic motivational account) suggests that decision makers systematically prefer decision-consistent information in order to reduce the aversive psychological state of dissonance arousal, which arises after a decision is made (cf. Festinger, 1957; Frey, 1986; Jonas et al., 2001). In contrast, cognitive accounts suggest that decision makers are basically rational, and search for information that possesses the highest perceived quality (Fischer et al., 2005; Fischer, Schulz-Hardt, & Frey, 2008; Schulz-Hardt et al., submitted for publication). However, the problem is that even rational decision makers cannot evaluate information quality independent of their personal stances (Ditto et al., 1998; Ditto & Lopez, 1992; Schulz-Hardt et al., submitted for publication), and decision-inconsistent information is consequently tested more critically than decision-consistent information, which is (more or less) accepted at face-value. As a result, decision-consistent information is perceived to be of higher quality than decision-inconsistent information, and is thus systematically preferred in information search tasks (see also Fischer et al., 2005).

Principally based on the cognitive approach, Fischer, Lea, Kastenmüller, Greitemeyer, Köppl, and Frey (2010) formulated a theoretical model based mainly on considerations of *subjectively perceived decision certainty*. The model suggests that high levels of decision certainty are associated with increased levels of confirmatory information processing, due to two factors. Firstly, high decision certainty reduces the cognitive effort a decision maker invests in processing relevant information (which leads to reduced critical analysis of their held decision preference, and more confirmatory information processing in turn). Secondly, high decision certainty carries over to decision-relevant information, and leads decision makers to become overconfident in the validity of standpoint-consistent information. These two processes combine to the effect that the quality of decision-consistent information is overestimated, and is subsequently systematically preferred in information search tasks. In support of the model, Fischer, Schulz-Hardt, and Frey (2008) conducted three experiments, and found that reduced levels of decision certainty (induced by loss decision framings) led to lower levels of confirmatory information processing.

Power and confirmatory information processing: the present research

Basing itself upon prior findings that high decision certainty is associated with increased levels of confirmatory information processing, the current research investigates whether people who pose in manners associated with power experience increased levels of decision certainty, and thus also exhibit increased levels of confirmatory information processing. An examination of the classic power literature makes this line of reasoning plausible; the present studies particularly add to research by Briñol, Petty, Valle, Rucker, and Becerra (2007), which found that power increases individuals' confidence in their own mental stances. As a result, if feelings of power are induced before a persuasive message is presented, participants differentiate less between strong and weak arguments (compared to when no such induction occurs). The authors presume that power validates participants' existing views, and that they thus pay less attention to subsequent information. However, no direct empirical evidence has been presented for this assumption.

In line with previous findings of Fischer et al. (2011), which showed that increased decision certainty (a form of confidence in the validity of one's own decisions and standpoints) leads to increases in confirmatory information search, we would expect that increased confidence in the

validity of one's position as a function of power inductions also increases confirmatory information search. For example, De Dreu and Van Kleef (2004) found that high-power individuals asked less diagnostic (and more leading) questions than low-power individuals did in a social negotiation setting. Moreover, Erber and Fiske (1984) showed that high-power individuals paid less attention to information that was inconsistent with their expectations of another person. Elsewhere, Neberg and Fiske (1987) found that those with high levels of power relied more on stereotypes, examining "hard-to-process" individualistic attributes instead. In addition, Goodwin, Gubin, Fiske, and Yzerbyt (2000) observed that high-power individuals devoted more attention to stereotype-consistent attributes, while the attention given to stereotype-inconsistent attributes was decreased. In line with these findings, Galinsky, Magee, Inesi, and Gruenfeld (2006) conducted a series of studies and found that people with high levels of power are less likely to examine a situation from the perspective of others. In general, the powerful seem to rely more on heuristics.

Based on these theoretical assumptions and previous findings, it is argued that high-power individuals should be more confirmatory in decision-relevant information processing than control individuals. This effect is expected as high-power decision makers are believed to be less careful and effortful in the processing of decision-relevant information than low-power decision makers (e.g., Goodwin et al., 2000). In addition, high-power decision makers are expected to overestimate the validity of their decisions, as the personal confidence associated with feelings of high power should carry over to the evaluation of the validity of personal standpoints and decisions; resulting in both the overestimation of the quality of information that supports their prior views, and a preference for it during information search tasks (see Fischer et al., 2005; Fischer, Jonas, et al., 2008; Schulz-Hardt et al., submitted for publication).

A series of four studies was conducted to directly test these hypotheses. We chose language-free methods to induce power; such as making a fist (Schubert, 2004; Schubert & Koole, 2009) or displaying an open, expansive posture (Carney, Cuddy, & Yap, 2010; Huang, Galinsky, Gruenfeld, & Guillory, 2010). In contrast, control groups were instructed to keep their hand in a relaxed position or to pose in a closed, constrictive seating position. After the power embodiment induction, participants worked on established selective exposure decision cases. They subsequently evaluated and searched for new decision-consistent and inconsistent decision-relevant pieces of information (confirmatory information processing: Studies 1–4). It was expected that high-power decision makers (i.e. those that made a fist or held an expansive posture during decision making) would exhibit higher levels of confirmatory information processing (selective exposure, biased assimilation) than the control group (who made no such gesture or posture). It was also hypothesized that this basic effect would be mediated by participants' personal levels of experienced decision certainty (Studies 3 and 4).

Study 1

The first study was designed to provide initial evidence that decision makers with high levels of power indeed exhibit higher levels of confirmatory information processing than the members of a control group. Participants were asked either to make a clenched fist (power condition) or to keep their hand in a relaxed position (neutral condition), and to preserve these respective gestures for the full duration of the study. They made a preliminary choice in a decision-making task, and were then given the opportunity to search for and evaluate subsequently presented pieces of both decision-consistent and inconsistent information.

Method

Participants and design

Twenty-five students at the University of Munich (LMU) participated in the study (19 women and 6 men; ages ranging from 19 to

48 years; $M = 23.94$, $SD = 4.45$). The study consisted of a one-factorial design with 2 independent conditions: 'high power embodiment induction' and 'control group'.

Material and procedure

To manipulate power, participants in the 'high power embodiment induction' condition were asked to make a fist with their non-writing hand for the entirety of the experiment (see Schubert, 2004; Schubert & Koole, 2009). In contrast, the control group members were instructed to keep their non-writing hands in a relaxed position throughout the study (the questionnaires given to both groups featured a reminder of the required hand gesture at the start of every page). All participants were then presented with a decision case in which they were instructed to imagine themselves as the owner of a fashion store, and had to decide whether or not to extend the contract of a managerial employee named Mr. Miller (Fischer et al., 2005; Fischer, Jonas, et al., 2008; Frey, 1986). They received a questionnaire that contained an introduction to the topic and the most important facts about Mr. Miller's work. He had been hired to manage the fashion store twelve months ago, and his contract had been limited to a single-year term; its prolongation dependant on performance. During his tenure, he had been met with mixed results. For example, while he had succeeded in attracting new customers by introducing a new, "Young Fashion" product line, some regular customers had been simultaneously lost because they did not like the new collections. Overall, the positive and negative aspects of Mr. Miller's work were balanced. After participants had read these facts, they made a preliminary decision regarding his continued employment, and were informed that (a) more information was available for them to examine, and (b) that they would have the chance to revise their decision if the need arose. The preliminary decision served as the basis for categorizing standpoint-consistent and -inconsistent information (this is the case for all four experiments). The additional pieces of information consisted of 12 one-page statements written by Mr. Miller's colleagues, each of which was summarized by a main thesis of about two sentences. The main thesis contained the key argument of the corresponding statement, and made it obvious whether the colleague supported or opposed an extension of Mr. Miller's contract. An example of a favorable thesis was: "Mr. Miller's work has been satisfactory; therefore, his contract should be extended", while a critical one was: "Mr. Miller hasn't fulfilled our expectations; therefore, his contract shouldn't be extended". Irrespective of the participants' prior decision, half of the statements supported it (decision-consistent information), and half conflicted with it (decision-inconsistent information).

Participants were then instructed to evaluate the expected quality of all of the available pieces of information, with regard to both their credibility ("How credible do you expect this information to be?"; from 0 = *not at all*, to 10 = *extremely*) and importance ("How important will this information be for making a good decision?"; 0 = *not at all*, 10 = *extremely*). Participants also indicated which pieces of information they would like to read in their extended forms (one page statements). Following the procedure of Fischer, Greitemeyer, and Frey (2008), three factors were subsequently measured and utilized as an indicator of confirmatory information processing after initial decision making: (a) the perceived reliability of the decision-consistent and decision-inconsistent pieces of information; (b) the perceived importance of consistent and inconsistent information; and (c) whether participants actually wanted to read extended versions of the corresponding arguments (yes vs. no). Each item was measured on a scale from 0 (*not at all*) to 10 (*definitely*). To increase the power of subsequent statistical analyses, difference values for each dimension were computed (for a similar procedure, see Fischer, Greitemeyer, & Frey, 2008). In addition, since information evaluation is known to be one of the most crucial determinants of actual information search (cf. Schulz-Hardt et al., submitted for publication; see also Fischer et al., 2005), it has been suggested (cf. Fischer, Greitemeyer, & Frey, 2008) that confirmatory

information evaluation and confirmatory information search should be combined. This suggestion was heeded by collapsing the difference values for perceived credibility, importance, and actual search to an overall indicator of confirmatory information processing ($\alpha = .72$). In other words, we subtracted the mean evaluation and search scores of decision-inconsistent articles from the mean evaluation and search scores of decision-consistent articles (i.e. confirmation bias; e.g., Frey, 1986). Once the experiment was completed, participants were debriefed, thanked for their participation, and dismissed.

Results and discussion

Check for background effects

Participants' age and gender did not affect the dependent variable, nor did they interact with the experimental manipulation, all $F_s < 1$.

Confirmatory information processing

An independent sample t -test revealed that participants who were subject to the power embodiment manipulation (clenched fist; $M = 0.39$, $SD = 0.93$) exhibited higher levels of confirmatory information processing than participants in the control condition ($M = -0.42$, $SD = 0.80$), $t(23) = 2.32$, $p = .03$, $d = 0.93$.

Thus, Study 1 provided initial evidence for the hypothesis that power embodiment inductions increase decision-relevant confirmatory information processing. The next study aimed to replicate this effect with a different type of embodied power manipulation.

Study 2

In order to increase generalizability, the second study aimed to replicate the observed effect of embodied power on confirmatory information processing with a different type of embodied power manipulation (an open, expansive seating position vs. a closed, constrictive one; Carney et al., 2010; Huang et al., 2010). In addition, a different type of decision case was used (economic). Moreover, we used a manipulation check on perceived power.

Method

Participants and design

Thirty-six students at the University of Munich (LMU) participated in the study (22 women and 14 men; ages ranging from 18 to 30 years; $M = 20.83$, $SD = 2.52$). The study consisted of a one-factorial design with 2 independent conditions: 'high power embodiment induction', and 'low power control group'.

Material and procedure

The procedure of Study 2 was similar to that of Study 1, except that we used both a different type of power embodiment manipulation and a different decision case. Embodied power was induced by asking participants in the high power condition to sit in an open, expansive position. In contrast, participants in the low power control condition were asked to sit in a stiff and closed position (for a similar manipulation, see Carney et al., 2010). We checked the validity of this power manipulation using the following two items, which were responded to on a scale from 1 (*not at all*) to 5 (*very much*): "To what extent do you feel mighty?"; "To what extent do you feel superior?"

¹ Please note that negative values only occur because we used z -values to combine the different measures of confirmatory information processing; they do not mean disconfirmatory information processing.

($r = .33$, $p < .05$). Both items were collapsed to form a single scale of 'experienced power'.

Afterwards, participants worked on a well-established economic decision case, which was developed in the context of selective exposure research (Fischer et al. (2011); for an overview, see Fischer & Greitemeyer, 2010; Fischer, Greitemeyer, & Frey, 2008). Participants were asked to work on the following scenario: "You have had the idea of opening a new kind of snack stall. You intend to start with a single stall. But you have one further decision problem: You've had two good and innovative ideas and you have to decide on one concept. The goods you offer on your stall could consist either of diet products (e.g., low fat and low carb products, etc.) or organic products (e.g., vegetables grown without pesticides or genetic manipulation, etc.). Both the organic and the diet industries seem to be very trendy in the UK." Next, participants were asked to make a preliminary decision regarding whether they would prefer to invest in either the diet or organic food ideas (they were also informed that they could revise their decision later on).

Afterwards, we measured confirmatory information processing in the same manner as Study 1; that is, participants both evaluated (assessing the expected credibility and importance of specific pieces of information) and actively searched for information amongst a set of 8 pieces of additional decision-relevant information (4 being decision-consistent, and 4 decision-inconsistent; for more on this typical selective exposure paradigm, see Fischer et al., (2011); Frey, 1986). As in Study 1, each piece of information consisted of a 2–3 sentence summary of an extended expert statement. An example of an item consistent with the organic product business (and thus inconsistent with the diet business) was: "Organic products are healthier than diet products. Thus, an organic stand can be recommended". An example of an item consistent with the diet product business (and inconsistent with the organic one) was: "Organic products are more expensive than diet products. Hence, a diet business should be preferred". We used the same indicator of confirmatory information processing as in Study 1, employing a z -transformed combination of difference values (consistent minus inconsistent) for information credibility and importance, as well as active information search. After the information search was finished, participants made a final decision, and the experiment was ended. Participants were subsequently debriefed and thanked for their contributions.

Results and discussion

Check for background effects

Participants' age and gender did not affect the dependent variable, nor did they interact with the experimental manipulation, all $F_s < 1$.

Manipulation check

Participants in the high power embodiment condition ($M = 2.58$, $SD = 1.05$) reported significantly higher levels of perceived power than control group participants ($M = 1.81$, $SD = 0.62$), $t(34) = -2.71$, $p = .01$, $d = 0.89$.

Confirmatory information processing

For an overview of the raw values and post hoc tests for the single dimensions of confirmatory information processing, see Table 1. An independent sample t -test revealed that participants in the high-power condition (sitting in an expansive posture; $M = 0.28$, $SD = 0.77$) exhibited higher levels of confirmatory information processing than participants in the low power control condition (constrictive posture; $M = -0.32$, $SD = 0.88$), $t(34) = 2.30$, $p = .028$, $d = 0.73$.

Table 1

Raw difference values (consistent minus inconsistent) for information reliability, information importance, and actual information search in Study 2.

Experimental condition	Dimension				Search	
	Reliability		Importance		M	SD
	M	SD	M	SD		
Low power	0.76ns	2.63	−0.01*	2.05	0.19+	1.05
High power	2.11	2.41	1.21	1.49	1.00	1.50

Note: * ($p \leq .05$); + ($p \leq .10$); ns ($p > .10$) for the difference between experimental and control group.

Study 3

The main aim of Study 3 was to test for potential, underlying psychological processes that may account for our found effect of power embodiment on confirmatory information processing. Following the decision certainty model of Fischer and Greitemeyer (2010), which generally assumes that high decision certainty is associated with increased levels of confirmatory information processing, we expected that participants in the embodied high power condition would experience higher levels of decision certainty than control participants; and that this should mediate the effect of embodied power on confirmatory information processing. In addition, Study 3 also attempted to enhance the ecological validity (and enable potential generalization) of Study 1 and 2's effect by employing an alternative decision case based on current political attitudes. As in the first two studies, it was predicted that participants with a high power embodiment induction would exhibit higher levels of confirmatory information processing than participants in a control group. We also expected that this effect would be mediated by increased levels of experienced decision certainty in the high power condition.

Method

Participants and design

Thirty-six students from the University of Munich (LMU) took part in the study (20 women and 13 men; ages ranging from 19 to 45 years; $M = 27.55$, $SD = 7.00$). Due to a large number of missing values in the main dependent variables, the data from three participants had to be excluded from further analysis. The study consisted of a one-factorial design with two independent conditions: 'high power embodiment induction' and 'control group'.

Material and procedure

After the participants arrived at the laboratory, they were informed that they were going to participate in two different and completely unrelated studies. The first dealt with bodily experiences (power manipulation), whereas the second would address perceptions of political information in the mass media (information evaluation and search; confirmatory information processing). Participants were told that for efficiency reasons, both studies would be performed together in one experimental session. As in Study 1, participants in the high power condition were instructed to make a fist with their non-writing hand throughout the experiment, whereas control group participants were asked to hold their hand in a relaxed position. As a manipulation check, we asked participants to indicate the extent to which they felt mighty, strong and superior on scales from 0 (*not at all*) to 5 (*extremely*). These three items were highly correlated, and thus collapsed into a single scale of power ($\alpha = .84$).

Following the power manipulation, participants were asked to work on a task concerning political information in the mass media, which is a typical decision paradigm for research on confirmatory information processing (cf. Fischer et al., 2005; Fischer, Greitemeyer,

& Frey, 2008; Frey, 1986). The participants were informed that the University of Munich's psychology department was conducting studies on the reception and evaluation of political information in the mass media, with the present research aiming to explore processes of perception, understanding, and assessment of the political information presented in newspapers. Following this introduction, participants were asked to indicate which of the two major German parties (SPD or CDU/CSU) they would vote for if there was a current election. Afterwards, they received 12 pieces of political information (in the form of two to three-sentence theses abridged from full-page newspaper articles), and were told that they could read the full statements later. Of the twelve theses, six pertained to the politics of the SPD (three consistent; three inconsistent), and six to the politics of the CDU/CSU (again, three consistent; three inconsistent). An example of a thesis consistent with the SPD was: "The SPD has performed well over the last few months. Many important reforms have been initiated and the increase in public debts has been halted.", while an example inconsistent with the politics of the CDU/CSU was: "The current leaders of the CDU/CSU are not prepared for the political problems facing Germany. Instead of overcoming Germany's economic problems, they conduct tasteless personal attacks on politicians from other parties." Regardless of the participants' initial political decision, half of the statements supported it (those favoring their selection, and those criticizing the alternative) and the other half conflicted with it (criticizing their choice, and favoring the alternative). As in Study 1, participants were asked to indicate which articles they wanted to read in extended form (having the freedom to select from 0 to 12), and to indicate the extent to which they believed said articles were credible and important (both on scales from 0 [*not at all*] to 10 [*definitely*]). Afterwards, the study was concluded, and the participants debriefed and thanked for their contributions. Following the strategy set forth by Fischer, Greitemeyer, and Frey (2008), the obtained values for credibility, importance, and actual search were transformed into z-values, and collapsed into an overall index of confirmatory information processing ($\alpha = .81$).

Results and discussion

Check for background effects

Participants' ages and gender did not affect the dependent variable, and did not interact with the experimental manipulation, all $F_s < 1$.

Manipulation check

Participants in the high power embodiment condition ($M = 2.44$, $SD = 1.09$) reported marginally higher levels of perceived power than participants in the control group ($M = 1.71$, $SD = 1.05$), $t(31) = 1.96$, $p = .059$, $d = 0.68$.

Decision certainty

Participants in the high power condition felt more certain ($M = 5.82$, $SD = 1.69$) that they supported the right political party than participants in the control condition ($M = 4.12$, $SD = 1.48$), $t(28) = 2.93$, $p < .01$, $d = 1.07$.

Confirmatory information processing

An independent sample *t*-test revealed that participants with the power embodiment manipulation ($M = 0.34$, $SD = 0.67$) exhibited higher levels of confirmatory information processing than participants in the control condition ($M = -0.32$, $SD = 0.93$), $t(31) = 2.33$, $p = .026$, $d = 81$.

Mediational analyses

Following the mediation criteria set forth by Baron and Kenny (1986) it was tested whether the impact of the power manipulation on confirmatory information processing was mediated by perceived decision certainty. To test this potential mediation effect, a bootstrapping analysis based on 1000 bootstraps was run (Preacher & Hayes, 2004). Results showed a significant direct effect of power induction on confirmatory information processing, $t = -3.09$, $p = .005$, which was reduced to non-significance, $t = -1.78$, $p = .09$, when controlling for the possible mediator 'decision certainty', which remained significant, $t = 2.35$, $p = .026$. Moreover, this analysis revealed a significant indirect effect at the 99% CI (-0.93 , -0.03), $p < .01$. In sum, perceived decision certainty mediates the effect of the power induction on confirmatory information processing.

Replicating the effects of Studies 1 and 2, Study 3 found that the embodiment of high power increased confirmatory information processing after decision making. This effect was shown to occur in a different decision context, which adds additional external validity to our argument. In addition, Study 3 provided first evidence that this effect is mediated by differing levels of subjectively experienced decision certainty: participants with a high-power embodiment induction experienced higher levels of decision certainty (and thus exhibited higher levels of confirmatory information processing) than participants in the no-power induction control group.

Study 4

The final study's goal was to rule out an alternative explanation for the power manipulation's observed effect, as well as further elucidating its underlying psychological process. Such an alternative account might be that participants who are instructed to make a fist feel negative physical strain, which may lead to confirmatory information processing as a way to alleviate it (cf. Jonas et al., 2006). To control for this potential explanation, Study 4 modified the prior control group so that its members were instructed to strain their hand – but without making a fist. The new condition should provoke similar feelings of physical strain as the one in which participants are asked to make a fist. As before, participants' subjectively experienced decision certainty was measured, and it was tested whether potential differences mediated the expected effect of power embodiment on confirmatory information processing.

Method

Participants and design

Twenty-five students at the University of Munich (LMU) participated in the study (21 women and 4 men; ages ranging from 19 to 29 years; $M = 23.96$, $SD = 2.30$). Due to a significant quantity of missing data for the main dependent variables, two participants had to be excluded from further analysis. The study consisted of a one-factorial design, with the two independent conditions 'high power embodiment induction' and 'control group'.

Material and procedure

As in Studies 1 and 3, participants in the high-power embodiment induction condition were instructed to make a fist for the entire duration of the experimental procedure. In contrast, participants in the control condition were told to leave their non-writing hand open, but to strain it as much as possible (control condition with physical strain controlled). For the manipulation check, we used the same three items as in Study 3 ($\alpha = .63$). Participants were then subject to the exact same decision scenario as in Study 3 (political parties in contemporary Germany).

Results and discussion

Check for background effects

Participants' age and gender did not affect the dependent variable, and did not interact with the experimental manipulation, all F s < 1.29 .

Manipulation check

Participants in the high power embodiment condition ($M = 2.53$, $SD = 1.00$) reported significantly higher levels of perceived power than control group participants ($M = 1.64$, $SD = 0.58$), $t(21) = -2.73$, $p = .01$, $d = 1.09$.

Confirmatory information processing

For an overview of the raw values and post hoc tests for the single dimensions of confirmatory information processing, see Table 2. An independent sample t -test revealed that participants with the high power embodiment manipulation ($M = 0.33$, $SD = 0.66$) exhibited higher levels of confirmatory information processing than participants in the control condition ($M = -0.37$, $SD = 0.82$), $t(21) = -2.26$, $p = .03$, $d = 0.94$.

Decision certainty

Participants in the high power condition felt more certain ($M = 6.05$, $SD = 3.84$) that they supported the right political party than participants in the control condition ($M = 3.50$, $SD = 2.16$), $t(21) = 2.04$, $p = .05$, $d = 0.82$.

Mediational analyses

Next, it was tested whether the impact of the power manipulation on confirmatory information processing was mediated by perceived decision certainty (Baron & Kenny, 1986). To test this potential mediation effect, a bootstrapping analysis based on 1000 bootstraps was run (Preacher & Hayes, 2004). Results showed a significant direct effect of power induction on confirmatory information processing, $B = .70$, $t = 2.04$, $p = .054$, which was reduced to non-significance, $B = .33$, $t = 1.00$, $p = .33$, when controlling for the possible mediator 'decision certainty', which remained significant, $B = .12$, $t = 2.28$, $p = .034$. Moreover, this analysis revealed a significant indirect effect at the 95% CI (0.02, 1.10), $p < .05$. Thus, perceived decision certainty mediates the effect of the power induction on confirmatory information processing.

General discussion

People systematically prefer decision-consistent to decision-inconsistent information (selective exposure, biased assimilation). The present investigation addressed the impact of embodied power on confirmatory information processing in the context of decision-

Table 2

Raw difference values (consistent minus inconsistent) for information reliability, information importance, and actual information search in Study 4.

Experimental condition	Dimension				Search	
	Reliability		Importance		M	SD
	M	SD	M	SD		
Control	0.35ns	1.28	-0.06ns	1.03	-.80*	1.81
High power	0.89	1.07	0.74	1.29	1.00*	1.26

Note: * ($p \leq .05$); + ($p \leq .10$); ns ($p > .10$) for the difference between experimental and control group.

making. Across four studies, it was found that a language-free power induction (making a fist or posing in an expansive posture) resulted in greater levels of confirmatory information processing. This tendency is unlikely to be due to mere physical strain (Study 4), and was mediated by differences in experienced decision certainty (Studies 3 and 4). Suspicion tests at the end of all four studies did not reveal any hint that these findings might be due to demand effects. In summary, the embodiment of high power makes people more confident that their preliminary decision is correct, and they consequently systematically prefer information that is consistent with their preferred decision alternative.

Theoretical and practical implications

The present research's most important theoretical implication is that bodily postures and their accompanying experiences can indeed affect the processing of decision-relevant information (both consistent and inconsistent). It was found that simply posing in powerful displays resulted in individuals becoming more confident in the validity of their personal decisions, which led in turn to increased levels of confirmatory information processing. It would be a fruitful endeavor for future research to investigate further impacts of bodily movements on decision-relevant information processing.

Moreover, the results of our studies clearly show that posture matters to the extent that it is associated with power, independent of (for example) the posture's openness. The effect we demonstrated for embodied power was not based on a specific bodily position; instead, we demonstrated that converging power posture effects on selective exposure can occur for both a constrictive (clenched fist) and expansive (open seating position) power posture. Our research therefore underlines the significance of bodily postures as manifestations of power, as well as its broad impact on different socio-cognitive processes (see Huang et al., 2010).

The present studies go significantly beyond prior research in the field. To the best of our knowledge, this is the first series of studies showing the effects of embodied power on selective exposure; with this effect appearing to be fairly robust. Across different decision problems, the embodiment of power increases the tendency to prefer information that is consistent with one's own preliminary decision compared to information that is inconsistent with it. Furthermore, the present research clearly shows that increased decision certainty as a function of a bodily power induction is the core underlying psychological process. This finding points to far-reaching implications. For example, the frequently demonstrated link between power and overconfidence (e.g., Anderson & Galinsky, 2006; Briñol et al., 2007; Keltner et al., 2003) might be perpetuated by mechanisms like selective exposure. Selective exposure prevents high-powered people from searching for and appreciating information that contradicts their initial decisions (and could thus potentially induce doubt regarding their choices). Without these doubts, however, overconfidence can be easily maintained.

In contrast to previous studies that investigated the impact of power on positive hypothesis testing (e.g., De Dreu & Van Kleef, 2004; Leyens, Dardenne, & Fiske, 1998), the present studies are the first to directly investigate the impact of power on selective exposure. Note that selective exposure is a completely distinct phenomenon to positive hypothesis testing, since selective exposure research (a) entails that participants know in advance whether a specific piece of information will support or contradict their position, and (b) finds that decision makers intentionally search for more consistent information. Both processes fail to occur in the context of positive test strategies (e.g., Klayman & Ha, 1987).

Moreover, it is important to note that there is other theorizing and empirical evidence that may question the assumption that high power always leads to heightened levels of confirmation (as we have found) for embodied power. First of all, from a theoretical viewpoint, our finding that power is not associated with reduced levels of confirmatory

information processing – but instead increased ones – contradicts dissonance theory, which is widely accepted in social psychology for explaining selective exposure effects (Festinger, 1957; Frey, 1986). This classic formulation of dissonance theory would predict that the experience of having high power is associated with a stable cognitive system that is able to bear the brunt of dissonant (inconsistent) information to a greater extent than those of decision makers who lack additional power inductions. Moreover, there are also empirical findings that are inconsistent with our findings. For example, De Dreu and Van Kleef (2004) showed a weaker accuracy motivation (which is associated with confirmatory information processing) for high-power participants in a negotiation context. Furthermore, Fiske (1992) found that high power does not coercively lead to more stereotyping – another phenomenon that is closely related to confirmatory information processing. Other research has even found *increased* levels of accuracy in information processing for high-power individuals: Overbeck and Park (2006) showed that strong situational relevancy encourages individuals with high power to rely less on stereotypic information than those with low power, showing an adaptive and goal-directed flexibility in information processing for the powerful. In conclusion, it would be beneficial for future research to address these inconsistencies in power research, and to further examine the situational preconditions under which high power can lead to more or less accuracy in the processing of decision-relevant information. One viable explanation for this inconsistency might be that embodied power is more a form of personal rather than social power. Personal power might lead to increased feelings of personal strength and that one is free to do what he or she wants. An experiment disentangling the impact of both forms of power on confirmatory information processing is warranted.

Differing from previous findings on the effects of making a fist on perceived social power (Schubert, 2004; Schubert & Koole, 2009), we did not observe any gender effects of this manipulation in our studies, even though we employed a similar fist-manipulation for inducing power. This may be explained by the different types of questions used in our studies to assess perceived power. Schubert (2004) pointed to the perception and evaluation of a given social situation or social target and Schubert and Koole (2009) asked participants to rate themselves on different scales to assess their general self-views of assertiveness (e.g., assertive, persistent, hesitating, fearful), as well as how they usually felt treated by others (e.g., esteemed, respected, aggrieved, insulted), in order to assess their participants' self-concepts. Instead, we measured a less stable (but more instantaneous), temporary perception of our participants' felt power by asking them about the extent to which they felt mighty and superior at that specific moment.

Future research should also address the question of whether similar effects on confirmatory information processing can also be found for other, non-gestural forms of power induction as well as other types of power (e.g., social vs. personal). For example, are similar effects found for power-related feelings of self-efficacy, self-confidence or control? In that sense, it would also be important to disentangle the different concepts of "power" and their potentially different effects on decision-relevant information processing. The distinct effects of social versus personal power; that is, power over other people versus freedom from other people (see Lammers, Stoker, & Stapel, 2009) on confirmatory information processing should be examined. In our studies, the embodied power instructions clearly pointed to personal power by manipulating a personal sense of strength or independence. However, social power is an important aspect of power, and may potentially decrease confirmatory information processing in line with the findings of Lammers et al. (2009), which demonstrated that in contrast to personal power, social power *decreases* stereotyping. Likewise, other forms of power, such as expertise power (French & Raven, 1959), might also have different effects on confirmatory information processing than the one we have observed for personal power.

From a practical perspective, the present studies show that experiencing high levels of power is problematic for the balanced

processing of decision-consistent and inconsistent information. Accordingly, based on the findings of Kray and Galinsky (2003), it might be hypothesized that high-power decision makers run the risk of making lower-quality decisions than individuals with less power. Our findings seem to reflect what is often observed in economic and political decision making: low-quality decisions being made by high-powered decision makers (see also Janis, 1982). Therefore, high-power decision makers seem to have particular need for de-biasing techniques such as considering the opposite (Lord, Lepper, & Preston, 1984) or counterarguing (Koehler, 1991), as well as measures for reducing overconfidence (Arkes, Christensen, Lai, & Blumer, 1987) — at least if they want to keep their power.

Acknowledgments

We would like to thank Pascal Burgmer and Adam Galinsky for their helpful comments on a previous draft of this paper.

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