

On the Specificity of Expert Knowledge about a Soap Opera: an Everyday Story of Farming Folk

DAWN K. REEVE¹ and JOHN P. AGGLETON^{2*}

¹*Department of Psychology, University of Leicester, UK*

²*School of Psychology, University of Wales, Cardiff, UK*

SUMMARY

Subjects who were highly knowledgeable about a radio soap opera ('The Archers') were given one of two imaginary scripts to read. One story was representative of the normal events in 'The Archers' (a visit to a livestock market); the other was atypical (a visit to a boat show). These expert subjects were able to remember many more details of the typical, market story than a group of subjects who knew little about the soap opera. This expert advantage completely disappeared for the atypical story. This pattern of results occurred even though the two stories shared many parallel features and most of the questions (and answers) used to assess their remembrance were the same. The results, which were not due to superior guessing by the expert group, show that frequent listeners to a soap opera can demonstrate 'expert knowledge'. The advantage that this confers is, however, highly selective and only pertains to events that are representative of the programme. © 1998 John Wiley & Sons, Ltd.

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INTRODUCTION

'Expert knowledge' refers to the ability of people with especially detailed knowledge about a topic to show superior learning and retention of new information about that same topic. Examples include the remembrance of chess piece positions by chess players (Case and Simon, 1973), the ability of baseball experts to remember details of a game (Spilich, Vesonder, Chiesi and Voss, 1979), and the ability of football fans to remember football scores (Morris, Gruneberg, Sykes and Merrick, 1981). Other examples include memory for computer codes, birds, dinosaurs, and the positions of pieces in the game of 'Go' (Adelson, 1981; Chi and Koeske, 1983; Peeck and Zwarts, 1983; Reitman, 1976). It has been proposed that this specific advantage does not simply stem from the accumulation of knowledge about that topic, but reflects the

*Correspondence to: John Aggleton, School of Psychology, University of Wales, College of Cardiff, PO Box 901, Cardiff CF1 3YG, UK.

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development of a 'tuned' schema that facilitates the interpretation and organization of relevant information (Morris *et al.*, 1981; Rumelhart and Norman, 1978; Spilich *et al.*, 1979). As a consequence, when an individual progresses from being a novice to an expert within a specific knowledge domain, there should be a qualitative, as well as quantitative, change in the storage of relevant information.

A great many people follow 'soap operas', which, because of their frequent nature, have the potential to become expert areas of knowledge. The present study sought to examine the extent to which people who often listen to a particular radio drama ('The Archers') show evidence of expert knowledge about that programme. Establishing whether expert knowledge develops in such programmes could have a number of practical implications. One of these is that established listeners ('experts') should find it easier to assimilate new information and plots, while those who are less familiar will find it relatively difficult to remember, and hence follow, the storyline. This is likely to act as a barrier to new listeners trying to become acquainted with the programme. It is also likely that this potential difficulty would go unnoticed by the programme's producers as they themselves are likely to be experts.

The present study compared the abilities of regular listeners and nonlisteners to remember a fictitious story about characters from 'The Archers'. This radio programme, which is broadcast by the BBC, was selected in view of the large numbers of devoted listeners, the length of time over which it has been broadcast (the first episode was in 1951), and the fact that both investigators are themselves avid listeners. A further goal was to assess the selectivity that might apply to any expert advantage, that is, to determine whether an advantage can occur for any information about 'The Archers', or whether the information has to fit closely with pre-existing knowledge about the programme. As a consequence, Archers experts were given one of two stories to read and remember. For half of the expert subjects, the story centred around events that were very typical of the usual content of the programme, i.e., the type of scenario that should closely accord with any pre-existing expert schema. As 'The Archers' concerns a farming community in central England the typical story described a visit to a market to buy cows and pigs. The remaining expert subjects received a story that, although it very closely paralleled the structure of the typical story, focused on an event (a visit to a boat show) that would be extremely unlikely to occur in the programme. Both stories centred around the actions of the same, genuine characters from 'The Archers', and much of the content in the two sets of stories was identical. As a consequence, most of the questions used to assess retention of the stories were identical and had the same answers. If expert knowledge depends on incorporating new information into a pre-existing schema, then recall of the typical story (but not the atypical story) should be considerably aided in the expert subjects.

METHOD

Subjects

A total of 48 subjects (30 female) participated in the main experiment. They were drawn from an urban population and had a variety of occupations. Their ages ranged from 19 to 60 years. All were initially screened, to ensure that 24 of the

subjects had considerable knowledge of 'The Archers' ('Archers experts'), while the other 24 subjects had little or no such knowledge ('Archers naive'). Two further groups, one of 14 subjects with little or no knowledge of 'The Archers' and a second (different) group of 16 Archers experts, were used to test whether the experts might be superior at guessing the correct answers to the memory test ('guessing controls').

Materials

All subjects received a screening test, which comprised 22 questions about 'The Archers'. (Some of the questions had multiple answers, so making a maximum score of 31.) The questions were designed so that the answers would be unlikely to be known by those who only listened casually to the programme. Subjects were considered to be experts if they scored 15 or more correct answers. They were also required to have listened regularly to the programme for at least the previous year. Subjects were designated as 'Archers naive' if they could only answer correctly two questions or less. Examples of the screening questions are: 1. What is the brand name of the local beer? (answer—Shires); 2. Name the local hotel. (answer—Grey Gables); 3. Give the names of Linda Snell's two goats and her dog. (answer—Demeter, Persephone, Hermes)

Two parallel test stories were constructed such that they contained information that was designed to be either consistent or inconsistent with the class of event that typically occurs in 'The Archers'. Both stories were written as if for a radio script, and so they consisted almost entirely of dialogue, with occasional 'stage' directions. One story ('typical') described two central characters from the Archers (David and Phil Archer) engaged in activities that fitted in with their occupations (farmers) and past actions in the programme. This typical story described a trip to a livestock market. The other story ('atypical') described the same two characters engaged in activities that were not consistent with their occupations or past actions. This atypical story concerned a trip to a boat show. To our knowledge, descriptions of sailing or boats almost never occur in *The Archers* (although there had once been a raft race down the River Am).

Care was taken to make the two stories as similar as possible, the only difference being the inclusion of either a typical or atypical setting. Thus, in both stories the main characters intended to make purchases (either of sows or of a boat), which, for similar reasons, they did not make. The stories contained a lot of neutral details that were identical in both stories, such as the time the characters departed on their journey, the name of the town they went to and the condition of the weather. Common features also included their dialogue with two other characters from the Archers (Eddie Grundy and Ruth Archer), although a third character (Ian Shaw) that they met at the market/boat show was created for the purposes of the experiment.

The retention test consisted of 20 questions that were formulated to test the subject's memory of one of the above stories. Three of these questions contained two items that were scored separately, making a total of 23 items. Thirteen of the questions and answers (15 items) were identical for both stories. The remaining eight items differed in that they dealt specifically with issues to do with the livestock market (typical story) or with the boat show (atypical story).

Procedure and design

Each experimental subject was tested for their retention of one type of story only, thus making four groups (Archers expert—typical story; Archers expert—atypical story; Archers naive—typical story; Archers naive—atypical story) each of 12 subjects. The two Archers naive groups were included to confirm whether the two stories were of comparable memorability.

After the initial screening test, all subjects were given either the typical or the atypical story. They were asked to read the passage through once at their normal reading pace. The subjects were then informed that they would be given questions on it in 2 days time, but were asked not to try and rehearse the story during the retention period. Two days after reading the story, subjects were given a question sheet and asked to write their answers down under each question. The test was scored by an independent marker who was unaware of the subject grouping.

The guessing control subjects were first given the Archers screening test, to determine whether they were experts. The 14 naive control subjects and the 16 Archers experts were then provided with a 1-sentence outline of the story and asked to guess the answers to the story recall questions. Half of the subjects in each control group were given the typical story questions, and were given the atypical story questions.

RESULTS

Each test subject had two scores, one for the expert screening test, and the other for the retention test (typical story or atypical story). The range of scores (maximum 31) on the screening test for the test subjects was 15–31 (mean 23.4) for the expert group and 0–2 (mean 0.21) for the naive group. For the guessing control groups the scores of the expert subjects ranged from 17–25 (mean 22.1) while those of the naive controls ranged from 0 to 2 (mean 0.36).

Recall of story

The story retention test involved 23 specific items. The mean scores for the four experimental groups (ranges in parentheses) were: experts—typical story 15.1 (8–23), experts—atypical story 8.4 (4–19), naive—typical story 9.5 (4–19), naive—atypical 8.4 (4–14). The equivalent mean scores for the guessing control groups were: experts—typical story 3.0, experts—atypical story 4.0, naive—typical story 2.9, naive—atypical story 3.2 (Figure 1).

It is evident from Figure 1 that there was no difference between the scores of the two experimental groups for the atypical story, nor was there a difference between the scores of the naive subjects for the two different stories. An analysis of variance with the between-factor group and type of story did, however, reveal a significant interaction [$F(1,44) = 7.15, p = 0.011$], reflecting the difference in scores by the experts for the typical and atypical stories. Subsequent group comparisons revealed that the scores of the experts—typical story group were significantly higher than those of the other three experimental groups (Newman–Keuls, all $p < 0.01$), but that this was the only group difference.

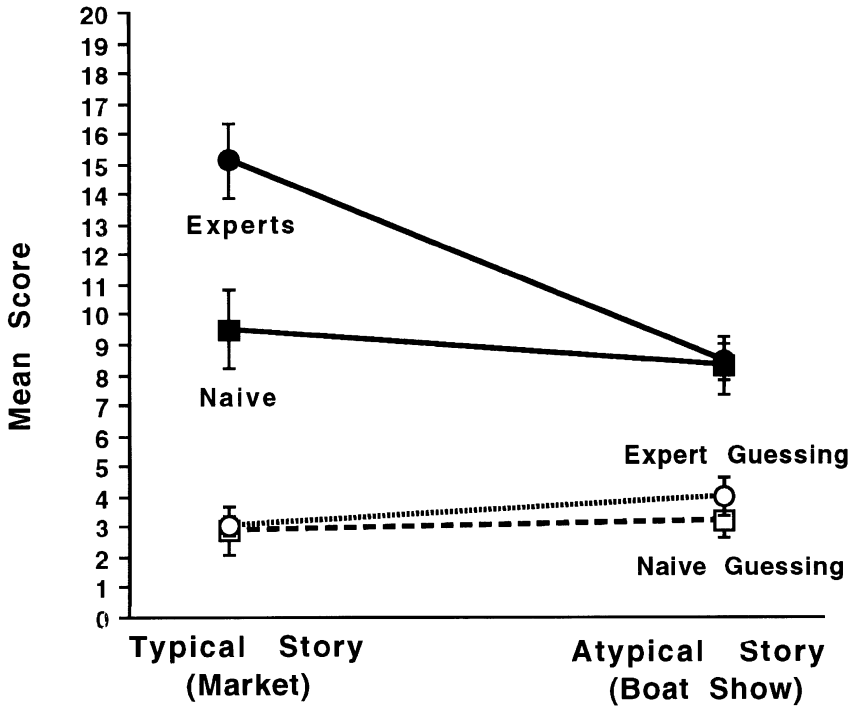


Figure 1. The mean performances of the Archers experts and Archers naive subjects on the recall of the typical story, the recall of the atypical story, and the accuracy of guessing these answers for the same two stories. The vertical bars show standard errors

As 15 of the questions and answers were identical for the two stories, the same analysis could be repeated for just this subset of questions. The mean scores were as follows: experts—typical 9.5, experts—atypical 5.8, naive—typical 6.8, naive—atypical 5.5. Although the interaction between the conditions failed to reach significance [$F(1,44) = 2.27, p = 0.14$], subsequent group comparisons showed that the scores of the experts for the market story (typical) were significantly higher than those of each of the other three groups (Newman–Keuls, all $p < 0.05$). There were no other group differences.

Finally, the four sets of guessing scores did not differ from each other (Figure 1), nor was there any evidence that the combined set of expert subjects were more accurate in guessing than the combined set of naive subjects (Mann–Whitney $p = 0.52$). The scores of the guessing control subjects were, however, always lower than those of the corresponding test group (Mann–Whitney, all $p < 0.001$).

Recall and relevance of item

It might be predicted that experts would only exhibit better recall for those parts of the market story that were most relevant to their expert schema, i. e. for those events most inter-linked with the type of detail that regularly occurs in the programme. In

order to examine this possibility, five expert subjects rated each item from the typical (market) story on a scale of one to four. A low score implied that the content of the question was not pertinent to the typical events in 'The Archers' (e.g. the weather on the day of the story). The total 'relevance' score for each question was then compared with the total number of correct answers for that question by the expert and naive subjects (for the three questions with two components the total score was halved). For the typical story a significant positive correlation was found between the scores of the experts and the relevance of the question (Spearman $r_s = 0.60$, $p = 0.005$, two-tailed). A much lower correlation was found for the naive subjects ($r_s = 0.34$, $p = 0.14$, two-tailed). This led to a further comparison in which the 20 questions for the typical story were divided equally between those with low relevance (a mean relevance score of 2 or less, 'irrelevant'), and those with high relevance (a mean relevance score of more than 2, 'relevant'). An analysis of variance with factors group (expert/naive) and relevance type (relevant/irrelevant) was then conducted on the scores for the market story. While relevant items were significantly better recalled [$F(1,22) = 17.2$, $p = 0.0004$], there was no group by type of question interaction ($F < 1$).

The lack of a significant interaction suggests that the superiority shown by the expert subjects is not simply related to the supposed relevance of that item to pre-existing knowledge about 'The Archers'. For this reason a final comparison considered the scores of the two sets of experts for just the first three questions. These questions were selected as all three had been designated as 'irrelevant' and all referred to identical information in the opening portion of the story. As a consequence, the major difference in the two stories up to the content involved in these questions was merely the substitution of the word 'market' with 'boat show'. In spite of these very minor differences, the scores of the expert subjects for the typical story were better than those for the atypical story (Mann-Whitney $U = 41.5$, $p = 0.039$, one-tailed).

DISCUSSION

The present study found convincing evidence that regular listeners to a radio soap opera ('The Archers') can display 'expert knowledge' about events in that programme. The results help to establish the generality of the 'expert knowledge' effect, but also highlight the very selective benefits associated with this effect. Thus, Archers experts were able to remember more details about a story concerning characters in 'The Archers' than a control group of naive subjects. This difference was not due to the 'experts' being able to rely directly on previous knowledge of the programme as the questions all concerned events in a fictitious episode and, consistent with this, there were no differences in the scores of the 'guessing control' subjects. Nor did it matter that the subjects knew that the information was fictitious, even though other studies have indicated that this can reduce the advantage shown by experts (Morris, Tweedy and Gruneberg, 1985). The expert advantage was, however, very specific as it disappeared when a different group of Archers experts were given a parallel ('atypical') story to remember in which the principal action took place in a most unusual setting for the programme. For this second story the Archers experts did no better than the naive subjects. This occurred even though the atypical story contained the same

characters and many of the same incidental details as the typical Archers story. Indeed the majority of the test questions were the same for both stories and had the same answers. In spite of this, there was a significant difference between the two groups of experts for the 15 identical questions. This result highlights the specificity of the expert advantage. Finally, the performance of the guessing control groups show that the equivalent scores of the Archers experts and the naive subjects on the atypical story were not a consequence of floor effects. This strengthens the assumption that the expert and naive subjects were appropriately matched.

It might be expected that the expert advantage was due solely to the fact that the typical task accorded with a pre-existing schema, so permitting the linking of new information with a rich knowledge base (Morris *et al.*, 1981; Spilich *et al.*, 1979). This view is supported by the marked difference between the results for the typical and atypical story. It is also consistent with the finding that those aspects of the market story thought to have most impact upon the characters were better remembered by the expert subjects. This comes from the highly significant positive correlation between the relevance ratings of the various questions and their recall by the expert subjects. The same correlation for the naive subjects was not significant. In spite of this, the interaction between the degree of relevance and group score (expert or naive) also failed to be significant. Subsequent inspection of the questions suggests that the less relevant questions tended to concern relatively peripheral or somewhat arbitrary aspects of the story (e.g. the time of day, someone's name, the name of a pub), and this may account for the positive correlation in both groups and the lack of an interaction.

While the marked difference between the performances of those expert subjects given the typical or the atypical story is consistent with a schema-based explanation, the lack of any expert advantage for the atypical story may be harder to explain (Gobet and Simon, 1996). Although the atypical story was centred around unusual events, it still concerned the actions of two major characters from 'The Archers' about whom the subjects would have a considerable amount of pre-existing knowledge. It is also the case that atypical events can be memorable, and this fact has been incorporated in the notion of a 'schema plus tags' model (Nakamura, Graesser, Zimmerman and Riha, 1985). Features of the atypical Archers story that may have minimized such an effect were that the boat show took place in a fictitious town and no transaction finally occurred. As a consequence the expert had no prior knowledge about the nature of the town, while the failure to buy a boat meant that the story would have had no resulting consequences for the characters from 'The Archers'. Finally, the fact that the scores for the Archers experts and the Archers naive subjects for the atypical story were the same does not guarantee that the information was encoded in the same manner.

It was noted that a significant group difference emerged between the two groups of experts after only the first three questions. These concerned events prior to reaching the two different destinations and all were rated as being of low relevance. Furthermore, the wording of these questions was identical for both stories (except that the words 'boat show' were substituted for 'market' in question 3), and the correct answers were the same. This group difference suggests that an additional factor may have aided the Archers experts. One possibility is that the subjects showed different levels of interest in the two stories once they had read the title, as the title immediately revealed whether the story was typical. This accords with a study of football experts, in which the level of interest in the team (whether strongly

liked or disliked) was a better predictor of the ability to remember scores than the importance of the match (Morris *et al.*, 1985). In the present case, the different titles may have generated different levels of interest and, hence, different levels of processing. Thus, some expert subjects may have been intrigued to see how closely we had captured the flavour and character of 'The Archers', and so followed the script very closely. This attitude would have been less likely for the boat show story as it was evident from the outset that this story was not an attempt to mimic the programme directly. Indeed, many expert subjects spontaneously commented on the typicality of the market story and that they could 'hear' the characters voices as they read it. Other expert subjects spontaneously commented on the atypical nature of the boat show story. Such findings imply that an expert advantage may be the compound of several, intermingled factors (i.e. rich schemata, heightened interest and attention, deeper levels of processing).

The present findings have highlighted the specificity of the expert knowledge effect as it applies to soap operas. That an expert advantage does exist supports the earlier supposition that naive listeners may find it especially hard to remember and follow the storyline of a soap opera. This is likely to make it harder for them to fully enjoy the programme. At the same time, a switch to an unusual venue or situation could reduce the ability of even experts to remember the story, and so limit the integration of that episode with subsequent events in the soap opera. A further feature that may affect the ability of novice listeners (or viewers) to become acquainted with the characters and events in a soap opera is the standard procedure of having each episode split into many brief episodes, each of only a few minutes. This practice was not adopted in the stories written for the current experiment, but it would be of interest to know if this increases or decreases the impact of expert advantage.

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