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THE USE OF HEURISTICS IN PERSUASION: DERIVING CUES ON SOURCE EXPERTISE FROM ARGUMENT QUALITY

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ABSTRACT

Dual-process models of persuasion contrast the expertise heuristic "experts' statements can be trusted" with systematic processing of message content. Studies in which source expertise and argument quality were simultaneously manipulated revealed that the expertise manipulation affects attitudes when receivers are not highly motivated to scrutinize the provided message. In contrast, when receivers are highly motivated and are able to scrutinize a message their attitude is usually affected by argument quality but is independent of the expertise cue. We argue that this does not rule out that receivers still make use of the expertise heuristic. Rather, they may consider argument quality to infer the expertise of the source. We show that a classic study (Petty, Cacioppo, & Goldman, 1981) may be interpreted by this alternative explanation and present a study, in which the effect of argument quality on receivers' attitudes was partially mediated by perceived source expertise. This mediation tended to be stronger among receivers reporting low self-expertise than among receivers reporting high self-expertise.

INTRODUCTION

Statements given by experts are often more convincing than statements given by non-experts. Research on risk communication and persuasion shows that laypeople often rely on source expertise when forming attitude and risk judgments (see Bohner, Ruder, & Erb, 2002, for an overview; Petty, Cacioppo, & Goldman, 1981; Chaiken, 1987; Siegrist, 2000). According to elaboration likelihood (Petty & Cacioppo, 1986) and heuristic systematic models (Chaiken, 1987), this is particularly the case in situations in which people are either not motivated or not able to scrutinize a persuasive message (Bohner, Moskowitz, & Chaiken, 1995). In line with this claim, there is ample empirical evidence that receivers who have restricted capacity to process information apply the expertise heuristic when they are provided with an expertise cue that is easy to process (see Kruglanski & Thompson, 1999). For example, high time pressure and the presence of distracters (e.g., Petty, Wells, & Brock, 1976), low relevance of a topic (Petty & Cacioppo, 1986; Petty et al., 1981), and low need-for-cognition (Cacioppo, Petty, & Morris, 1983) enhance the likelihood that communicator cues like source expertise affect attitudes. In this situation, attitude effects are stronger if a message is assigned to a communicator who has positive characteristics (e.g., high-expertise) than if the communicator has negative characteristics (e.g., low-expertise). In contrast, in a situation in which receivers are highly motivated and able to scrutinize a message (e.g., high topic relevance, no time constraints), the attitude is typically a function of argument quality with strong arguments exerting stronger attitude effects than weak arguments. In this condition of systematic information processing, the cue on source expertise usually does not exert direct attitude effects (e.g., Petty et al., 1981).

However, that does not necessarily mean that communicator cues like source expertise do not have any effects on attitudes when a message is scrutinized. Rather the cue on source expertise can have an indirect effect on attitudes when information is processed systematically. There is evidence that source expertise can influence the interpretation of ambiguous arguments (Chaiken & Maheswaran, 1994) or foster the formation of expectancies on message quality that serve as a standard to which the subsequent arguments are compared (Bohner et al., 2002). For instance, if a message is comprised of arguments that are ambiguous with respect to quality assimilation effects are likely to occur. In such a situation, a message is usually evaluated more (less) favourably if it belongs to a source of high (low) expertise (see Chaiken & Maheswaran, 1994).

Overall, these studies show that information about a communicator in form of a short description of source expertise may directly affect attitudes or may exert indirect attitude effects by affecting the interpretation or the evaluation of the message. Whereas there are some studies demonstrating effects of communicator cues on the interpretation and evaluation of arguments (cue-content relation), effects of argument quality on the evaluation of a communicator and subsequent effects on attitudes have not yet been studied systematically (content-cue relation). We focus on the latter relation and thus aim to make a contribution to the discussion on the interplay between communicator cues and characteristics of the message (e.g., Chen & Chaiken, 1999; Kruglanski & Thompson, 1999; O'Keefe, 2003, 1999; Petty & Cacioppo, 1986; also see Erb et al., 2003).

More specifically, in analogy to the direct and indirect effects of communicator cues, we assume that argument quality can affect attitudes in two different ways when a message is scrutinized: (1) argument quality may exert a direct effect on attitudes, in which case receivers base their attitudes directly on the arguments provided in the message; (2) argument quality may exert an indirect effect on attitudes, in which case receivers use argument quality to determine source expertise and then use the expertise heuristic. According to this view, there might be contexts in which receivers apply the expertise heuristic but systematically process information pertaining to source expertise. We show that studies which have assumed that receivers do not use the expertise heuristic when processing information systematically are also compatible with this assumption of a multi-stage process in which receivers first infer source expertise from argument quality and then use the expertise heuristic. In line with this claim, we present a study which demonstrates that argument quality can have both direct and indirect effects on receivers' attitudes.

DIRECT AND INDIRECT EFFECTS OF ARGUMENT QUALITY

Some evidence that receivers use argument quality to derive information on source expertise comes from studies that systematically varied both expertise cue and argument quality dimensions. In the manipulation check sections of these studies it is usually mentioned in passing that the variation of argument quality affected perceived source expertise (cf. Chaiken & Maheswaran, 1994; Petty et al., 1981; Ziegler, Diehl, & Ruther, 2002). For example, in one classic study, Petty et al. (1981) had their students hear a tape that advocated that high school seniors be required to take a comprehensive exam in their major area as a prerequisite for graduation. Participants either learned that the tape was based on a report of a class at a local high school (low expertise) or on a report prepared by a commission chaired by a professor of education at Princeton University (high expertise). Additionally, argument quality and topic relevance were varied as further experimental factors: The message comprised either strong or weak arguments and the institutionalization of the exams was either said to be considered in one year (high relevance) or in ten years (low relevance).

In order to check if their manipulations were successful, Petty et al. (1981) measured perceived argument quality and perceived source expertise. They expected that the variation of argument quality would not only affect perceived argument quality but also affect perceived expertise of the communicator. Therefore, they asked their participants to judge expertise independently from the message (Petty et al., 1981, p. 851): "Regardless of how you felt about what the author had to say, how qualified did you think he was to speak on the topic?" Surprisingly, even on this measure on message-independent expertise a strong effect of argument quality was found. Notably, this effect was much stronger than the effect of the description (F_s : 39.20 vs. 4.86).

As predicted, argument quality and expertise interacted with topic relevance. The argument quality manipulation exerted stronger attitude effects in the high relevance than in the low relevance condition, whereas the cue on expertise only affected the attitude towards the proposed exams in the low relevance condition. The authors conclude that when a persuasive message concerns an issue of high personal relevance the effectiveness of the appeal is more a function of the cogency of the arguments presented than of the perceived expertise of the message source. Conversely, when the message concerns an issue of relatively low personal relevance, effectiveness is more a function of source expertise than of the arguments presented.

However, because of the dependency of the experimental factors, the results do not rule out that the receivers in the high relevance condition still used the expertise heuristic. According to this alternative explanation, the difference between the conditions of low and high relevance lies in how participants arrived at their judgements on source expertise. One possibility is that receivers in the low relevance condition used the information provided by the description (direct effect of the expertise cue) whereas receivers in the high relevance condition inferred expertise from the quality of the message (indirect effect of argument quality). Thus, participants may have applied the expertise heuristic even in the high-relevance, systematic processing condition.

Reimer (2003) provided some experimental evidence supporting this interpretation. He replicated the effect of argument quality on perceived expertise but revealed that the effect of argument quality on the attitude was partially mediated by perceived source expertise. Thus, these findings provide support for the idea that there are direct and indirect paths through which argument quality can affect attitudes. In the present study, we built on these ideas and further investigated the conditions that determine which path is taken by considering one potentially relevant variable that may affect if argument quality has a direct or an indirect effect on receivers' attitudes: perceived self-expertise. The assumption adopted is that an indirect effect is particularly likely to be found in judges who are low in perceived self-expertise. The rationale for this is that non-experts may have the feeling that they do not have enough background knowledge to directly judge the issue at hand even if they are motivated and able to scrutinize the provided message (e.g., see Siegrist, 2000; Siegrist & Cvetkovich, 2000). Thus, we assumed that whereas participants with a low perceived self-expertise apply the expertise heuristic, participants with a high perceived self-expertise would base their attitudes directly on the arguments provided and would not rely heavily on source expertise.

In detail, we expected argument quality to have an effect on perceived source expertise: participants should judge communicators that use strong arguments to be higher in expertise than those who use weak arguments (hypothesis 1). Second, we expected argument quality but not the cue on expertise to affect attitudes (hypothesis 2). However, argument quality was expected to have an indirect effect on the attitude, that is, an effect that is mediated by perceived communicator expertise (hypothesis 3). Finally, we tested the hypothesis that this effect is moderated by perceived self-expertise (moderated mediation) (hypothesis 4).

METHOD

Participants were provided with a fictitious magazine article on the new set-up of the credit-point system in psychology at the University of Basel. Thereby, the expertise of the author (high vs. low) and argument quality (high vs. low) were varied between participants.

Participants

The sample comprised 97 undergraduate psychology students (78 females and 19 males) who were randomly assigned to one of the four experimental conditions. Participants received course credit points for their participation. Mean age of the sample was 23.5 years.

Material

The Department of Psychology at the University of Basel, Switzerland, started with a new curriculum in autumn 2002, which regulates the credit point system in the B.A. studies in psychology. Given our hypotheses concerning systematic processing of message content we chose a topic that could be assumed to be relevant to all participants of our study: the new set-up of the credit point system in their major. Additionally, participants were told it was currently being discussed whether the renewal should be implemented the following year. According to present regulations, undergraduates need 12 credit points for the module "Biological psychology and neuropsychology." Participants received a fictitious article from a university magazine (Uni Nova), in which the author demanded a reduction in the number of obligatory credit points in this module to 6 points and an increase in the number of credit points for optional subjects from 30 to 36 points.

The fictitious article resembled real articles in this magazine. In the condition of high [low] expertise, the author was introduced as a 25 [22] years old psychology [chemistry] student from the University of Hamburg who is currently finishing his M.A. [intermediate exam].

After an introduction to the topic, the author explicitly stated that, from his point of view, the proposed renewal of the credit point system had only advantages. Overall, arguments on six different topics were provided in each of the two conditions of strong and weak argument quality. Each topic was presented as a separate short paragraph. The arguments were selected from a list of potential arguments produced by five students who were interested in the topic and had participated in the discussion of the renewal of the credit point system. Their task consisted of listing potential arguments in favor of the renewal. After discussing each item, we selected twelve arguments on which there was agreement as to whether they were weak or strong. For example, one issue that had been discussed was the long distance between the psychology and the anatomy departments. The renewal was said to diminish this problem because it would allow students to freely choose lectures. This argument was classified as a weak argument.

Strong arguments focused on the following topics: (1) the renewal still allowed students to take classes in biological psychology; (2) taking classes in a subject other than one's major increases the chances in the labor market; (3) the opportunity to choose classes freely would increase students' motivation; (4) minors usually require more than 30 credit points and thus the renewal would enhance the chances one would actually achieve a degree in a minor; (5) the renewal increases students' freedom and supports the development of a professional identity; (6) the renewal would enforce taking responsibility for one's choices which is a major goal of education at a university. The arguments in the condition of weak arguments referred to the following topics: (1) students from another university recommend the renewal; (2) the renewal enhances the chance to meet more people from other sciences; (3) the renewal would allow to extend one's general knowledge; (4) the renewal would allow to improve the organization of the current schedule; (5) the renewal would allow avoiding to cover time consuming distances necessary to get from the psychology to the anatomy buildings; (6) according to a student, last term's anatomy lecture was boring. Both one-page articles finished with the statement that all listed aspects support the proposed renewal of the credit point system.

Measures and Procedure

Relevance of the topic: All items were measured on a nine-point Likert scale (-4, totally disagree to +4, totally agree). Composite indices are based on mean scores throughout. We first asked respondents to indicate the perceived relevance of the topic by the following two items ($r = .63$): a) "The topic 'change in credit points' is relevant for me personally;" and b) "I feel involved with the topic 'change in credit points' that is discussed in the article."

Argument quality: Perceived argument quality was measured by asking whether or not arguments are a) persuasive and b) good ($r = .94$).

Source expertise: Two items were administered to measure perceived expertise of the communicator ($r = .71$): a) "The author knows the regulations in psychology quite well" and b) "The author has a high expertise with regard to the regulations."

Attitude: In order to measure the attitude towards the proposed renewal of the credit point system, the following three items were administered: a) "The proposed change between the modules 'Biological psychology and neuropsychology' in favor of optional subjects is useful;" b) "The proposed change should be introduced in October 2003" and c) "I would prefer to study according to the curriculum from the 26th of June 2001." After converting the third item, the three items were aggregated to form an overall attitude measure (Cronbach's alpha = .86).

Perceived self-expertise: Participants' perceived self-expertise was determined on the basis of the following items: a) "I know the actual curriculum quite well;" b) "I had already intensively thought about the topic (credit point system) before;" c) "I studied the regulations thoroughly;" d) "I know exactly how many credit points I need in the single modules;" e) "Up to this point, I have not considered the curriculum." After converting item e), items were collapsed into a measure of perceived self-expertise (Cronbach's alpha = .78). On the basis of this measure, a median split was computed. As expected, participants assigned to the two remaining experimental factors at random did not differ with respect to their perceived self-expertise (all $F_s < 1.6$). Subsequently, two groups were formed (high vs. low perceived self-expertise) on the basis of the median split ($M = 1.64$; $SD = 0.88$; vs. $M = -1.18$; $SD = 1.09$; $t(95) = 14.09$; $p < .01$).

Actual expertise: The actual expertise was measured by a test consisting of six items (e.g., "the B.A. in psychology requires 160 credit points;" "somebody who has passed the course 'introduction to social psychology' receives eight credit points"). Participants had to state one of three options for each sentence: "True," "False," "I do not know." We computed a score for each participant by summing up their correct answers and subtracting the number of wrong answers.

Recall of arguments: After completing the questionnaire, participants were asked to list as many arguments as they could recall from the newspaper article. We first counted how many of the six arguments that were actually used in the text were listed (number of correctly recalled arguments). From this number we subtracted the number of items that were listed though they had not appeared in the magazine article (number of wrongly recalled items).

RESULTS

As expected, overall, the students rated the topic as personally relevant ($M = 1.02$; $SD = 2.13$; this mean differs from 0; $t(96) = 4.70$; $p < .01$). Therefore, it is likely that students read the fictitious article carefully. This is also indicated by the finding that participants, on average, correctly recalled 3.67 ($SD = 1.61$) of the six arguments mentioned in the article. The means and the standard deviations of the main variables are listed in Table 1.

Table 1: Mean Values of Measured Variables, Separately for the Factors of Source Expertise (High / Low) and Argument Quality (Strong / Weak)

Variables	High source expertise		Low source expertise	
	Strong arguments	Weak arguments	Strong arguments	Weak arguments
Attitude				
M	2.08	0.36	1.64	0.11
SD	1.72	1.88	1.87	1.98
Perceived argument quality				
M	1.86	-2.58	1.79	-2.44
SD	1.64	1.51	1.72	2.16
Perceived source expertise				
M	1.84	0.02	0.96	-0.50
SD	1.19	1.54	1.69	1.98
Perceived self-expertise				
M	0.78	0.20	0.19	-0.09
SD	1.54	1.47	2.03	1.80
Actual expertise				
M	4.24	3.88	3.58	3.46
SD	1.51	1.23	1.86	1.74
Recall of arguments				
M	3.76	3.46	3.96	3.50
SD	1.74	1.59	1.16	1.89
N	25	24	24	24

We present the results in the following order: First, we report the manipulation checks on argument quality and expertise. Second, we present the test of the hypothesis that argument quality has an effect on perceived expertise (hypothesis 1). Third, we report a direct effect of argument quality on the attitude towards the renewal of the credit point system (hypothesis 2). Fourth, we present an indirect effect of argument quality on the attitude, that is, an effect mediated by perceived expertise of the communicator (hypothesis 3). Additionally, we provide some evidence for the claim that the indirect effect of argument quality is qualified by perceived self-expertise (hypothesis 4). Finally, we dismiss the idea that our results can be explained by differences in actual expertise or recall of arguments.

Argument Quality

As expected, the strong arguments ($M = 1.83$; $SD = 1.66$) were judged to be better than weak arguments ($M = -2.50$; $SD = 1.84$; $F(1,93) = 145.33$; $p < .01$). The direct expertise manipulation did not affect perceived argument quality (main effect of expertise: $F(1,93) = 0.01$; ns; interaction: $F(1,93) = 0.09$; ns).

Source Expertise

Perceived source expertise was determined by the direct manipulation ($F(1,93) = 4.53$; $p < .05$) and, as predicted by hypothesis 1, by argument quality ($F(1,93) = 24.76$; $p < .01$; interaction: $F(1,93) = 0.30$; ns). These results suggest that both information sources were taken into consideration when judging source expertise.

Attitude

Overall, participants had a positive attitude towards the renewal ($M = 1.06$; $SD = 2.01$; the mean differs from 0, $t(96) = 5.18$; $p < .01$). The attitude was much more positive if strong arguments were used ($M = 1.86$; $SD = 1.79$) than if weak arguments were used ($M = 0.24$; $SD = 1.91$; $t(95) = 4.34$; $p < .01$; see hypothesis 2). The attitude towards the proposed renewal was affected by argument quality ($F(1,93) = 18.46$; $p < .01$) but was independent from the cue on communicator expertise ($F(1,93) = 0.84$; ns; interaction: $F(1,93) = 0.06$; ns).

Self Expertise

Perceived self-expertise did not have any impact on perceived argument quality or on perceived source expertise. Additionally, this factor did not qualify any of the effects on these two variables (all $F_s < 1$). Somewhat unexpectedly, participants who said that they had thoroughly thought about the credit point system before (reported high self-expertise) had a less positive attitude towards the proposed change ($M = .74$; $SD = 2.41$) than participants who had been less concerned with the issue (reported low self-expertise) ($M = 1.40$; $SD = 1.44$; $F(1,89) = 4.53$; $p < .05$).

Mediational Analyses: Direct and Indirect Effects of Argument Quality

In line with the analyses of variance, perceived argument quality had a direct effect on perceived source expertise ($\beta = .59$; $p < .01$) as well as on the attitude towards the renewal of the credit point system ($\beta = .60$; $p < .01$; see Table 2). In addition, the attitude was regressed onto perceived source expertise ($\beta = .42$; $p < .01$). A mediation effect requires the effect of argument quality on the attitude to be substantially reduced when perceived source expertise is included as a predictor (see Baron & Kenny, 1986). In line with this requirement, the beta-coefficient of perceived argument quality is reduced to $.54$ ($p < .01$) when perceived source expertise is included in the equation. Furthermore, and in line with hypothesis 3, the indirect effect of argument quality on the attitude is significant ($z = 1.76$; $p < .05$; see Baron & Kenny, 1986, p. 1177, for the respective test).

Table 2: Means of the Attitude, Perceived Argument Quality, and Perceived Source Expertise, and Intercorrelations Between these Variables

Variables	Attitude	Argument quality	Source expertise
Argument quality	.60**	---	
Source expertise	.42**	.59**	---
M	1.06	-0.32	0.59
SD	2.01	2.79	1.83

Note: **Correlation is significant at the .01 level.

With regard to hypothesis 4, there is some evidence that the role of perceived source expertise differed in the conditions of reported high and low self-expertise even though the respective interaction term was not significant. In line with this hypothesis, the observed indirect effect was mainly due to those judges who were low in perceived self-expertise. As is shown in Table 3, participants with perceived low (compared to high) self-expertise seem to be more strongly basing their attitudes on perceived source expertise (beta = .51 vs. beta = .44). In addition, the beta-weight is more strongly reduced in the condition of low (difference of .16) than high self-expertise (difference of .06) if source expertise is included in a regression analysis. Accordingly, the difference between the two beta-weights of .60 and .42 was significant ($p < .05$; see Cohen & Cohen, 1983, p. 111, for the respective formula). However, if perceived self-expertise is included as a continuous variable, the critical interaction term of perceived self-expertise by perceived source expertise is not significant. According to Baron and Kenny (1986, p. 1179), a moderated mediation requires a significant moderator by mediator term in a regression analysis in which the moderator (perceived self-expertise), the predictor (perceived argument quality), the mediator (perceived source expertise), and a moderator by predictor term is included. In the respective regression equation, the moderator by mediator term was not significant.

Table 3: Beta-Weights of Perceived Argument Quality (ARG) and Perceived Source Expertise (EXP) in Regression Analyses, Separately for Receivers Reporting High and Low Self-Expertise

Predictors	Criterion	High self-expertise	Low self-expertise
ARG	Attitude	.66**	.58*
ARG	EXP	.57**	.61**
EXP	Attitude	.44**	.51**
ARG, EXP: Effect of ARG	Attitude	.60**	.42**

Note: * $p < .05$; ** $p < .01$.

Thus, taken together the mediational analyses suggest that argument quality has a direct as well as an indirect effect on attitudes: The attitude effect of argument quality is partially mediated by perceived source expertise in line with hypothesis 3. In contrast, the results regarding hypothesis 4 are less clear: An analysis based on a median split suggests that the observed mediation is stronger in receivers reporting low self-expertise than in receivers reporting high self-expertise. However, when perceived self-expertise is treated as a continuous variable, the moderated mediation is not significant.

Actual Expertise and Recall of Arguments

Can the differential effects found be explained by differences in actual knowledge or in memory performance? This does not seem likely. First, there were no systematic differences in the actual knowledge between experimental conditions. Somewhat surprisingly, participants who indicated that they had thoroughly thought about the credit point system did not have more accurate knowledge ($M = 3.90$; $SD = 1.75$) than did participants with a low perceived self-expertise ($M = 3.68$; $SD = 1.45$; $t(95) = 0.67$; ns); perceived self-expertise and scores in the knowledge test did not correlate significantly ($r = .13$; ns). However, number of answers given in the knowledge test correlates positively with the score of perceived self-expertise ($r = .35$; $p < .01$). Thus, participants with a perceived high self-expertise ($M = 5.18$; $SD = 0.92$) more often chose to give an answer (as opposed to stating "I do not know") than participants with a perceived low self-expertise ($M = 4.62$; $SD = 0.92$; $t(95) = 3.01$; $p < .01$). All these results seem to indicate that differences in perceived self-expertise did not reflect disparities in actual knowledge but the extent to which participants perceived themselves as experts.

Likewise, we found no significant differences between the experimental conditions in memory performance (all $F_s < 1.6$). On average, participants correctly recalled 3.67 ($SD = 1.61$) of the six presented arguments indicating that participants read the test carefully. In contrast to previous research (see Petty et al., 1981), participants did not recall significantly more strong ($M = 3.86$; $SD = 1.47$) than weak arguments ($M = 3.47$; $SD = 1.73$; $t(95) = 0.25$; ns).

DISCUSSION

In general, only those features of a message that are sufficiently processed and discriminated can have an impact on a receiver's attitudes. Usually, in studies on persuasion, communicator cues (e.g., information on source expertise) are easier to discriminate than argument quality (Kruglanski & Thompson, 1999). Thus, if a receiver does not process a message systematically, these easy-to-process cues (cf. Bohner & Siebler, 1999) are more likely to exert an attitude effect than argument quality.

However, it does not follow from this that the perception of communicator traits or attributes does not matter during systematic information processing. There is empirical evidence showing that communicator cues can: (a) influence how systematically messages are processed (Petty & Cacioppo, 1986; Ziegler et al., 2002); (b) determine the interpretation of ambiguous arguments (Chaiken & Maheswaran, 1994); and (c) instigate expectancies to which arguments are then contrasted (Bohner et al., 2002). Taken together, these various effects may be interpreted as examples for an indirect effect of communicator cues. In these cases, information about the communicator influences attitudes by affecting processing objectives and the interpretation of the arguments (also see Petty & Wegener, 1998).

The current study adds to this research by showing that argument quality may also exert an indirect effect on attitudes by affecting perceived source expertise. In particular, we adopted the assumption of multi-stage processing, which adds to previous findings on the interplay between heuristic and systematic information processes (see Chen & Chaiken, 1999), as well as on the interplay between communicator-related and content-related information (e.g., Kruglanski & Thompson, 1999; O'Keefe, 2003, 2001, 1999; also see Erb et al., 2003). Thus, the study provides some support for the idea that systematic processing of information includes a direct and an indirect path to attitudes and indicates that people may use the expertise heuristic more often than is acknowledged in the persuasion literature.

The detection of an indirect effect of argument quality in this study is noteworthy given that it was designed to avoid a direct effect of source expertise: the arguments provided were unambiguous and the communicator was not assigned an extremely high or low expertise. As a consequence, the direct manipulation of expertise did not exert an effect on the attitude. How does that fit with the finding that receivers' attitudes were correlated with perceived source expertise? One reasonable explanation lies in finding that the effect of argument quality on perceived expertise was much stronger than the effect of the description as in the Petty et al. study (1981). In a situation in which the provided information on a communicator is extremely positive or negative, attitude effects of the direct manipulation on expertise are more likely.

Regarding the moderating role of perceived self-expertise, our study provides mixed evidence. One analysis shows that the beta-weights in the conditions of perceived high and low self-expertise differed indicating that the observed mediation was stronger in those judges who judged themselves as non-experts. Another analysis shows that the moderated mediation was not significant when perceived self-expertise was included in a regression analysis as a continuous variable. Thus, more data are necessary to clarify the role of perceived self-expertise.

In addition to the ambiguous findings with regard to perceived self-expertise, the current study has several other limitations. We started out by showing that the findings of the Petty et al. (1981) study can be explained by a multi-stage process in which people first derive source expertise from argument quality and then apply the expertise heuristic. Even though this study points to an alternative process it is worth noticing that the observed mediation is based on correlational data and thus does not allow determining the causal relationship between the main variables. Rather there are several other causal relationships conceivable between these variables and other models could potentially account for our findings. We think this sort of problem is pervasive in persuasion research; the most prominent models such as the heuristic systematic processing model (Chaiken, 1987), the elaboration likelihood model (Petty & Cacioppo, 1986), and the unimodel (Kruglanski & Thompson, 1999) greatly overlap in explanatory power, and several phenomena can potentially be explained using any of them. One direction that might further our understanding of the processes that are involved in persuasion and their inter-relations might be to specify the underlying processes in more detail so that they can be studied directly (see Gigerenzer & Regier, 1996; O'Keefe, 2003).

Another limitation of our study concerns the issue of changes in attitudes and in perceived source expertise, which were not measured at the outset. One extension of this study would be to see which attitude changes occurred that can explain the observed attitude differences. In the present design, we did not use a control condition nor did we measure receivers' attitudes beforehand. Thus, it is not clear whether the differences in the attitude measures were mainly due to attitude changes in the condition of strong or weak arguments, and if receivers had already formed an attitude on the renewal beforehand. In a similar vein, it would be interesting to see in which condition participants changed their perceptions and attitudes towards the communicator when processing his message. Previous work has shown that argument quality also affects the evaluation of a communicator if receivers do not receive any cue information about the communicator or if they receive several messages from several authors as in a discussion (see Reimer, 2003; Reimer & Raab, 2004).

Concerning future directions, it seems fruitful to link research on persuasion more closely with that on impression formation, which has traditionally focused on impressions based on agents' behaviours (Srull & Wyer, 1989). For example, it seems to be worthwhile testing if the perceived expertise of a communicator is more stable over time and more resistant to counterfactual evidence if it is based on systematic processing (e.g., through argument evaluation) than when it is based on a short description. Moreover, O'Keefe (1999) reviewed studies on the effects of one-sided and two-sided messages. His meta-analysis revealed that two-sided messages might not only be more persuasive but might also enhance the perceived credibility of a communicator. These effects were qualified by whether or not the topic was related to advertisement and whether messages were refutational or nonrefutational. It might be that the persuasiveness effects of the sidedness are at times also mediated by credibility. In line with this meta-analysis it seems worthwhile to look for further message-related cues that might affect the perception of a communicator. Those effects are, in general, likely to arise whenever a contrast effect (e.g., Bohner et al., 2002) between the description of the communicator and features of the message can occur.

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