
**Role of Responsibility in Conditional Reasoning**

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Role of responsibility in conditional reasoning

A series of recent studies showed that facilitation on the Wason Selection Task could be produced by perceived utilities. The present work was aimed at testing whether a similar factor could also be involved in human reasoning performance in the context of responsibility. We supposed that the motivation of the subject assuming responsibility is affected by normative goals. These goals prescribe the actions and the results to be achieved, also considering the different social roles. In this experiment the responses of different groups of subjects (n=270) to a selection task were compared in two different conditions involving different responsibility contexts. The results show that the subjects’ strategies in searching for possible violators depended on the condition (responsibility vs. no responsibility). In particular, we found that only in the context of responsibility were the performances elicited by conditional rules characterised by a falsification strategy.

Several studies demonstrated that people’s reasoning is affected by the content of argument (Wason & Shapiro, 1971; Johnson-Laird, Legrenzi, & Legrenzi, 1972; Griggs & Cox, 1982; Cheng & Holyoak, 1985). The best-known content effects on reasoning occur in Wason’s selection task (1966, 1983), an experimental paradigm that has played a central role in producing general explanations of content effects in deductive reasoning. The Wason Selection Task is a paper-and-pencil problem that invites a subject to see if a conditional rule in the form “if p then q” has been violated by any one of four instances about which the subject has incomplete information. Each instance is represented by a card. One side of a card tells whether the antecedent is true or false (i.e., whether p or not-p is the case), and the other side of the card tells whether the consequent is true or false (i.e., whether q or not-q is the case). The subject, who is permitted to see only one side of each card, is asked to say which card(s) must be turned over to see if any of them violate the rule. The four cards that the subject must choose represent the values of p, not-p, q, and not-q. From the point of view of formal logic, only the combination on the same card of a true antecedent (p) with a false consequent (not-q) can falsify a conditional rule. Thus, regardless of content, the logically correct
response to the Wason Selection Task is to choose the \( p \) card (to see if it has a \( \text{not-}q \) on the other side) and to choose the \( \text{not-}q \) card (to see if it has a \( p \) on the other side). The card displaying \( \text{not-}p \) and the card displaying \( q \) need not be chosen because any value on the other side is consistent with the rule. Although \( p \& \text{not-}q \) is the logically correct response, when the content of the conditional rule tested is abstract (relates letters or numbers), few subjects resolve the problem. Most choose \( p \) alone, or \( p \& q \).

Subsequent research has shown that varying the content of the problem and/or putting it in a different context can abolish the preponderance of error [see e.g.: realistic content (Johnson-Laird, et al., 1972); familiar content (Griggs & Cox, 1982); pragmatic schemes relating to permission or obligation (Cheng & Holyoak, 1985); social contracts (Cosmides, 1989); precautionary rules (Girotto, Gilly, Blaye, & Light, 1989; Manktelow & Over, 1991)]. Only recently, a series of studies using the Wason Selection Task demonstrated that human reasoning strategies are also guided by perceived utilities (e.g., Manktelow & Over, 1991; de Jong, Mayer, & van den Hout, 1997; de Jong, Haenen, Schmidt, & Mayer, 1998; Smeets, de Jong, & Mayer, 2000). That is, individual reasoning performances seem to depend on the perceived relevance of the rule to one’s personal interests. A selection task is facilitated by this factor: what individuals say about the truth or falsity of conditional rules depends on their preferences between various possible outcomes or states of affairs. These preferences fix the utilities we attach to these outcomes or states of affairs. De Jong and colleagues (1997, 1998; Smeets, et al., 2000) showed that with a series of selection tasks containing safety rules (i.e.: if \( p \) then \( \text{safe} \)) and danger rules (i.e.: if \( p \) then \( \text{danger} \)), in the context of general threat, subjects adopted a verificationistic strategy in case of danger rules and tended to look for falsifications in case of safety rules. In potentially dangerous situations, it is adaptive to rely on confirming information concerning danger rules. For example, given the rule “If the alarm bell rings, then there is a fire” one is well advised to check whether \( p \) is followed by \( q \) and whether \( q \) is indeed preceded by \( p \). The logical option of a false alarm (the bell rings in the absence of a fire) is less relevant for survival. That is, although it is very uncomfortable to flee for no reason on some occasions, ignoring the bell even on a single occasion may be fatal. Thus, one’s interests are better served knowing whether the bell sometimes rings when there is a fire \( (p \& q) \), than whether the bell sometimes rings in the absence of a fire \( (p \& \text{not-}q) \). The opposite is true for safety rules such as “if the monkeys scream, then it is safe”. In this instance, it is adaptive to
check whether it is, indeed, safe when the signal is present. That is, in case of safety rules, one’s interests are best served by searching for potentially disconfirming information \( p \& \text{not-} q \).

Thus, a wide literature shows that inferential processes are guided by the reasoner’s perceived utilities. The present study was designed to investigate whether a particular utility, to be up to one’s own responsibilities, influences human reasoning strategies. In daily life, people are often required to take some responsibilities and in those situations, characterized by responsibility, they have to take important and crucial decisions carrying out a reasoning whose conclusions have therefore important implications. For example, a doctor has to reason on medical hypotheses and his conclusions have an evident relevance for the patient he is responsible for; a magistrate has to reason on guilt/not guilt hypotheses concerning the accused person, and also in this case he is responsible for the judgment.

As the motivation of the subjects assuming responsibility is affected by normative goals, and the human reasoning performances seem to be goals-sensitive, we argued that the activation of a status of responsibility in the reasoner’s mind could produce a facilitatory effect in Wason Selection Task, eliciting the logically correct falsification strategy. In general, the responsibility condition presupposes that the individual is responsible for a given action in correspondence to a given rule. In particular, we assume that under responsibility conditions, a normative goal is activated (i.e., for a doctor, to treat a patient). This goal prescribes which action or omission is requested (i.e., the treatments to give) in pursuing the result required (i.e., the patient’s recovery). The normative goal also indicates a method of evaluating the result and the adequacy of actions or omissions with the norm (Conte & Castelfranchi, 1995).

Numerous authors assume that making an individual responsible for a specific action or omission is necessary in order to maintain the social and moral order. In this way, the underlying common rules safeguard is guaranteed (Heider, 1958). Attribution of responsibility also revolves around the concept of the individual’s social role (Hart, 1968): every individual in every social system must fulfil specific functions related to social roles. This concerns relationships with other persons and activities to be carried out in order to achieve the group’s goals. Obviously, this involves a comparison between the individual’s behaviour and the group members’ expectations regarding it.
More generally, explicit or implicit normative goals provide an essential background by affecting subjective utilities for deductive reasoning in most social settings. According to this point of view, we hypothesize that under responsibility conditions individuals search appropriately for counterexamples (p & not-q) to the following conditional rule: “if you carry on treating the patient, or you don’t let his illness progress of its own accord, then he will die”. In a situation characterized by responsibility the reasoners’ minds activate a falsification reasoning strategy. That is, subjects assuming a normative goal, try to disconfirm the idea that the outcome is not the one prescribed (i.e., the patient’s death), although he acted according to the normative prescriptions (i.e., to treat the patient). Therefore, with the above mentioned-rule the individuals become interested (has perceived utility) in selecting only the p (to treat the patient) and the not-q (the patient’s recovery) cards: the only choices that would lead to falsifying the conditional rule attesting that the outcome obtained is not the one prescribed by the norm. Individuals faced with a conditional rule contemplating the same outcome required by the norm, but attesting that they have not acted as approved (if you let the patient’s illness progress of its own accord, then he will recover), will be guided by their subjective utilities (perceived utilities) in choosing the not-p (to treat the patient) and the q (the patient’s recovery) cards: the only ones that would disconfirm the idea that behaviour is not that prescribed by the norm. Furthermore, faced with the following conditional rule “if you let the patient’s illness progress of its own accord, then he will die”, responsible reasoners will tend to understand the task as a request to search for potential violators of the rule (not-p & not q). Thus, they will select cards they judge as being relevant (to treat the patient and the patient’s recovery), because these are the only ones that would disconfirm the idea that the individual’s behaviour and the outcome reached are not the ones prescribed by the normative goal. Therefore, in a context of responsibility, with the above-mentioned rules (if you carry on treating the patient, or you don’t let his illness progress of its own accord, then he will die; if you let the patient’s illness progress of its own accord, then he will recover; if you let the patient’s illness progress of its own accord, then he will die) the individuals become interested in disconfirming all the statements that disconfirm the normative goal.

On the contrary, we hypothesize that individuals are prone to search selectively to confirm information when asked to judge the validity of the conditional rules attesting that the behaviour and the obtained outcome are the same as those required by the norm.
Thus, with the following conditional rule: “if you carry on treating the patient, or you don’t let his illness progress of its own accord, then he will recover”, the individuals have more interest (perceived utility) in choosing only the p (to treat the patient) and the q (the patient’s recovery) cards. Therefore, from our point of view, individuals reasoning patterns seem to vary as a function of the perceived utilities, which in turn depends on the attribution of responsibility.

In order to test the above mentioned hypotheses, we conducted an experiment in which we compared the subjects’ performances to the selection task in two different conditions involving different contexts: attribution of responsibility, and no attribution of responsibility. In particular, in the first condition (context of Responsibility), we compared the responses of two different groups of subjects submitted to different conditional rules. The rules to be tested were four: action/positive outcome (if you carry on treating the patient, or you don’t let his illness progress of its own accord, then he will recover); action/negative outcome (if you carry on treating the patient, or you don’t let his illness progress of its own accord, then he will die); omission/positive outcome (if you let the patient’s illness progress of its own accord, then he will recover); omission/negative outcome (if you let the patient’s illness progress of its own accord, then he will die).

In the context of No Responsibility, in order to demonstrate that the selection patterns are different from those selected in the Responsibility condition, we presented the same four conditional rules in a context of No Responsibility other than a role responsibility (Hart, 1968), due to the identification related to the working role played by the protagonist of the story and the experimental subject (both doctors).

**Method**

**Subjects**

The subjects were 270 (92 males; 178 females) psychology undergraduates recruited at the University of Palermo. Their average age was 21.7 yr., the range 19 to 25 years. They were selected on the basis of their availability; none of them had any prior experience with the Wason Selection Task.
Materials and procedure
The participants were allocated at random to one of the two experimental conditions (Responsibility, n=136; No Responsibility, n=134) and tested in four groups in quiet rooms at the university; they had to solve the problem individually.

For each condition, the participants were randomly assigned to the four different conditional rules, as shown in Table 1.

First, the experimenter explained the task by means of an example of a conditional rule. Then participants received a paper with written instructions and a context story. Subjects were told to read the question (concerning a reasoning problem) carefully and to take whatever time they required.

The stories and the conditional rules used in the two different experimental conditions are given in the Appendix.

In the Responsibility condition, the appropriate task instructions to activate responsibility in the participants were as follows: “You are the only doctor in your ward, and you’re treating a patient suffering from X. You are the only person responsible for this patient”. The context story contained one of the four conditional rules as follows:

Action/positive outcome: if you carry on treating the patient, or you don’t let his illness progress of its own accord, then he will recover.

Action/negative outcome: if you carry on treating the patient, or you don’t let his illness progress of its own accord, then he will die.

Omission/positive outcome: if you let the patient’s illness progress of its own accord, then he will recover.

Omission/negative outcome: if you let the patient’s illness progress of its own accord, then he will die.

In the present study, the four cards referred to four different persons (“doctors”) to whom a fixed question could be asked. They were all presented at the same time. Two doctors referred to the antecedent of the rule (p and not-p). In particular, for each of the four conditional rules, the propositions given by the two “antecedent doctors” were as follows:

“p”: I have dealt with a sample composed of 100 patients suffering from X, and I treated them.

“not p”: I have dealt with a sample composed of 100 patients suffering from X, and I have let their illness progress of its own accord.

The other two doctors represented the consequent of the conditional rule (q and not-q). For each of the four conditional rules, the proposition representing the two “consequent doctors” were as follows:
“q”: All the 100 patients included in my sample died.
“not q”: All the 100 patients included in my sample are in good health now.

Moreover, for each doctor who represented the antecedent (p and not-p) the participants could choose between two consequents (q and not-q). More specifically, for each of the four conditional rules, the proposition representing the two consequent answers were as follows:

“q”: Are the patients in good health now?
“not q”: Are the patients dead?

The same criteria applies to those doctors representing the consequents (q and not-q): for each conditional rules participants could choose between two possible antecedents (p and not-p):

“p”: Did you treat your patients?
“not p”: Did you let your patient’s illness progress of its own accord?

Thus, each task consisted of a contextual story, a conditional rule, and four doctors’ experiences representing the antecedents and the consequents of the conditional rule.

The No Responsibility condition was very similar. However, it differed in that the four conditional rules were applied indirectly (i.e. if he carries on treating that patient, or he doesn’t let his illness progress of its own accord, then the patient will recover). The two conditions also differed in that the task instruction did not activate responsibility, other than that of role. In this condition, the story began as follows: “You are in hospital and you are watching a colleague treating a patient suffering from X. He knows he is the only person responsible for that patient”. Everything else in the story, and all associated instructions, were exactly as for the Responsibility condition.

In all two conditions, participants were instructed to indicate to which doctor they definitely needed to ask only one of the two above-mentioned fixed questions, in order to check the validity of the conditional rule. In this way, for each of the four different conditional rules (action/positive outcome; action/negative outcome; omission/positive outcome; omission/negative outcome), only the following selection patterns were obtained (p and q represent the antecedent and the consequent of the conditional rule, respectively):

\[
\begin{align*}
\text{p and q} & \\
\text{q and p} & \\
\text{p and not q} & \\
\text{not q and p} & \\
\text{not p and q} & \\
\text{q and not p} & \\
\end{align*}
\]
not p and not q
not q and not p

Our task differed from the original version of the Wason Selection Task in that the participants had to render the complete selection patterns explicit. As can be seen, in this way we were always sure of the reasoning strategy for the search adopted by the subjects. In fact, employing the traditional Wason Selection Task, experimenters knew which cards subjects wanted to turn over, but they could not be sure of what the subject was looking for exactly on the back of the card.

The order of the four different cards (doctors) was random, and they were all presented at the same time.

RESULTS

The performances were analysed in terms of the selection pattern that participants chose. In particular, the selection patterns including the same antecedent and the same consequent of the conditional rule were scored as follows: p & q or q & p were scored as p & q; p & non-q or non-q & p were scored as p & non-q; non-p & q or q & non-p were scored as non-p & q; non-p & non-q or non-q & non-p were scored as non-p & non-q. As in the original version of the Wason Selection Task, we did not take into account the order of the antecedent and the consequent in the selection patterns.

Moreover, in analysing the selection patterns across the two conditions, the participants’ responses were grouped into two classes: for the rule “action/positive outcome”: p & q pattern versus other patterns; for the rule “action/negative outcome”: p & not-q pattern versus other patterns; for the rule “omission/positive outcome”: not-p & q pattern versus other patterns; for the rule “omission/negative outcome”: not-p & not-q pattern versus other patterns. In this way, for each of the four conditional rules, we contrasted the predicted patterns with the other no predicted patterns. The frequencies and percentages of response patterns across the two conditions are shown in Table 1.

INSERT TABLE 1

We will examine the results concerning the Responsibility condition first. In this context, as predicted, the pattern p & not-q was mostly frequently selected in the action/negative outcome rule, at a level (65%) significantly greater than that for the
other three conditional rules (compared to action/positive outcome, $\chi^2 = 25.6$, $p < 0.0001$; compared to omission/positive outcome, $\chi^2 = 25.6$, $p < 0.0001$; compared to omission/negative outcome, $\chi^2 = 11.8$, $p < 0.0001$), as indicating searching for counterexamples of the rule attesting that the result obtained is not that prescribed by the norm.

In the omission/negative outcome rule the most frequent choice was, as predicted, the selection of the combination not-p & not-q (62%), which was significantly more prevalent here than in the other three rules (compared to action/positive outcome, $\chi^2 = 26.6$, $p < 0.0001$; compared to action/negative outcome, $\chi^2 = 13.6$, $p < 0.0001$; compared to omission/positive outcome, $\chi^2 = 20.1$, $p < 0.0001$). Thus, in the Responsibility condition, reasoners tend to search for potential violators of the rule attesting that their behaviour and/or the outcome obtained are not those required by the norm.

Surprisingly, some similarity exists in the pattern for the two conditional rules reporting a positive outcome (action/positive outcome and omission/positive outcome). Both produced a high number of p & q pattern selection (85% for the action/positive outcome; 73% for the omission/positive outcome), significantly more than for the other two rules (action/positive outcome versus action/negative outcome, $\chi^2 = 34$, $p < 0.0001$; action/positive outcome versus omission/negative outcome, $\chi^2 = 43$, $p < 0.0001$; omission/positive outcome versus action/negative outcome, $\chi^2 = 24$, $p < 0.0001$; omission/positive outcome versus omission/negative outcome, $\chi^2 = 32.4$, $p < 0.0001$). This result shows that the Responsibility condition drew reasoners’ attention to the importance of confirming the rule attesting that their behaviour and the obtained outcome is that prescribed by the norm. This gave salience to the p & q pattern, even if the antecedent (p) considers a non correspondence between the individuals’ behaviour and that prescribed by the norm. Therefore, it can be argued that this selection is due to a judgment of the relevance of responsibility. In the omission/positive outcome rule, responsible individuals give priority to the outcome.

In the No Responsibility condition, the pattern of results was that predicted by our hypothesis. A $\chi^2$ performed on the selection patterns revealed no significant difference between the four conditional rules in this condition. A difference in p & not-q pattern
selection was found only between the action/negative outcome rule and the
action/positive outcome rule ($\chi^2 = 9.4, p < 0.001$), which indicates that subjects continued
to choose the pattern that falsificate the action/negative outcome rule.
The action/negative outcome conditional rule produced a significantly higher rate of $p \& \neg q$ response pattern in the Responsibility context than did the same rule in the No
Responsibility condition ($\chi^2 = 4.05, p < 0.02$). For the omission/negative outcome rule, as
predicted, the selection pattern not-$p$ & not-$q$ was most frequently selected in the
Responsibility condition, at a rate significantly higher than that in the No Responsibility
condition ($\chi^2 = 7.64, p < 0.001$).

Finally, the frequency of $p \& q$ response pattern was higher both for the
action/positive outcome (85%) and for the omission/positive outcome rules (73%) in
the Responsibility condition than in those of the No Responsibility condition (action
/positive outcome rule, $\chi^2 = 7.64, p < 0.0001$; action/negative outcome rule, $\chi^2 = 16.9,
p < 0.0001$).

To summarize, these results suggest that the reasoner in the non responsible
condition does not have any active normative goal in mind. Therefore, he does not have
to respect any prescription regarding action or omission and outcome. For this reason,
the individual in the non responsible condition may not be interested in searching for the
information that confirms the idea that his behaviour and the outcome are congruous
with those prescribed by a normative goal or, on the contrary, to disconfirm the rule
attesting that the outcome is not that prescribed by the norm, even if the latter is a weak
tendency. As shown, the reasoners in the No Responsibility condition also choose the
falsification pattern ($p \& \neg q$), although at a lower rate than in the Responsibility
condition. As hypothesized, this data can be attributed to the identification between the
individual and the protagonist of the story, because of the same working role. This
process would elicit in the reasoner a weak activation of the same normative goal as that
of the responsible protagonist of the story.

**DISCUSSION**

The aim of the present study was to demonstrate that subjects’ reasoning is
affected by the content of arguments, and then to identify the factors that influence
performance on the Wason Selection Task. In line with previous research, we obtained evidence that reasoning is guided by the content of the task, rather than by its formal structure (Wason & Shapiro, 1971; Johnson-Laird, et al., 1972; Griggs & Cox, 1982; Cheng & Holyoak, 1985). In particular, we found that deductive reasoning is influenced by individuals’ preferences. Reasoners’ responses to the Wason Selection Task support the earlier findings of Manktelov and Over (1991) and of de Jong, et al. (1997, 1998; Smeets, et al., 2000) that reasoning performance is also affected by perceived utilities: the perceived relevance of the conditional rule to reasoners’ personal interests. Our work demonstrated that this factor is involved in human reasoning performance in the context of responsibility. We supposed that individuals’ assumption of responsibility is characterized by normative goals. These goals prescribe the actions or omissions and the outcome to be reached, bearing in mind individuals’ different social roles.

In general, our results showed that individuals’ reasoning strategies vary as a function of perceived utilities, which in turn depend on the attribution of responsibility. In particular, our data corroborate the hypothesis that in a context of responsibility, the reasoner become interested in disconfirming the idea that the outcome is not that prescribed by the norm, although he has acted according to normative prescriptions. Thus, in a situation characterised by responsibility, individuals activate a falsification reasoning strategy. In fact, with the action/negative outcome rule we obtained the p & not-q selection pattern: the only choice that allowed for the falsification of the conditional rules, attesting that the outcome is not that prescribed by the norm. Moreover, the omission/negative outcome rule elicited more not-p & not-q selections than the other selection patterns. That is, individual faced with the conditional rule contemplating a different outcome from that required by the norm and also attesting that he does not act as approved, tended to understand the task as a request to search for potential violators of the rule.

On the contrary, we found that reasoners given responsibility assume a normative goal selected information that confirm the rule, indicating that the outcome reached and the behaviour are congruous with the norm. In fact, in the action/positive outcome rule we obtained p & q selection patterns.

The performance we obtained in the omission/positive outcome rule did not match our prediction of a high rate of not-p & q selection. Applying this type of rule we obtained the same selection as for the action/positive outcome rule (p & q).
It seems probable that these results (to investigate with further studies) reflect an individuals’ preference in giving priority to the outcome reached. In fact, when the outcome in the rule is that prescribed by the normative goal (positive outcome) the subjects view “omission” as the right course of action to take, on par with “action” in the action/positive outcome rule. The situation seems to be one of doctor’s expertise and from this point of view, both antecedents (if you carry on treating the patient, or you don’t let his illness progress of its own accord; if you let the patient’s illness progress of its own accord) seem to play a similar role.

In the context of no responsibility, our data showed that the mind of the subject not given responsibility does not activate any normative goal. Therefore, the individual is not called on to respect any prescription regarding their actions or omissions, the outcomes and the criteria for evaluating the adequacy of the actions or omissions and the results with the norm. For this reason, the individual has no interest in searching for information that confirms the idea that his behaviour and the outcome reached are congruous with those prescribed by a normative goal (selecting the p & q pattern) or, on the contrary, to disconfirm the rule attesting that the outcome is not that prescribed by the norm. Furthermore, according to Hart (1968), our results showed that the attribution of responsibility also revolves around the concept of individual’s social roles. The individual not given responsibility continues to manifest a similar, but weaker behaviour to that of the subject given responsibility, choosing the falsification pattern (p & not-q). This result may be due to the same working role, and therefore to identification between the reasoner and the protagonist of the story. This process would elicit weak activation of the same normative goal of the responsible protagonist of the story in the reasoner.

Taken together with other results in the recent literature, our findings offer an innovative differentiated picture of the relationships among perceived utilities, attribution of responsibility and reasoners’ choice on the selection task. Following this approach it has been possible to predict different patterns of choice, which would be difficult to explain in terms of abstract rules of inference. Moreover, in our approach the notion of attribution of responsibility is probably in itself sufficient to explain competence issues in different cognitive processes and seems to be responsible for facilitating the resolution of different kinds of reasoning problems, not only of a deductive nature. A recent study of adult reasoning on judgement and choice offer interesting points of comparison. Tetlock (1992) demonstrated that reasoners improved
their performance only when the experimenter asked them to justify their choices before the reasoning task. It seems probable that this result depends on the notion of responsibility. Individuals, who have to justify their responses, become responsible for them. For this reason, they become interested in showing the adequacy of their decisions with respect to the task to be undertaken. In this case, the correct task resolution is the active normative goal. This evaluation process would eliminate judgement and choice biases (Tetlock, 1992).

Naturally, the current study is far from conclusive in this respect. One way of testing the issue is to extend the study of the attribution of responsibility to the vast literature on subjective utilities, judgement and choice and decision-making.

REFERENCES

Appendix: Texts of conditional tasks

Responsibility Condition

Rule: action – negative outcome

You are the only doctor in your ward, and you’re treating a patient suffering from X. You are the only person responsible for this patient. The results of your therapy are not as good as you had expected, you think he’s going to die in a few days; meanwhile, a colleague of yours, passing by, tells you: “if you carry on treating the patient, or you don’t let his illness progress of its own accord, then the patient will die”

You want to know whether your colleague is right or wrong, so you go to the library, where you can use the latest Internet search engines. But you have a very short time to do this, and you can only ask 4 famous doctors, expert scientists in this field, a few ready questions. Every doctor answers according to his own experience.

Doctor 1. I have dealt with a sample composed of 100 patients suffering from X, and I treated them. You can ask him:
are they dead? or,
are they in good health now?

Doctor 2. I have dealt with a sample composed of 100 patients suffering from X, and I have let their illness progress of its own accord. You can ask him:
are they dead? or,
are they in good health now?

Doctor 3. All the 100 patients composing my sample died. You can ask him:
did you treat them? or,
did you let their illness progress of its own accord?

Doctor 4. All the 100 patients composing my sample are in good health now. You can ask him:
have you treated them? or,
have you let their illness go out by it’s own?

Which doctor will you ask and which question will you choose in order to validate or invalidate your colleague’s opinion?

No Responsibility Condition

Rule: action – negative outcome

You are in hospital and you are watching a colleague treating a patient suffering from X. He knows he is the only person responsible for that patient. The results of his therapy are not as good as he had expected, he thinks the patient is going to die in a few days. According to what you read in a medical review about a similar situation, you think: “if he carries on treating that patient, or he doesn’t let his illness progress of its own accord, then the patient will die”
Actually, you are not sure of this, so you go to the library, where you can use the latest Internet search engines. But you have a very short time to do this, and you can only ask 4 famous doctors, expert scientists in this field, a few ready questions. Every doctor answers according to his own experience.

**Doctor 1.** I have dealt with a sample composed of 100 patients suffering from X, and I treated them. You can ask him:
- are they dead? or,
- are they in good health now?

**Doctor 2.** I have dealt with a sample composed of 100 patients suffering from X, and I have let their illness progress of its own accord. You can ask him:
- are they dead? or,
- are they in good health now?

**Doctor 3.** All the 100 patients composing my sample died. You can ask him:
- did you treat them? or,
- did you let their illness progress of its own accord?

**Doctor 4.** All the 100 patients composing my sample are in good health now. You can ask him:
- did you treat them? or,
- did you let their illness progress of its own accord?

Which doctor will you ask and which question will you choose in order to validate or invalidate your opinion?