

## THE CHOICE OF THE PASSIVE VOICE IN A COMMUNICATIVE TASK

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Subjects had to rank-order four logically equivalent but syntactically different sentences in terms of their appropriateness as descriptions of one diagram in contrast to another. A prediction of this rank order was derived on the assumption that subjects would attempt to emphasize the larger areas of colour in the stimuli, and that passive sentences emphasize the logical object to a greater extent than active sentences. Four groups were run in a  $2 \times 2$  design. One variable was whether the stimulus to be described was symmetrically or asymmetrically divided into two colours. When one type of stimulus was to be described the other type served as a contrast. The other variable was whether the larger area of the asymmetrical stimulus was denoted by the logical subject or the logical object of the sentences. These two variables gave rise to a subsidiary prediction concerning the degree of correlation between the predicted rank orders and the actual performance of the groups. Both predictions were confirmed.

### INTRODUCTION

An earlier report (Johnson-Laird, 1968) presented evidence to support an hypothesis about the difference between the active and passive voice in English. The hypothesis was that the passive implies that the logical object is more important than the logical subject, whereas the active implies that there is a minimal difference in the importance of these two entities or that the logical subject slightly predominates. The notion of 'importance' is vague and any attempt at a precise definition would be premature. In framing rather similar hypotheses, Jespersen (1924) talks of 'the centre of interest', and Frege (1879) of 'what we want the hearer to attend to specially'. Clark (1965), reporting the results of a study in which subjects completed active and passive sentence-frames, claims that 'people put what they want to talk about...in the beginning of the sentence'. There are also several technical notions which reflect similar preoccupations on the part of linguists; but nowhere is there an adequate definition. Perhaps an example may clarify matters: according to the hypothesis, 'the man was kissed by the woman' implies that it is the man (logical object) who is important, whereas 'the woman kissed the man' implies that there is little difference between the importance of the two or that the woman (logical subject) is slightly more important.

Evidence supporting the hypothesis was provided by the original experiment in which students had to draw diagrams to illustrate an active sentence and its corresponding passive. The present experiment tested the same hypothesis but used the converse task: students were presented with a diagram and had to choose an appropriate description for it from a set of active and passive sentences. In fact, they made a succession of choices yielding a rank order of preference for the sentences. This task bears some resemblance to the speaker's performance in *choosing* a sentence to describe something; the earlier task bears some resemblance to the listener's performance in *interpreting* a sentence.

In English, as in many languages, the grammatical subject usually precedes the

grammatical object in the word-order of sentences. When the logical object is brought to the front of the sentence, as with passives or sentences of the form 'he is easy to please' (cf. Chomsky, 1965, p. 222), it becomes the grammatical subject. There are, as Chomsky points out, stylistic inversions which allow the logical object to come to the front of the sentence without any change in its grammatical status, e.g. 'him I really like'. Such inversions seem rather rare, and it is likely that they occur merely as a way of emphasizing the logical object when recourse to the passive is inappropriate. It would be rather ponderous to say, 'he is really liked by me': pronouns rarely feature in the agent-phrase of the passive (Svartvik, 1966). (It is tempting to suggest that this is because pronouns are used to refer to what is the centre of interest.)

It has been hypothesized that the passive is used to emphasize the logical object. But is this emphasis due to it becoming the grammatical subject of the sentence or to it being placed prior to the logical subject? It seems likely that word-order is the

Table 1. *An example of one set of sentences used in the experiment*

1. There is a blue area that precedes a red area.	(Normal active)
2. There is a red area that a blue area precedes.	(Inverted active)
3. There is a red area that is preceded by a blue area.	(Normal passive)
4. There is a blue area that a red area is preceded by.	(Inverted passive)

more crucial factor—why else should the stylistic inversions have the same effect? In order to test this conjecture, the subjects made their choices from a set of sentences of the type shown in Table 1. The transformational derivations of these four sentences are similar (cf. Katz & Postal, 1964, p. 73). They are derived basically from two underlying structures (strictly speaking, the passive has a slightly different underlying structure from that of the active) which may be represented in simplified form as: (a) There is a blue area. (b) A blue area precedes a red area. Their main semantic import stems from structure (b), in which it is clear that 'a blue area' is the logical subject and 'a red area' is the logical object. ('A blue area' is *not* the logical object of structure (a), which does not possess one (Chomsky, 1965, p. 72).) The *Normal active* in Table 1, like most normal actives, has its logical subject prior to its logical object. Similarly, the *Normal passive* has its logical object prior to its logical subject. The *Inverted* sentences invert these customary word-orders but without changing the grammatical status of the noun-phrases. These sentences were paired with two types of stimulus so that, if the emphasis of the passive were due to word-order, the preferred description for one stimulus would be the Normal passive and the preferred description for the other stimulus would be the Inverted passive. If, on the other hand, the emphasis were due to grammatical function, the preferred description for both stimuli would be the Normal passive, since there would be no purpose in choosing the more cumbersome Inverted passive.

The *situation* of a communication (its socio-physical setting and linguistic context) probably exerts a decisive influence upon the form it takes and the way that it is understood, e.g. Wason (1965) has demonstrated an effect of setting on the evaluation of negative sentences. It is also likely that the appropriateness of a description depends to some extent upon what is *not* to be described, i.e. the contrast class of those

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things which the description is intended to rule out. Clearly, it is desirable to control this, otherwise subjects will set up their own imaginary contrast classes. In the present experiment, two types of stimulus were used: one divided symmetrically into areas of red and blue and the other divided asymmetrically into the same two colours (cf. Fig. 1). When one type was to be described the other type served as a contrast. This introduced a problematic aspect into the task, since the sentences are true descriptions of both stimuli. But if voice has the emphatic function that has been hypothesized, the task is solvable. Moreover, if human communication is rational, the order of preference for the descriptions of one type of stimulus should be exactly the opposite to that for the other type of stimulus. Similarly, there should be a comparable degree of concordance between the orders obtained in the two conditions. These two hypotheses, which may be subsumed under the general heading of 'the rationality assumption', seemed unlikely to be confirmed in full and predictions about departures from them will be made subsequently.

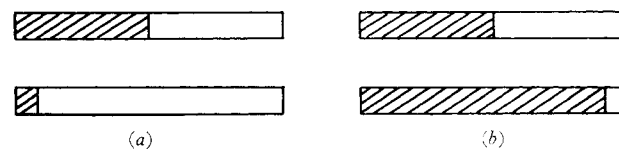


Fig. 1. Two examples of the pairs of stimuli. The shaded area represents blue, the unshaded area represents red.

METHOD

*Task*

Each subject was presented with two stimuli which were long narrow rectangles, one divided symmetrically and the other asymmetrically into two coloured areas, as shown in Fig. 1. A set of four sentences was also presented; an example of one set is given in Table 1. All the sentences specify the arrangement of colours depicted in both stimuli, but the task was to rank-order them in terms of their appropriateness as descriptions of one stimulus as opposed to the other. The communicative aspect of the task was enhanced by telling the subject, prior to his first choice, that 'someone else' had to decide which of the two stimuli was being communicated, on the basis of this choice.

*Design*

Although each subject was his own control for the test of the basic hypothesis, four independent groups were run in a  $2 \times 2$  design. The first variable was designed to test the word-order hypothesis. The sentences and stimuli were paired so that the larger area of the asymmetrical stimulus was denoted either by the logical object or the logical subject of the sentences. The second variable was designed to investigate the rationality assumption: the stimulus to be described was either asymmetrical or symmetrical. The combination of these two variables produced the following four groups:

- AO: the asymmetrical stimulus had to be described and its larger area was denoted by the logical object.
- AS: The asymmetrical stimulus had to be described and its larger area was denoted by the logical subject.
- SO: the symmetrical stimulus had to be described and the larger area of the asymmetrical stimulus was denoted by the logical object.
- SS: The symmetrical stimulus had to be described and the larger area of the asymmetrical stimulus was denoted by the logical subject.

*Predictions*

The predicted rank order of choices for AO was (1) the normal passive, (2) the inverted active, (3) the normal active, (4) the inverted passive.

The Normal passive emphasizes the larger area of the asymmetrical stimulus, which is denoted by the logical object. The Inverted active similarly brings the logical object to the front of the sentence but is *ex hypothesi* less emphatic than the passive, so it should be the second choice. The third choice follows from the simple corollary that an inappropriate emphasis is less pronounced with an active than with a passive.

For AS, it is the logical subject which denotes the larger area of the asymmetrical stimulus. Hence, the first choice should be the Inverted passive, which emphasizes the logical subject. By similar reasoning, the rank order for AS should be exactly the opposite to that for AO.

It follows from the rationality assumption that the best description of the symmetrical stimulus would be the one which was the worst description of the asymmetrical stimulus, and so on. The main prediction for the symmetrical groups was thus that their rank orders would be exactly the opposite to those of their corresponding asymmetrical groups.

These rank-order predictions should apply if the materials and subjects were ideal. Neither of these conditions was likely, so a subsidiary prediction was made. This concerned the *degree* of correlation between actual performance and the predicted rank orders, and it was based upon two intuitive assumptions. Firstly, the material was not ideal: an informal test revealed that the Inverted passive was considered slightly bizarre and was harder to interpret correctly. Subjects in AS and SO might be reluctant to make it their first choice. Secondly, the symmetrical groups might adopt strategies other than the 'rational' one predicted. C. Alexander (personal communication) has shown that symmetrical stimuli are considered to be simpler than asymmetrical ones. Similarly, actives seem to be simpler than passives. So, one alternative strategy was that subjects might make a first choice of an active sentence, and base their choices throughout upon

Table 2. *Summary of the design, the predicted rank order of preference for each group, and the predicted trend of the degree of correlation over the groups*

(The upper row of each cell states the predicted rank order of sentences for the group, and the lower row states the place of the group in the predicted trend of the degree of correlation between performance and the main prediction. Note: 1 = Normal active, 2 = Inverted active, 3 = Normal passive, and 4 = Inverted passive.)

Stimulus communicated	The part of the sentences denoting the larger area of the asymmetrical stimulus	
	Logical object	Logical subject
Asymmetrical	AO: 3214 1st	AS: 4123 2nd
Symmetrical	SO: 4123 4th	SS: 3214 3rd

a criterion of simplicity. Since this was a factor likely to affect strategy as a whole rather than the choice of a particular sentence, it would have a greater effect upon the diversity of performance than the 'difficulty' of the Inverted passive. It was thus possible to predict a trend over the groups in terms of the degree of correlation between actual performance and the main prediction. AO would have the highest correlation because it was unaffected by either factor; AS would have the next highest correlation because it was affected only by the difficulty of the Inverted passive; SS would be next because it was affected by the strategy factor; and finally, SO would have the lowest correlation because it was affected by both factors. The main and subsidiary predictions are summarized in Table 2.

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### *Subjects*

The subjects were thirty-two undergraduates (sixteen male, sixteen female) in the Department of Psychology, University College London. They were native-speakers of English and ignorant of the purpose of the experiment.

### *Materials and procedure*

Four separate sets of sentences were used in the experiment. One set is shown in Table 1, and another set was constructed from it by switching round the two colour-names in each sentence. This set was used with stimuli which were constructed by switching round the colours of the stimuli shown in Fig. 1. As a mutual control for any directional bias of the verbs, a further two sets of sentences were constructed using the verb 'follows' instead of 'precedes'. All the sentences were typed in block capitals on separate slips of paper.

Three strip stimuli were prepared on separate cards so that, by suitable rotations and arrangements, each of the required pairs could be assembled. Each of the single stimuli consisted of a strip,  $5 \times \frac{1}{4}$  in., drawn on a plain  $6 \times 4$  in. card. One was divided symmetrically into a red and a blue area, and two were divided asymmetrically in a ratio of 1:11, with the larger area being red in one case and blue in the other.

Each of the four sets of sentences and each of the four pairs of stimuli were used in every group. There were, in fact, just four permissible combinations in any group, since each set of sentences required a different stimulus-pair so as to satisfy the group conditions. Two subjects were run for each combination in order to counterbalance the vertical arrangement of the stimuli. There were thus eight subjects in each group. The sentences were also arranged vertically, using four basic arrangements derived from a Williams square. These four arrangements were used twice in a group: once for the sentences with 'follows' and once for the sentences with 'precedes'.

The subjects were tested individually and allocated in rotation to their particular set of materials. They sat at a table on which lay the stimuli and sentences, covered by a blank piece of paper. This was removed and the following instructions were read: 'All these statements are true descriptions of both these drawings. I want you to check, for your own satisfaction, that this is so.' When the subject had announced agreement, and some subjects disagreed at first, having misinterpreted the Inverted passive, the experimenter continued: 'Imagine that you're to try to communicate to someone else that you're looking at *this* stimulus [here, the experimenter pointed to the relevant stimulus] rather than this one, which one of the statements would you choose as most likely to convey this information? Remember that the person you're communicating with knows that it's one or other of these two stimuli, but he doesn't know which one. So, it's your task to try to make this clear by selecting what you feel is the most suitable statement for *this* stimulus.' Here, again, the experimenter pointed to the relevant stimulus. No explicit mention was made of the fact that 'follows' and 'precedes' related to the conventional left-to-right direction. This, of course, was implicit in the opening sentence of the instructions, and was not queried by any subject.

After the subject had made a first choice, the chosen sentence was removed from the array and the experimenter asked, 'Now, which of *these* (sentences) would you choose as the most suitable?' This procedure was repeated for the subject's third choice.

## RESULTS

The subjects' three choices yielded a rank order of preference for the four sentences; the proportion of times each type of sentence occurred in each rank is shown for the separate groups in Fig. 2. The difference between performance with 'follows' and 'precedes' was minimal, and all the analyses were on pooled data. In the test of the combined significance of the thirty-two independent rankings, Kendall's tau was +0.30 ( $P < 0.001$ ); thus, the main prediction was confirmed. Separate values for each group were also calculated: for AO,  $\tau = +0.71$  ( $P < 0.00003$ ); for AS,

$\tau = +0.46$  ( $P < 0.006$ ); for SO,  $\tau = +0.21$  (n.s.); and for SS,  $\tau = -0.17$  (n.s.). This trend over the groups is in accord with the subsidiary prediction and a trend test (Jonckheere, 1954), using subjects'  $S$  values as data, was significant ( $P < 0.003$ ).

The numbers of times the asymmetrical groups selected the two types of passive on their first choice are shown in Table 3. The two groups were compared in order to test the word-order hypothesis, and the deviation from proportionality was significant on a Fisher-Yates exact test ( $P = 0.001$ , one tail).

The low correlations in the symmetrical groups could have been caused by the subjects adopting some common alternative to the predicted performance. Kendall's coefficient of concordance was 0.21 for SO and 0.14 for SS, and neither coefficient was significant. This indicates that no clear alternative strategy was adopted by these groups, a fact readily observable from Fig. 2(c) and (d).

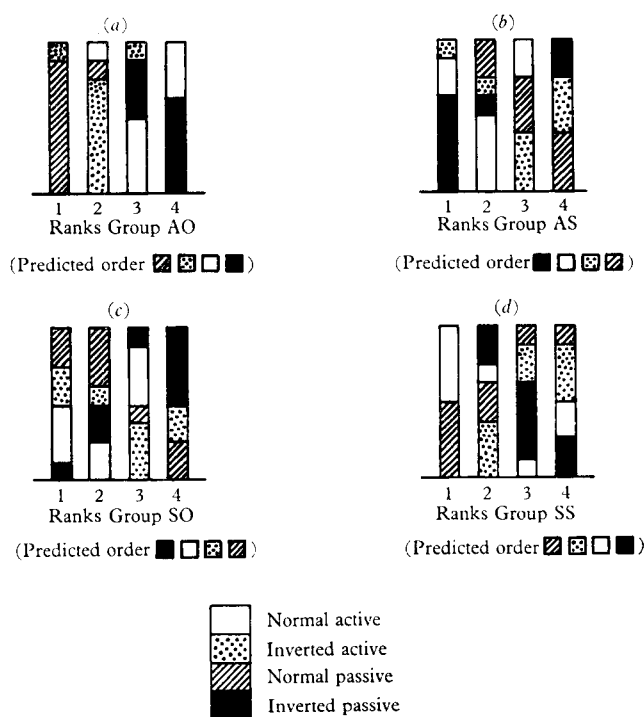


Fig. 2. The proportion of times the four types of statement occurred in the ranks yielded by the subjects' preference choices. There were eight subjects in each group. (The areas within each column are arranged so that, as one moves up each column, they should diminish in size as a function of the subjects' adherence to predicted performance.)

Table 3. *The number of times the two types of passive sentence were chosen first by the asymmetrical groups: there were eight subjects in each group*

	Type of passive chosen first	
	Normal	Inverted
Group AO	7	0
Group AS	0	5

*Qualitative results*

*Group AO.* Four out of eight subjects performed exactly as predicted. Seven subjects reported that they had attempted to emphasize the larger area of the asymmetrical stimulus but they admitted that this had been difficult, especially on the second and third choices. The remaining subject claimed that his choices were motivated by the ease of understanding the sentences. Only one subject initially thought that the Inverted passive was a false description of the stimuli: he and another subject mentally eliminated it before making their first choice.

*Group AS.* Two subjects performed exactly as predicted. Again, the majority reported that they had attempted to emphasize the larger area of the asymmetrical stimulus. Two subjects said that they had ignored the stimuli initially and 'considered only what the statements had conjured up', 'treated the statements in a vacuum'; one performed as predicted and the other nearly so. Two subjects refused to choose the Inverted passive, one because it was 'confusing' and the other because it was 'ungrammatical'.

The introspective reports from the symmetrical groups were somewhat disparate, reflecting a wider variety of strategies and some dissatisfaction with the task: it was 'frustrating' and 'impossible'. Only three subjects stated that they had taken into account what was the best description of the contrast stimulus.

*Group SS.* There were signs of the expected conflict in this group; as can be seen from Fig. 2(d), the first choice was equally divided between the Normal passive and the Normal active. The choice of the active was justified mainly on the grounds of simplicity. The choice of the passive was explained on several grounds, of which the most interesting and coherent was that it implied that the colour denoted by the logical object was larger in the symmetrical stimulus than the area of the same colour in the asymmetrical stimulus.

*Group SO.* It was obvious from the subjects' reports that they had found the task difficult; indeed, some subjects were unable to say anything about what had motivated their choices. SO was also the only group where each of the four types of sentence was chosen at least once as the best description (cf. Fig. 2c). The single report common to a number of subjects was that they had rejected the Inverted passive because it was difficult to understand.

DISCUSSION

The correlation between performance and the main prediction was small, positive, and highly significant. But this result is slightly misleading because only the asymmetrical groups show significant correlations with their predictions. The group results do in fact strongly conform to the predicted trend, with the performance of the symmetrical groups showing a greater diversity rather than the adoption of a common but unexpected strategy.

The experiment shows that a passive sentence is not necessarily chosen to describe the same things as its corresponding active. It confirms the basic hypothesis about the difference between the two voices, in a situation where relative size determines what has to be emphasized. The passive, as hypothesized, is more emphatic than the

active, perhaps because a greater effort is required to handle it (cf. McMahon, 1963; Slobin, 1966). It is the verb-phrase that indicates which voice is being used, and hence the level of emphasis. But it is word-order that indicates to what the emphasis is being given. This is supported by the preference for the Normal passive in AO and the inverted passive in AS. Word-order alone, however, is insufficient to account for the results since it fails to explain the preference for the passive rather than the active. The results thus support both the voice factor and the word-order factor; in everyday discourse, these two factors are, of course, usually confounded.

Could it be that the results are an artifact and that subjects merely chose the sentence in which the two noun-phrases occurred in the same left-to-right order as the colours of the stimuli? Although this again fails to explain the preference for the passive in the asymmetrical groups, it has an initial air of plausibility. However, consider what happened in AO: two subjects received the stimuli illustrated in Fig. 1(a) and the sentences shown in Table 1; they should, according to this alternative hypothesis, choose the Inverted passive or the Normal active. In fact, neither of these sentences were chosen by them. It is a simple matter to show that there should be no difference between the first choices of AO and AS, if this alternative hypothesis were true. Half the subjects in both groups should choose the Inverted passive, and the other half should choose the Normal passive—assuming that the choice of the actives has been eliminated on some grounds. The actual difference between the two groups was highly significant and satisfactorily eliminates this possible explanation.

It was predicted that the pattern of choices for the symmetrical stimulus would be more diverse than for the asymmetrical stimulus, but the extent of the actual difference was unexpected. Certainly, human communication departs from the rational ideal in this situation: few subjects realized that in choosing a description for one stimulus it was a valuable strategy to consider its suitability as a description for the contrast stimulus. This finding is reminiscent of the well-known inability of subjects to adopt indirect methods in reasoning about problems. It implies that there may be gross differences in the ease with which something may be communicated even within a limited universe of discourse.

The comparison of the two symmetrical groups is less revealing. A plausible explanation of the performance of SO, which is supported by the introspections, is that the conflict between strategies lowered the subjects' tolerance for the Inverted passive. Since the sole difference between the conditions for SO and SS is in their respective contrast stimuli, the findings are consistent with the notion that *situation* exerts an influence upon the form of a communication.

It seems likely, having confirmed the basic hypothesis in both an interpretative task and a choice task, that voice could be used to communicate information in an experiment using one subject in the speaker's role and another subject in the listener's role. A more important task, however, is to generalize the findings to a greater variety of verbal material, and one such study, with promising preliminary results, is nearing completion.

Controversy about the synonymy of the active and passive voice has been carrying on for some years. On the basis of linguistic intuition, there have been arguments for synonymy (e.g. Katz & Postal, 1964) and against it (e.g. Chomsky, 1957; Ziff,



1966). The present empirical study suggests that both these 'all-or-none' alternatives may be wrong. The voices differ in their emphatic pattern and this may yield differences in meaning. This is particularly so for ambiguous sentences involving quantifiers, where active and passive may have different privileged interpretations, e.g. 'Some girls are liked by all the boys'; 'All the boys like some girls'. These two sentences are ambiguous in the same way, but the more probable interpretation of the first is that all the boys like some *particular* girls, and the more probable interpretation of the second is that all the boys like (some or other) girls. Change the order of the two quantifiers, and it becomes clear that surface word-order rather than voice *per se* is responsible for the difference in the privileged interpretations.

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