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REMEMBERING BREAKFAST:
HOW DO PRE-SCHOOLERS REPRESENT
AN EVERYDAY EVENT?

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ABSTRACT

While it is clear that pre-schoolers have episodic memories for unique events, the representation of mundane events is disputed. In three studies we investigated three- and four- year olds' recall of that day's breakfast. In the first study (n=27), all children discriminated between specific and general questions about their breakfast. However, children with a greater variety of breakfast options were more likely to correctly remember their morning's breakfast than children with only two or three options. This effect was maintained in the second study (n=21) where systematic directive questioning was used to increase access to the relevant representation. In addition, repeated questioning over a number of days had no effect on recall. In the third study (n=15), where questions were asked within minutes of finishing breakfast, children with little variety again failed to do better than chance. The findings together indicate that pre-schoolers have specific records for today's breakfast-time. Schema access is necessary for talking about those details that were not encoded as part of the record, such as food or drink where the child has limited choice. In such cases the child apparently samples from the alternatives in the schema with a corresponding high error rate. Children with more choice for their breakfast represent what they have eaten in their record of the event.

INTRODUCTION

The purpose of this investigation was to reveal the underlying cognitive representations that young children of three and four years of age have for a familiar event. Specifically, we were interested in whether young children could accurately remember the details of the breakfast they had that day.

Research findings on young children's recall of special and one-time events are positive. Children as young as three have been shown to be very good at recounting in great detail their experience of a trip to Disney world (Hamond & Fivush, 1991) and children are able to recall their kindergarten visit to an archaeology museum several years after the event (Hudson & Fivush, 1987). Moreover, whilst at three and four years of age a child may say very little when asked to recall an entire event, the recall can be very good when specific but non-leading questions are used, in order to direct them back to each phase and location of the event (Wilkinson, 1988a).

Research on script development indicates that even after the first encounter with a certain type of event, children have already formed a primary generalised structure of that event (Fivush & Slackman,1986; Hudson & Nelson, 1986). Having schematic representations means that we have expectations about what could happen on any particular occasion. A schema represents possibilities rather than specifics. For example, when children are asked about what happens at birthday parties, answers could include reference to events such as 'playing games' and 'eating cake', indicating that they have some general representation about the kinds of things that take place at birthday parties.

In the present set of studies, we are interested in whether children of three and four years are able to remember their breakfast. A schema for breakfast consuming

could look something like the illustration in figure 1, where FOOD and DRINK nodes are represented at a position near the top of the hierarchy and specific exemplars are represented at terminal nodes (i.e., different types of breakfast foods and drinks). This schema would be embedded in a more encompassing one which represented the surrounding actions (hugging mummy, getting bowl, etc).

Insert FIGURE 1 about here

There are certain predictions that can be made when using a schema to answer questions about breakfast. The exact nature of the predictions depends upon the specific variant of schema theory. The links between higher nodes and specific exemplars could be *fixed and equal* or they could be *variable.* For fixed links, each exemplar is equally likely to be produced. With variable links, on the other hand, the strength of the connections between pre-terminal and terminal nodes are increased with each occurrence of the specific exemplars. There would then, typically, be some decay of strength of connection over time. Within such a system, both the more frequently occurring items and the more recently occurring items would be most likely to be produced, other things being equal. On most models, these effects would be biases rather than deterministic. Given this type of schematic representation, there is a good chance that the question, "*What did you have for breakfast this morning*?" could be answered correctly simply because the more recently activated links would have a greater chance of being reactivated compared to other links. There would also be a good chance that items which were most popular or common would be produced as a response. Such a model could be inferred by looking at the pattern of responses children give to the specific question. If they produce the most recent breakfast items above chance level, but make the same responses to both general and specific questions and there is a frequency bias, then one could infer that they were using a schema with modifiable links.

The classic studies showing young children's overreliance on schemas are by Hudson, Fivush, & Kuebli (1992) and Hudson and Nelson (1986) who asked three- and four-year-olds questions about specific occurrences of everyday events, such as, "What *happened* when you had dinner at home yesterday"? and the children's answers were compared to those given to a question which asked for general information about the familiar event, such as "What *happens* when you have dinner at home"? It was found in this research that children relied on general event knowledge in reporting both scripts ("what happens?") and episodic memories ("what happened?").

Farrer and colleagues, (Farrar & Boyer-Pennington, 1999; Farrar & Goodman, 1990, 1992), claimed that young children are often poor at answering specific questions about repeated events because they attend to information which is consistent with the existing schema (albeit one of rather skeletal form) at the expense of ignoring information which deviates from it.

A problem with the schema-bound account of event memory is in explaining how you can ever remember all the details of a specific event within a schema that is used multiple times. To accommodate this within a framework that assumes that specific details have to be 'tagged' to the schema, one has to accept that event-specific tags can be attached to a number of schema nodes and that all the tags for a specific event are, in some way, linked together. Whilst such a device is computationally possible, it does seem to violate the principles underlying schematic theories.

An alternative perspective, which avoids this need for multiple 'tag' linkages in a schematic framework, is to accept that there are, instead, two kinds of mental representation working alongside each other: a schema together with a specific representation for each event. One framework which was first proposed to account

for the way that adults access memories through a number of different routes is that of 'Headed Records' (Morton, Hammersley & Bekerian, 1985; Morton, & Bekerian, 1986; Morton, 1990; Thompson, Morton & Fraser, 1997). Headed Records contain specific information pertaining to a singular event, whether it be a repeated or one-time event. The framework is based on the assumption that each event gets stored as a 'Record' with an associated 'Heading' that functions as an access key. Retrieving a memory involves using the information available (usually a question) to form a 'Description' (a concept taken from Norman & Bobrow, 1979) which is used to search 'Headings' for a match. When a match is found between Description and Heading, the Record associated with that Heading is automatically retrieved. Should more than one 'Heading' match a 'Description', which is likely in the case of a repeated event, then the most recent one gets selected. A 'Record' could include link to a particular script.

Using the Headed Records framework, Wilkinson (1988b) claimed that the reason why pre-schoolers benefit from being given more specific cues when asked to recall an event is because they have not yet developed suitable strategies for forming appropriate Descriptions. Therefore, when young children's recall is poor, this may be due to a problem they have in retrieving a memory rather than the absence of any memory for specific details and an overreliance on a schematic representation.

There is already good evidence that young children's memories for novel events can be recounted in some detail (Fivush, Gray & Fromhoff, 1987; Todd & Perlmutter, 1980) and we make the parsimonious assumption from this that specific records have been formed for these events. The area of question is whether young children form specific records for repeated events. For this reason, we asked the question as to whether children aged three and four years can recall the particular details of a simple event that gets experienced regularly. The routine event chosen was 'breakfast', because we assumed that, for most young children, breakfast takes the

same form every day and it can be reduced to easily manageable structural forms, such as ***food*** + ***drink*** with ***food*** having lower nodes of ***cooked*** and ***cereal****, etc.*

If there are separate records of the individual events, then one would expect the type and pattern of answers to a question about a particular breakfast to be different to those given to a question about what generally happens at breakfast. This is because a record would be accessed in answering the former but one would default to schema sampling in answering the latter. Only the most recent breakfast should be produced as an answer to the specific question but to a general question any of the possible breakfast options could be produced and, even if there were a bias to more recent items, other items could be recalled too (for example, 'I had toast and marmalade today, but I sometimes have toast with jam, marmalade or honey'). Thus, unless children's specific answers are identical in kind and distribution to answers given to the general question, then there would be no grounds for claiming that we are confined to a schematic representation.

Retrieval of a food item from a schema can also be contrasted with retrieval from semantic memory. Errors from a schema would be restricted to items which did actually appear at breakfast whereas errors from a semantic net would range more widely.

To investigate the way young children represent breakfast, three studies were carried out with three- and four-year-old children. The patterns of answers given by children can be compared against the predicted answers for schemas and records.

STUDY 1

METHOD:

Participants:

Originally, 28 young children (13 girls, 15 boys, aged 3 and 4 years: mean age: 3-6, Range 3-0 to 4-3) were selected for the study, but one child was excluded as she was unwilling to participate, leaving 27 children in the final sample. The children were all native speakers of English. Twelve of the participants were from one of two nursery schools. This 'nursery' sample all ate breakfast at nursery during the week. As we were only able to obtain a small sample in this manner, we selected a second sample of 15 children all of who were contacted through the Central London subject database at the Cognitive Development Unit (a research unit of the Medical Research Council, 1982-1998). These children all ate breakfast at home. This unexpected availability of the two groups leads to a prediction, that the nursery sample will have better recall than the home sample, by analogy with Wilkinson's (1988a) finding of the effects of context re-establishment (see also Morton, 1990).

A 'breakfast diary' was completed for each participant: For the children having breakfast at nursery, nursery teachers were asked to write down what food and drink was on offer each morning of the experimental period as well as what each child had for breakfast over a three-week period, long enough to give us a sense of the full variety of the child's breakfast experience. For the children having breakfast at home, parents or caregivers made a note of what the children had for breakfast over at least a three-week period. The times that the breakfasts were eaten was also noted in the diaries.

Finally, we also obtained a sample of 16 adults, who were all staff and students from University College London to confirm that adults do remember what they had for breakfast on the day that they are asked about it.

Procedure:

In the initial briefing, parents and teachers were instructed not to prepare the children for any of the visits by the investigator, to keep the events at breakfast as

normal as possible and to avoid discussing breakfast with the children. For the interviews, the children were seen at various times during the day, the only criteria being that they were asked the questions at least two hours after completion of breakfast.

Establishing rapport:

Each child was seen individually by the same interviewer (CS) who spent a few hours participating in activities with the children in the weeks leading up to the individual interviews. This allowed the children to familiarise themselves with the interviewer's presence and feel comfortable with her. This luxury was not afforded to the children in the home sample, ten of whom were questioned at the Cognitive Development Unit (CDU) and six of whom were seen in their own homes. For these children, the familiar setting and the close presence of a parent or childminder appeared to be sufficient to keep the child at ease (only one child seen at the CDU requested a parent to accompany her and she was eventually excluded due to an unwillingness to cooperate). Irrespective of where a child was interviewed, she was first introduced to the clip-on microphone and allowed time to get comfortable wearing it. A few minutes were then spent encouraging the child to talk about things that suited her (e.g. siblings, pets, toys) and playing with wind-up toys of familiar cartoon characters. Only when it was clear that a child was comfortable talking to the interviewer were the breakfast questions introduced. When this happened, the questions were asked in an informal way and entered into the flow of the conversation as naturally as possible.

Asking the Breakfast questions:

The children were first asked the general question and this was followed with the specific question:

General Question - 'DO' question:

"What do you normally have for breakfast in the mornings?"

Specific Question - 'DID' question:
"When you got up this morning, what did you have for your breakfast?"

After each of these standard questions, further priming questions ("Anything else?) were asked to encourage the child to provide as much information as possible. If a child initially failed to produce a drink item in their answer, the experimenter asked, "What (do) did you (normally) have to drink....anything else?" All replies were tape-recorded and later transcribed for analysis.

Sixteen adults were asked the same two questions by the same interviewer, after establishing that the adult participant had finished breakfast at least two hours ago. All adult participants readily retrieved their morning's breakfast. There was no indication that any of them were struggling to recall what they had consumed that morning although we could not confirm the accuracy of their memories.

Preschoolers' Breakfast Memory:
On examining the breakfast diaries, it was observed that for three children in the nursery group, there was no variety at all in what was drunk at breakfast time. Therefore, whilst all subjects are included in the analyses of food responses, these three participants are excluded in the drink item analyses.

a) Responding to the nature of the questions: General and Specific.
Initially we examined the data to see whether children were treating the two questions appropriately.

Tense of the verbs: Many answers to both the general and specific questions were single word answers and so the child did not use a verb. However, of those children

who did use verbs (DO: n=8 DID: n=7), the present tense was always used in answering the DO question and the past tense was always used to answer the DID question.

Understanding the pragmatics of general verses specific questions: If young children understand the pragmatic differences between answering general and specific questions, they should only give one answer to the DID question, but they may give further answers to the DO question. For example, multiple responses such as "cornflakes,....rice-crispies,..and..coco-pops" or "orange juice,.....apple juice and...milk" would be taken as competing responses, whereas a multiple response such as "cornflakes.....egg.....toast" would not, if there was reason to believe that the child was allowed to have all three of these items at a single breakfast meal. The data show that for food responses, 17/27 children gave competing responses when asked the DO question, whereas for the DID question there were 3/27. For drink the figures were 10/24 and 2/24 respectively. The differences between DO and DID were significant *(Sign tests: food, $p<0.01$; drink, $p<0.05$).* We conclude that on the whole the children in our sample were not confused about the meaning of the two questions. Interestingly, children never recalled breakfast items that were not within their range of choices which helps to eliminate any speculation that children might just be offering a general knowledge response to the 'Do' question.

b) Evidence for a Specific memory of Breakfast.

Effects of sample (breakfast at Nursery or at Home): As it turned out, the pattern of data differed between the Nursery and Home samples and so subsequent analyses deal with the two samples separately. Table 1 presents the number of correct responses for food and drink for the two groups.

Insert TABLE 1 about here

For the home group, two-thirds of the children (10/15) produced the correct food items to DID. This figure is not significantly different from the proportion correct (4/12) in the Nursery group (Fisher exact test, p=0.074), but the difference is in the opposite direction to the one predicted where we anticipated that Nursery children could benefit from context-reinstatement cues to recall.

However, there is another consideration which leads us to take the different pattern of results between Nursery and Home samples seriously. This is the variety of choice of food found in the two groups.

Variety of breakfast items To determine the kind of representations the children are using, we need to know the probability of giving correct responses by chance. For this, we need to know the total number of potential items that the participants could sample from. The next step then is to look at breakfast variety.

From the breakfast diaries for each child we determined the number of different food and drink items that were consumed per week and the number of different items that the child was recorded as consuming at breakfast altogether. These scores are shown separately for the Nursery and Home groups in table 2. We also noted for each child the item which was the most frequently consumed over the period logged.

Insert TABLE 2 about here

Looking at table 2, clear differences exist between the samples. For the Nursery children, the total variety of food items was limited to three, with the number of options provided by the Nursery being two within any week. The Home sample

consumed over four times as many different food items as the nursery children. The minimum amount of choice for this group was three in any week. Thus, there was no overlap between the two groups in food variety. For drink items, choice was very limited for both samples of children.

What does this tell us about the scores for producing the most recent breakfast items (see Table 1)? Looking first at the Home sample, the high number of correct food answers to the specific question cannot be accounted for by using a simple schematic model of breakfast. We rule out schema access in this condition on two counts. Firstly, given the high variety of breakfast food items for the Home sample (an average of 13 different types per child), the probability of getting this score by chance is very low, as random sampling would predict a less than 8 percent chance of getting the correct answer, when in actual fact, 67 percent of the children in this group were correct. Suppose that we take a conservative figure of assuming that the children were guessing what food they had for breakfast from the pool of 4 items from the current week. We would then expect that less than 4/15 children would be correct by chance compared with the 10 correct we found. This conservative estimate gives a one-sample χ^2 of 12.27 ($p<0.001$, two-tailed). This argues against an explanation of the performance of the Home group based on sampling from a schema that has no biases. In comparison, the Nursery children were not correct more often than would be expected by chance, one third of them being correct, with an average choice of three items. This is consistent with these children sampling at random from a breakfast schema.

A piece of evidence which rules out an explanation based on a schema with modifiable links is that the high number of correct responses produced in this sample was not accompanied by a frequency bias. In fact, only one of the correct food responses was also the most frequently consumed item for that child. Given this overall pattern of results for our Home sample, we conclude that children in the

Home sample were in general using a record of their morning's breakfast, but children in the Nursery sample were usually not. A possible explanation for this difference between samples is variety of choice of food. We hypothesise that when recalling the food they had that morning children with a higher number of breakfast options are more likely to use a specific record than are children who only have very few options.

One question outstanding is why the Home sample of children were still poor at remembering what they had to drink. Unlike food items, drink items vary only minimally in all cases. Therefore, it looks as if drink items are not encoded because drink variety is low. If this is the case, then while children with substantial variety in their food choice do have a breakfast record, there is no specific representation of drink within the record and so they still need to default to schema sampling when it comes to trying to remember what they had to drink. For drink, the scores in both Home and Nursery groups are most compatible with a schema model which has frequency biases, because 10 of the 11 correct drink answers to the specific question were also the most commonly consumed breakfast drink. Use of general knowledge is ruled out since all the errors were legal. Thus, if the school options were restricted to milk or water the children never responded with “juice”.

However, these conclusions are based on the results of a single study involving small numbers. In addition, breakfast variety confounds with where the breakfast was eaten. Therefore, the second study specifically examines the effect of breakfast variety on young children’s memory of their morning’s breakfast when it is eaten at home. The failure to remember breakfast items by young children could be due to a retrieval rather than an encoding problem. To investigate this possibility the second study also aims to uncover whether young children’s scores can be improved by

using directive questions to provide them with the best opportunity to retrieve any available specific memory that they may have of the breakfast event.

STUDY 2

The results of Study One suggested that young children who remembered what they had to eat for breakfast were accustomed to a fair amount of breakfast variety. However, children with only limited choice appeared to be relying on a schema in giving their answers about their morning's breakfast. If having little variety prevents subsequent recall of specific breakfast items, does this mean that no breakfast records have been laid down? An alternative explanation is that children with little breakfast variety have a record, but have difficulty retrieving it for some reason. Wilkinson (1988b) found that pre-schoolers improved their recall of an event when given non-leading directive questions about additional details. Other researchers have reported similar findings (e.g. Hudson & Nelson, 1986, Pillemer et al, 1988). Such directive questioning appears to provide young children with a retrieval strategy for the target information. As the results from Study One are based on very narrowly focused and specific questions about what was consumed at breakfast, perhaps the results are an underestimate of what the children could have produced if they had been cued with questions about other details surrounding the event of breakfast time, such as questions about who the children were sitting next to and who had provided the breakfast.

However, there are two pieces of evidence which suggest that retrieval failure is unlikely to account for the findings in Study One. The first is that, even when children with greater food variety recalled the food item correctly, they still failed to recall drink items correctly. If these children are basing all their answers on information from their morning's breakfast record, it is difficult to explain why they get food correct but drink wrong if errors are due to retrieval failures alone. The

second argument is that if children were simply having difficulty in accessing a record, then one might have expected 'low variable' participants to have refrained from giving any answer at all. However, fewer than 20% of responses were null. Most failures were due to participants giving an answer which was a breakfast item that they might have on other mornings, but which they had not consumed on that particular morning, looking like schema sampling. Note that all the incorrect responses were appropriate for that child. For example, no child responded "egg" if they never actually had egg for breakfast.

Study Two was designed, firstly, to add further data which could test the variety hypothesis and, secondly, to try to resolve the question as to what kind of representation the children who are making errors are using. In order to rule out a retrieval failure account, in study 2, when children could not produce answers initially, they were always probed with further questions to lead them back to the event itself. Recalling other details about the breakfast event should have a facilitatory effect on children's ability to correctly recall what they had eaten, even when their breakfast variety was low. In addition, we questioned the children on a number of days, to see whether the questioning influenced the way in which the children encoded breakfast.

METHOD:

Participants:

Originally, 25 three- and four-year-olds (12 girls and 13 boys, mean age = 3-9, range 3-1 to 4-1), none of who had taken part in Study One, were volunteered by their parents for this study. All the children spoke English as a first language. The children all ate breakfast at home. Thirteen parents had responded to advertisements displayed in a children's 'fun crèche' and in nursery schools in North London. One

was recruited at a parent and child group in Central London and 11 were volunteered through nursery schools. Breakfast diaries were given to parents and teachers of the participants recruited at nursery school and, for the remaining children, parents were asked on the days of the interviews, in the child's absence, what their child had consumed for breakfast that morning and whether their answers about other details of the breakfast event were correct or not. After the interviews had been completed, the parents were also asked to report generally about what their children normally have and do at breakfast time.

By the end of the study, one child had withdrawn, two children were excluded from the analysis due to parents not keeping diaries up to date and a further child was excluded because it was discovered that she always had the same drink and often failed to have anything to eat for breakfast. This left us with data for 21 children altogether in our final sample. Of this final sample, 11 children were interviewed in their homes and 10 children were seen in a quiet and familiar area of their nursery school.

On the basis of the diaries and parental reports, the variety of breakfast food options were determined for each child and they were then divided into two groups: Nine children were in the 'low variety' group (2-3 food items) and twelve were in the 'high variety' group (4-5 items per week, 6+ items overall).

Procedure:

As an additional procedure, in this study children were interviewed repeatedly. Half the children were asked about breakfast on five to seven different days (n=11) and the other children (n=10) were only asked about breakfast on the final day of interviewing, with previous interviews involving questions about daily events other than breakfast. We ran the procedure in this way to see if there was an effect of being questioned about breakfast on recall of breakfast on subsequent days. We

speculated that if the problem for low variety breakfast was an encoding one, then repeated questioning about breakfast on different days may encourage these children to regard breakfast food as important and to encode it in the record. In this case, we would expect to see children with low variety breakfast producing more accurate recall in later interviews compared with initial interviews.

For the first interview, the interviewer (CS) spent a few minutes establishing rapport with the child as in Study One. For each interview, the children were seen individually by the same interviewer and all children were interviewed between three to six hours after their breakfast. The child was then asked the same specific question that was asked in Study One: “When you got up this morning, what did you have for your breakfast?” If a child failed to respond initially to this question or said, "I don't know", the interviewer asked further directive questions to see whether the child could recall other details surrounding that day’s breakfast as potential cues to what they consumed. These directive questions were of the following type.

"What did you do first after you got up, what next... etc"?"
“Did you get dressed? Where did you get dressed? What did you do next?
"What were you doing whilst eating breakfast this morning?"
"Where did you sit?"
"Who gave it to you?"
"Who else had breakfast with you?"
“What colour was the dish/cup you ate/drank out of?

Finally, after the child had attempted to answer the directive questions, they were then asked again the standard question(s), "What did you have for breakfast this morning?", “What did you have to drink?”

RESULTS:

a) Correct recall as a function of breakfast variety

The two groups differ only in their breakfast food variety because, as in Study One, drink variety is always low.

Drink: Two children (both with low variety food) had no variety in their drink items and are excluded from the drink analyses. Since drink variety was low, we expected correct drink recall to be poor. In fact, correct drink scores are higher than in Study One. Correct percentage drink scores were 63% for the single interview and as high as 78% for the means of the multiple interviews. However, the drink answers contain many more high frequency items than food answers. In fact, 42% of correct drink responses in this sample were for drinks that were taken at breakfast most frequently and for 14 of the 19 participants there was a clear favourite or common drink item that they would most likely have for breakfast. Therefore, the recall of correct answers for drink is compatible with a schema model where links to items are strengthened each time they occur, giving rise to frequency biases as well as recency biases.

Food:

There is a breakfast variety effect in the recall of food items. From the proportion of correct scores in the single interviews, low variety yielded only 44% correct (a figure consistent with random sampling from 2-3 options) and from the higher variety group all but one child answered correctly. The sample size is small, but difference reached statistical significance *(Fisher exact statistic: p= 0.046).*

Taking together the scores for all participants (low variety = 9, high variety = 12), which includes both the scores for the eleven children who were questioned about

breakfast on multiple days and the single trial scores for the ten children questioned about breakfast once, percentage scores for answers for uncued recall (before directive questions) are shown in figure 2.

Insert FIGURE 2 about here

It is clear from figure 2 that there was already a significant effect of variety on correct food answers at free recall. We looked at the effect of variety on correct scores only for those children who had several breakfast interviews (n=11) by taking the percent correct score for each child in the two groups. This effect was found to be significant (*Levine Test for homogeneity of variance, $F=5.9$, $p<0.05$*: *t (unequal variances: 7.15) $=3.86$, $p<0.01$;*). Notice that there is only one incorrect answer at uncued recall (a low variety breakfast child), with approximately three quarters of the low variety children making no response to the initial DID question. The question as to whether those children in Study Two with low variety do have retrieval difficulties can be answered by looking at whether there were any improvements in recall from these children after they were asked the directive questions. These questions should increase the likelihood of retrieving the memory record of breakfast-time and, if the food items are coded in these records, increase the proportion of correct responses.

b) Effects of directive questioning on recall

Drink: There were no significant effects of cuing on the accuracy of drink recall in either group. The only changes were moves from null responses to actual answers. Prior to cuing, the 19 participants gave 10 correct responses and 2 incorrect ones leaving 7 null responses. Following directive questioning, the remaining seven

children gave 2 correct and 2 incorrect responses with 3 children still declining to respond. The ratio of correct to incorrect responses for drink does not change significantly and the data is consistent with a variety of models, including sampling from a schema with frequency and recency “biases." Note that, as in Study 1, all the errors were legal, thereby ruling out the use of a general semantic net in generating responses.

Food: In the breakfast interviews, on trials where children gave an answer (correct or incorrect) before cueing (26% for ‘low’ and 63% for ‘high’), directive questions were not asked. Taking those children who had several interviews (n=11), the average number of trials per child that were cued were 5 for the ‘low’ group and 2.7 for the ‘high’ group. Figure 3 looks at the effects of directive questioning: It presents percentage scores (correct, incorrect and null) at cued recall for those trials (multiple and single interviews inclusive) for which the children failed to give any answer to the initial question.

Insert FIGURE 3 about here

Figure 3 shows that after cuing, whilst the null category has been virtually eliminated, there are many additional incorrect answers for the low variety group. In fact, more than half of the cued trials for the low group were incorrect, with three of the four children who were repeatedly interviewed still making errors and two children who had a single interview making errors, even after directive questions. Performance after cuing for this group was therefore, at chance level.

This contrasts with the high variety group who showed almost perfect food recall after cuing with only one error from 18 trials cued for this group from a three-year

old boy who was successful on 6 other trials. Thus the effect of variety persisted even after cuing and was found to be statistically significant as shown by comparing percentage scores for the children who had several interviews on an independent t-test *(t (8) = 4.14, p<0.001)*. Thus, it can be seen that directive questioning only benefits children with high variety. We conclude that the directive questioning enables all children to reach the memory record of breakfast-time, but that children in the low variety group have failed to encode the food item in that record.

One outstanding question is the contrast between the high number of scores in the null category prior to cuing in this study and the low percentage of null scores in Study One. Examination of the interview protocols in Study One showed that this difference can be accounted for by the fact that, even without the explicit directive questioning manipulation in Study One, the interviewer often provided such cues to children who appeared to be struggling to find an initial response. This cuing occurred spontaneously as part of an attempt to communicate effectively to the young children and to make sure that they produced their best. Note that the interviewer did not see the breakfast diaries until after the interviews and so could not provide the children with correct feedback as a natural closure to the interview. Therefore, further questions were a way of avoiding a rather abrupt ending to some of the interviews in Study One. However, the interpretation of the results is the same for both Study One and Study Two: children with low variety breakfast in general have no specific memory of their breakfast food but must rely on sampling from a schema to produce an answer.

c) Recall of other breakfast details following directive questions

The above results have shown that children with low variety of food options are unable to correctly recall what they had for breakfast, even after directive questions. However, how did these children cope with the directive questions? What was immediately apparent was that, irrespective of variety, children welcomed these

additional questions and provided answers to them. For the children seen at nursery school, the parents seldom provided enough information in the diaries for the interviewer to know whether the answers given were accurate or not. However, for children seen at home, the interviewer asked the parents directly whether the child's answers were, first of all, accurate and secondly, whether these details were true of all breakfast occasions or whether and how these features varied. One important observation was that no parent ever disagreed with anything that the child said. Therefore, if we can rely on parental confirmations as being bias free, it looks as if even low food variety children were not making errors for other aspects of the breakfast event. Of the 11 children seen at home, there were six children whose answers to the directive questions satisfied both criteria of being, a) true of that morning's breakfast and b) not always true of that child's previous breakfasts.

Presented below are dialogues taken from interviews with two children who had low variety food and drink options for breakfast. These children's answers demonstrate that they were correctly recalling details from the morning's breakfast even though they incorrectly recalled what they ate and/or drank.

Participant A (child's responses shown in italics):
What did you have for breakfast this morning then?
I forgot.
Oh, go on, have a think.
No I don't know.
Who gave you breakfast this morning? Was it mummy or daddy?
Daddy and mummy. They both did.

(This was a specific memory as breakfast was usually served by either Mummy or Daddy and was only occasionally served by both parents.)

So what did you have for your breakfast?
I had porridge.
(This was incorrect.)
What did you have to drink?
Water.
(This was incorrect.)
Did you have your water in a cup or a glass?
In a cup.
Which cup did you have?
The Thomas cup.
Is that the cup you always have at breakfast?
No.....I have it in different cups.

(This answer was confirmed to be correct: the child did have a selection of cups to choose from and he had drunk from the 'Thomas' cup that morning even though it was not the child's most favourite cup. The child remembered the cup he had drunk from but incorrectly recalled what he had been drinking.)

Participant B:
...and who had breakfast with you today?
Mummy and Luis (brother).

(His little brother had sat down for breakfast today**,** but he did not join in on those mornings when he was still sleeping. Sometimes mummy and/or daddy has breakfast at the same time, but they had not that morning and the child had appropriately excluded any mention of his father.)

Was Luis a good boy?
He ate up some of his Cheerios and not the rest.

(Mother confirmed that Luis had tried Cheerios that morning and did not like them very much and so had refused to eat them all.)

He doesn't eat as much as you because he is only little, isn't he? What about mummy? Did you have a chat with mummy at breakfast?
Yes.
Did you?
So did you get dressed first or did you get dressed after breakfast?
After breakfast.

(Again, mother claimed the child was correct despite the fact that on some mornings he gets dressed before breakfast. This child had 'low variable' breakfast and recalled what he had to eat and drink incorrectly.)

There were similar dialogues for four other children who remembered the surrounding details of their breakfast. This anecdotal data suggests that the recall problem for children with low variety breakfast was restricted to what they had to eat and drink. They had no trouble in correctly recalling other specific details surrounding their morning's breakfast. It looks as if these children do have a specific record of breakfast which contains specific information about this particular mealtime. However, the meal itself has not been encoded. In no case did the parent correct what the children said apart from the food and drink errors.

c) Interviewing about breakfast on successive days

So far, it has been shown from mean scores that children with low breakfast variety do not appear to be using a record when recalling what they had to eat or drink for breakfast. However, mean scores may obscure any changes that could have occurred across interviews for those children who were interviewed several times.

More specifically, the question is, for children with low variety breakfast, does having the experience of talking about breakfast increase the chance that subsequent breakfast food will get encoded into a record? The effects of multiple interviewing are shown in figure 4. In this figure, the mean correct food scores across interviews (including the directive questions) for children who were interviewed about breakfast on several days are shown as a function of variety.

Insert FIGURE 4 about here

It is clear that questioning across several days had no effects. Children who were questioned about breakfast on different days were consistent in their scores. Spearman correlations comparing mean correct scores by interview showed no relationship between score and interview order *(food: $r=0.056$, $p=0.91$, ns; drink: $r=0.288$, $p=0.53$, ns).* In addition, children who were asked about their breakfast by the interviewer on a number of occasions were not more likely to answer correctly at the final interview than children only asked about breakfast once *(food: $\chi^2=0.023$, $p=0.92$, ns; drink: $\chi^2=0.212$, $p=0.35$, $N=11$, ns)*.

Therefore, there is no evidence to suggest that children who do not encode what they are having for breakfast are any more likely to do so as a result of receiving prior questioning about breakfast. How might this be explained? One would certainly expect to find some improvement in an equivalent situation with adults. It was not the case that the children had forgotten about the interviews. Indeed, by the end of the testing period, some of the children who were repeatedly questioned would run up to the experimenter when they saw her at school and spontaneously tell her what they had for breakfast. We can only conclude that at breakfast time, whether or not

there was any prospective memory for this interview, the children did not specifically prepare for it.

Whilst the findings of the present study indicate that the problem for children who have little variety is that they are not encoding the information about what they are eating or drinking, all the interviews in both the present study and for Study One took place at least two hours (usually more) after the children had finished eating it and often after another meal had been taken since breakfast. Another possibility then, is that the children who could not recall their breakfast later in the day would be able to do so if asked earlier. If the young children with little variety can remember what they had straight after breakfast, then the present results would be seen as showing that the low variety children have more difficulty retrieving the information after a delay. Therefore, in the next study, young children were asked the breakfast questions as soon as possible after finishing the meal.

STUDY 3

METHOD:

Participants:

Two nursery schools in North London volunteered to take part. Initially we had set out to get a group of young children who had low breakfast variety. However, we ended up with a mixed group.

Seventeen children of three- and four- years of age (14 girls and 3 boys; mean age: 3-9, range 3-1 to 4-9) took part in the study, but one child was excluded from the analyses because she ate exactly the same breakfast item over the three weeks recorded in her breakfast dairy. Thus there were 16 children in the final sample, but

data were collected for 15 children for Immediate Recall (as one child was unwell over this period of the investigation). Data for 10 of the children were also collected to get Delayed Recall measures (see procedure for details). All the children spoke English fluently (one child was bilingual). The nursery schools involved did not provide breakfast and so all children ate their breakfast at home. Parents either kept a breakfast diary for their child for approximately 3 weeks leading up to the interviews or they filled out a questionnaire which asked about the kinds of items their child had for breakfast as well as which breakfasts were popular or most common and the variety of options offered.

From the diaries and questionnaires, it was established that five of the children were getting a high number of food options (at least 6 different varieties of breakfast) and eleven children were getting little variety (an average of 3 food items). As with Studies One and Two, none of the children were getting much variety for drink, with 7 children getting no drink variety at all. Subsequent reference to drink recall thus only applies to a group of 8 children.

Procedure:

The main difference between this study and the two previous ones was that children in the present study were asked about what they had for breakfast as soon as was possible after completion of breakfast. This interview is subsequently referred to as Immediate Recall (as opposed to the usual Delayed Recall). Results were obtained for 15 children at Immediate Recall (10 low and 5 high food variety).

Immediate Recall involved each child being asked about their breakfast within half an hour of having finished it. Three interviewers were involved in Immediate Recall. Two of them were already familiar to the children because they had a child of their own at the different nursery schools. The third interviewer was only involved with the telephone interviews, which involved the option of the child only

communicating indirectly with the interviewer via conversation with the parent (see details of 'phone home' procedure below).

Each child was asked what they had just had for their breakfast on repeated mornings over a three-week period. Two methods were used:

Phone home: involved an interviewer (CS) telephoning the parent minutes after the child's breakfast. Parents were asked to inform us of the time to make the phone call and then the interviewer would check that breakfast had been eaten. At this time, either the parent asked the child what they had just eaten and drunk for breakfast that morning or, if the child was happy to do so, the child was asked to tell the interviewer themselves over the telephone. The parents were prepared for the interviewer to call on any morning over this period and they had agreed to ask the child the question in its pure form, without giving any help or cues of either a verbal or non-verbal nature. The parent reported back to the interviewer what the child had actually had for breakfast that day, as well as the child's answer, if the child had not given their answer already over the telephone.

Nursery arrival: involved an interviewer directly asking the child what they had eaten and drunk for breakfast that morning as they were arriving at nursery school. Then, once the parent had dropped the child off at nursery school, s/he reported back to the interviewer what the child had actually had for breakfast that morning.

During the study it was discovered that, although all parents were aware that the study involved early morning interviews, some of the participants were quite difficult to contact, whilst others were fairly easy to reach during the early morning. This meant that there was a lot of variety in the number of interviews given to the participants in this study, ranging from one interview (one child who went on

vacation after the first interview) to six interviews maximum. (Mean number of interviews = 3.3).

Finally, in order to add to the data from Studies One and Two, we aimed to collect Delayed Recall scores from these same participants on another day. We were able to do this for 5 of the high variety and 5 of the low variety children in this study. For these children, on a day when they were not required to produce Immediate Recall of their breakfast, they were instead asked the memory question a few hours after breakfast, just as in the previous studies.

RESULTS:

Effects of breakfast variety on immediate recall

All children had low variety drink, so the analysis for Immediate Recall looks at food answers alone, as a function of breakfast food variety. The data are presented in Table 3. They show that there is a clear difference between children of low variety and children of high variety on the first interview. Consistent with our data from the previous two studies, the 5 children with high food variety breakfast all provided completely correct recall of what they had to eat for breakfast. However, for the low food variety children, only 4 out of 10 were completely correct. A comparison of the answers of the two groups at the first interview was significant at p=0.044 on the Fisher Test.

Insert TABLE 3 about here

Taking all the interviews, the low variety children had just over 50 percent of answers correct (16 out of 30 observations). Since they were only getting 2 or 3

different food options, their correct answers were around chance level, even though they had only just finished eating their breakfast. All of the high variety children correctly remembered their breakfast food in all interviews.

Delayed Recall. For the delayed recall trial, although dealing with small numbers in this study (Low = 5, Hi = 5), the findings were consistent with the pattern found in the first two studies: Three of the 5 young children who had low variety breakfasts recalled the food item correctly later on that day, whereas all 5 of the high variety children answered correctly later in the day. As with the first two studies all the errors made were legal.

An overall result: Combined results for Studies One, Two and Three:

Finally, as an even more powerful analysis of the consistent variety effect shown in this investigation, results across the three studies are combined to examine the effects of variety on answers given by three- and four-year old children to a specific question about what was eaten for breakfast earlier in the day. Overall there were 26 children with a low variety of breakfasts and 32 with a high variety. The results are shown in figure 5. All scores are for food items at delayed recall with only the first interview included where participants received multiple interviews

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Insert FIGURE 5 about here

The combined effect of all three studies shows a clear and stable effect of variety on recall of food items. This difference between low and high variety in the

proportions of 'correct', 'incorrect' and 'no response' food scores, produced in response to a specific question is highly significant $(\chi^2 (2)=14.06, p<0.001)$.

GENERAL DISCUSSION

One of the strengths of this set of studies may also be considered one of its limitations. We wanted to rule out alternative explanations leading us to design second and third studies so that our findings could be tested with more rigour. We were able to include a variety of participant sources and use quite a range of interview methods in doing this. One disadvantage to this methodological richness is that without homogeneity in our samples and procedures, we might have lost the rigour of findings we were aiming to achieve.

To start with, we confirmed our intuitions that adults have no difficulty verbalising with confidence the details of the breakfast that was consumed on that day. We set out to examine young children's answers to the same question. We have considered two general kinds of memory representation underlying their answers. One can be seen within a schema framework, where individual events are not clearly differentiated and the other involves individual events having separate representations. We used the 'Headed Records' framework (Morton et al, 1985) as the example of the latter type.

From our three studies, there is good evidence to show that children of three and four years of age have a specific record of their morning's breakfast-time, which, for children with a high variety of choice, included information about food. Children who had only two or three options made the correct response only at chance level. Therefore, it looked as if these children were using a schema to select an answer.

An alternative is that these findings were due to retrieval factors rather than encoding differences between the groups. Errors might have been due to difficulties children had getting back to the mundane details of breakfast when asked about it later in the day and after eating another meal, lunch, the details of which would likely have been more interesting and accessible to them than their morning's breakfast when their breakfast variety is limited.

In Study Two we aimed to give low variety breakfast children a better chance of retrieving answers by using Wilkinson's (1988) method of systematic directive questioning. Those children who gave no answer to the initial food question were asked a set of questions about events leading up to breakfast and about other details of their breakfast-time before asking what they had eaten and drunk. The rationale behind directive questioning is that it provides young children with a retrieval path to counter their lack of suitable retrieval strategies. In Headed Record terms, the directive questions enable the children to form a suitable 'Description' which can match information in the 'Heading'. Once a match is formed, there is automatic retrieval of the associated Record. (For a more thorough account of the structures and retrieval cycles of Headed records, see Morton et al., 1985).

In Study Two, the children with little breakfast variety did not benefit at all from the directive questioning. For these children, whilst the number of responses increased as a result of the questioning, they were still just as likely to produce incorrect answers as correct ones. However, the directive questions benefited children with more breakfast options. More than a third of these children shifted from giving no response at all to giving the correct one, indicating that the directive questions had enabled them to access the appropriate record. For children with little variety of food, it looks as if the information about the food does not get encoded in the record of breakfast-time.

What produces error with directive questioning of the low variety children is defaulting to schema sampling when the required information is not encoded in the event record and there is social pressure to produce an answer. In fact, there is evidence that children are less likely to say 'don't know' when they are expected to know all the answers (Howie & Dowd, 1996). Therefore, if put under more pressure through additional questions, young children might be more inclined to make a guess when they do not know the answer. Wilkinson (1988a; see also Morton, 1990) found a massive increase in recalling an event that occurred in school the previous day following directive questioning, with no errors. The only error for the high variety breakfast group in our Study Two was at the first interview for one child who answered correctly on all the other six occasions.

Another feature of Study Two was that some of the children were asked the breakfast question on seven successive days. We could find no significant effect of this repeated questioning. It seems that three- and four-year-olds cannot anticipate the breakfast question they are going to be asked later in the day and then memorise the breakfast they are eating.

In the first two studies, questions were asked about breakfast two hours or more later. The question remained, could we really rule out retrieval errors in accounting for our pattern of findings? Accordingly, we asked the children the specific questions only minutes after they had finished eating their breakfast. Children with little breakfast variety were still at chance in attempting to recall what they had been eating only a brief while earlier.

Despite the substantial evidence of the variety effect on memory of what was consumed at breakfast, we were able to establish from the transcriptions and from parental reports that, irrespective of the breakfast variety, children did have a specific memory of the events surrounding that morning's breakfast. One child

remembered what cup he drank out of even though he incorrectly answered what he had been drinking from it. Some children were able to remember what their siblings and other family members were eating and still made a mistake in recalling what they themselves were eating.

These results indicate that three- and four-year-olds do have a specific memory of a routine event such as breakfast. However, what we are seeing is that not all aspects of the event get encoded as part of the record. Working memory capacity is limited, particularly for young children. Therefore, like adults, children are only going to attend to and encode the details which are of most interest to them. For children whose breakfast variety is limited to, say, one type of cereal versus another, the actual contents of the bowl will probably be of less interest than other information such as who else is eating with them. Therefore, what the young child is having for breakfast may not be processed properly in this case. Even for children with ample food variety, drink variety was limited and even these children did not appear to have processed the drink information.

An obvious question arising from this finding is to ask what can account for such an influence of breakfast variety? This effect warrants further investigation. One possibility is that gastronomic variety is related to socio-economic factors. This could imply several variables influencing children's attention to their breakfasts. In this research, we did not measure social class. However, it is likely, especially in studies two and three, that all the children we saw were from families of higher SES levels. Yet, the food variety effect remained.

Another plausible explanation might be to do with the centrality of mealtime and food choices in family conversations. There are contrasting ways in which food preferences are framed to children by parents with some adopting a more negotiated

approach, seeking children's input, and with others adopting a more regulated approach to set meals that resist variation (Thompson et al., 2016). It would be interesting to see how family approaches and conversational styles impact on the content of children's earliest memory records.

What might the child's representation of breakfast be in the case of high variety of food? Central is the idea that the child will previously have formed a schema of **Breakfast-time**. Within that schema will be information about what happens in general. The schema will serve to guide the child's behaviour and form the basis of a Record of the occasion, including a description of the breakfast meal. This will include information about food and drink. The food entry will be specific and explicit. However, for all children, the drink entry will be a pointer to the default breakfast schema. When the child comes to mention drink she will sample from that schema in the same way as she would if asked the more general DO question.

What about children with low food variety? The evidence we have presented indicates that they, too, have a **Breakfast-time** record, but that it contains no specific information about what was consumed.

We can now note again that, in Study Two, 74 percent of the initial responses to the food question by the Low variety group were of no reply. This could have been because the record was not accessed or that it was accessed, contained no information about food, and that the pragmatics of the situation did not require a response. In fact, we favour a mixture of these interpretations because of the data from the high variety children. On 18 occasions (37%) the latter children initially gave no reply to the food question. If we assume that this group always included food in their event record of **Breakfast-time,** the absence of response must have been because they could not access the record at that time. If there were no other differences between the groups, we can assume that on the same percent of the

occasions the low variety child could not access the record either. The remainder of the no response occasions for these children (around 37%) must have been when the low variety individual accessed the record and found no food there. For both groups there would be this same percentage who could not access the appropriate record at the time. Following the directive questions, all but two children in the high group consistently produced the correct response. We deduce, then, that most of the children in both groups would have located the **Breakfast-time** record at this time. However, the pragmatics and social demands of the situation would have changed by then, and children who had previously found no need to make a food response would now feel obliged to. They would, then, sample from the food schema. In this way we virtually eliminate the "no response" category and collect a lot of errors from the low variety group (see Figure 3).

We should reiterate that there is no question in our minds as to the centrality of schematic representations of repeated events. No child had any problem with producing answers to the DO question. More crucially, no child produced a response to the DO question or an incorrect response to the DID question which was fictitious. This could only mean that they were indeed sampling from a specifically **breakfast** schema and not a more general one, i.e. a semantic net. Four-year-olds, asked to name all the drinks they can think of, will invariably include drinks they do not have at breakfast time and these were not produced as error responses by our subjects.

We can now consider why Hudson and Nelson (1986) found that three- and four-year-olds were poor at answering specific questions about a repeated event? In the first study of the present investigation we showed that young children did understand the pragmatic differences between general and specific questions: They gave more examples of different types of breakfasts in response to “anything else?” prompts, when the question was asking “What do you have....?”, whereas most

refrained from giving more than one answer to the specific "What did you have....?." question. Perhaps Hudson and Nelson's results reflect this pragmatic knowledge rather than any poverty of specific memory compared with general memory in young children. We did not replicate Hudson and Nelson's finding of young children overusing the present tense. None of the children in the present investigation used inappropriate tense. The possible reason for this difference is the greater simplicity of the questions asked here compared with this earlier research study. Firstly, children in the present investigation did not need to provide whole sentences in their answers. In fact, single word answers such as 'crispies' or 'toast' were acceptable. Hudson and Nelson asked a much more complex question, "What happened when you had lunch at school today?", which did not easily allow the children to produce single word answers.

Our interpretation of the effects of breakfast variety on recall in the present investigation is that low variety makes the food and drink items of little interest to the young child who can spend time encoding other details of the broader breakfast event which will be more significant to them, such as the social context around the mealtime and drinking out of a special cup.

According to the schema confirmation-deployment model, new details would be considered atypical to the script and thus episodically encoded, leading to enhanced memory for the item (Brubacher et al, 2017). Similarly, Hudson et al (1992) summarise, "Very young children up to adults are better able to recall deviation episodes than episodes that closely follow a script." (p.483) and Danby, et al (2019) state "children were more accurate in their episodic reports when they experienced the low, compared to high, similarity event." (p1). All these authors have worked with novel situations with few repetitions and focus on types of activity rather than detail. The current research shows that the same type of conclusion can be reached in relation to memory of detail within a routine event. These results demonstrate an

aspect of event memory which has not been considered in previous studies. It seems that there is more than one representation available when we remember an event. A repeated event does not get lost forever within a general schema. At least for the remainder of that day, it remains separate in a specific representation. The present results show that even pre-schoolers have specific memories for a repeated event. Young children are forming event Records, just as adults do even if they sometimes may need more guidance when it comes to retrieving those records.

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The second author wishes to add:

Jacques never worked on Memory, so far as I know, but he would have been interested in this paper, because he was interested in and well read in all aspects of cognition. I met him around 1970 and spent the year 1974 to 1975 working in his unit in Paris. We were close friends thereafter. We never did any experimental work together, but we used to chew over a wide range of theoretical issues. One paper we did write together was on the relationship between biology and language, about which we argued furiously, with Jacques taking a more biological stance than me. We had reached stalemate on the n^{th} revision when Jacques said "Let's get Peter to arbitrate" – Peter Jusczyk, who was on a sabbatical in Jacques' lab. So, section by section Peter sorted the sense from the polemic while Jacques and I

alternately wriggled with embarrassment. And the paper was published and our friendship continued.

Jacques was an unfailingly kind and generous person and I miss him and his sage advice.

CAPTIONS FOR FIGURES

1. A schema for breakfast.
2. Study Two: Initial recall (before directive questions) of breakfast food.
3. Study Two: Recall of breakfast food following directive questions where the initial response was null.
4. Study Two: Lack of effect of repeated questioning about breakfast food over time.
5. Combined scores over the three studies of the effects of variety of food choice.

FIGURES

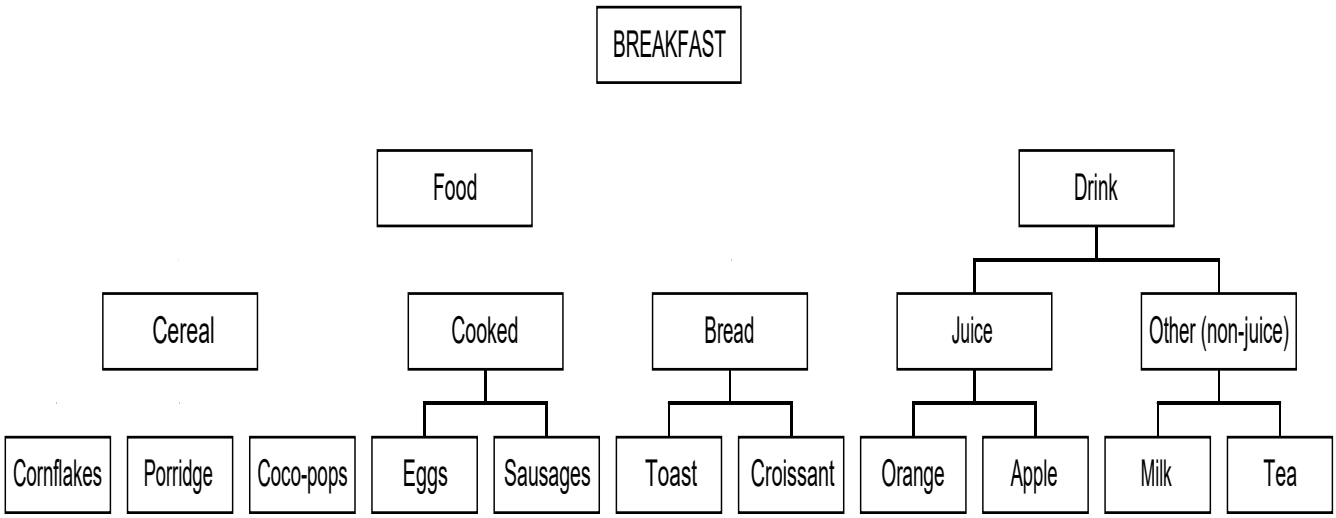


FIGURE 1: A Schema for Breakfast

FIGURE 2: Study Two - Initial recall (before directive questions) of breakfast food

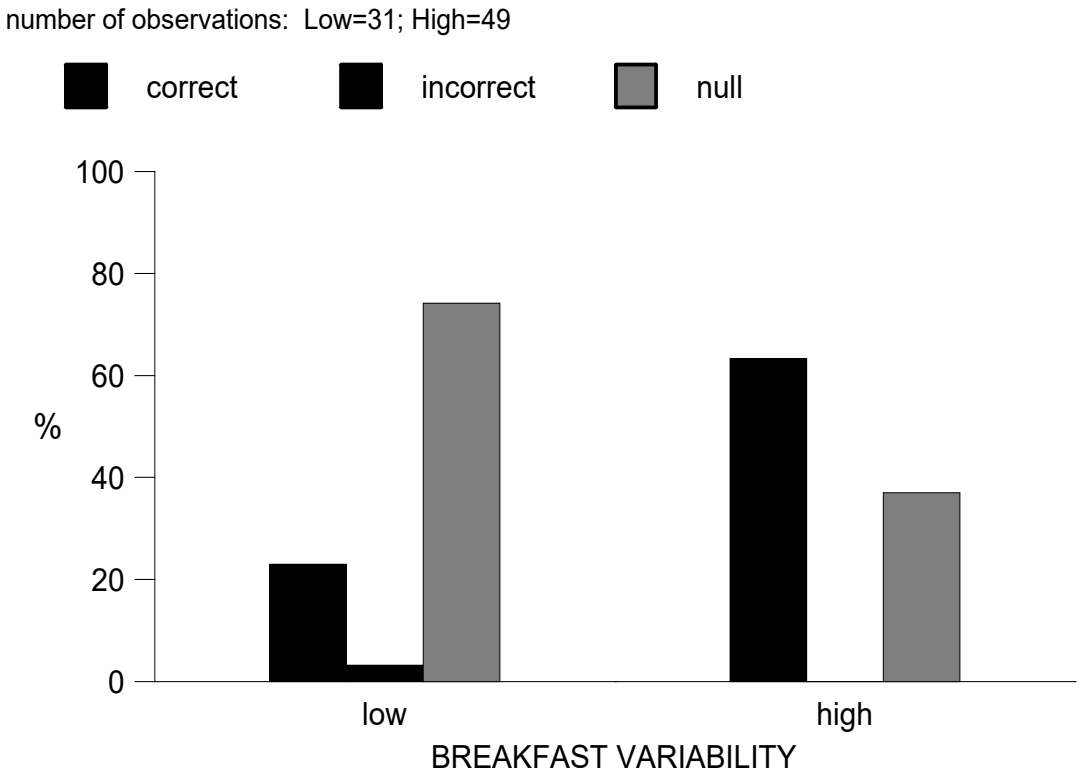


FIGURE 3: Study Two - Recall of breakfast food following directive questions where the initial response was null.

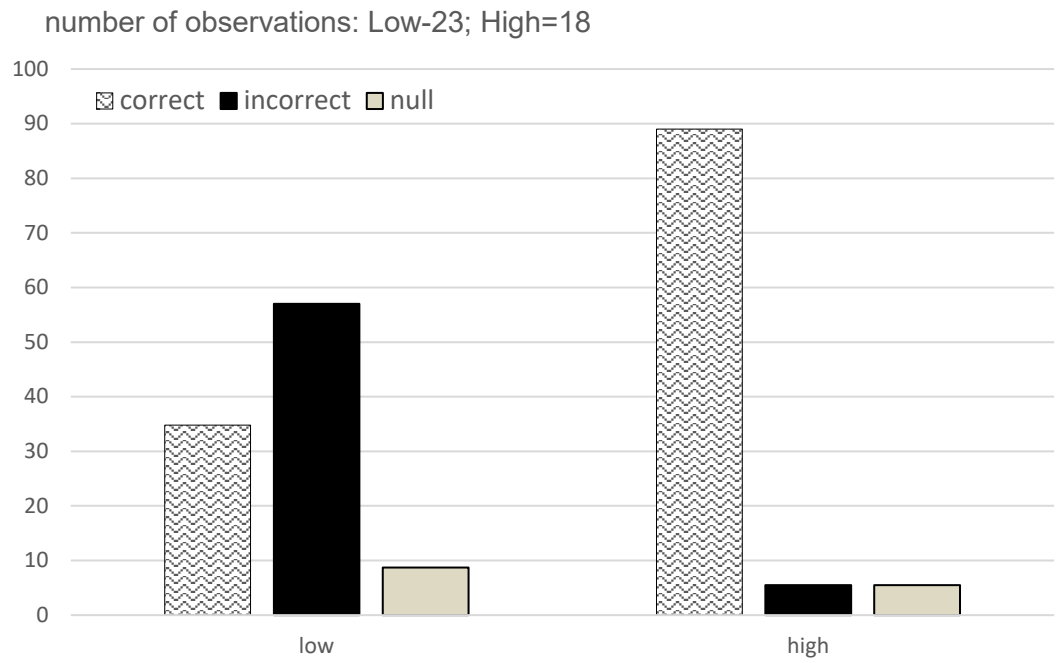


FIGURE 4: Study Two - Lack of effect of repeated questioning about breakfast food over time

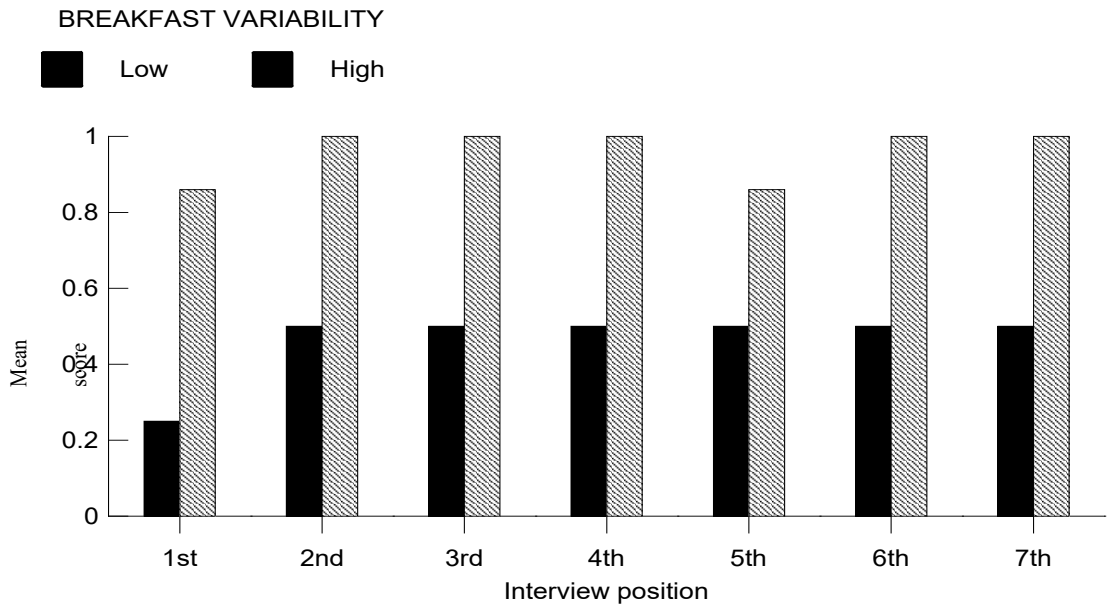
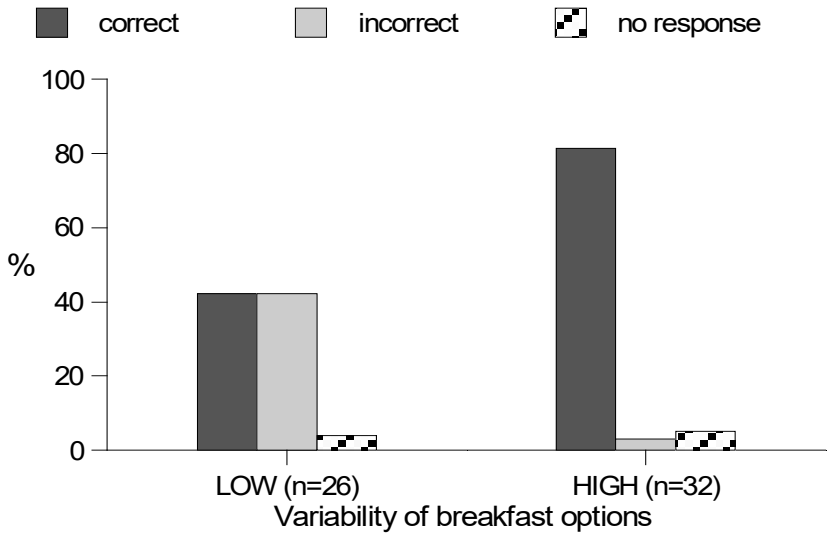


FIGURE 5: Combined scores over the three studies of the effects of variety of food choice



TABLES

	Correct	Incorrect
FOOD		
Home (n=15)	10	5
Nursery (n=12)	4	8
DRINK		
Home (n=15)	5	10
Nursery (n=9)	6	3

TABLE 1: Study One - Correct and Incorrect answers to DID question.

Participant group	Mean days recorded	FOOD		DRINK	
		Mean no. different items	Mean no. items every 5 days	Mean no. different items	Mean no. items every 5 days
Nursery	11 days	3	2	3	2
Home	24 days	13	4	5	2

TABLE 2: Study One – No. of different items per five day week and over full study.

Immediate Recall **FOOD items**	**First Interview**	**Overall scores**
LOW variety (n=10)	4 **(40%)**	total = 16 **(53%)** 30 observations
HIGH variety (n=5)	5 **(100%)**	Total = 19 **(100%)** 19 observations

TABLE 3: Study Three - Correct food answers at first Immediate Recall interview and Overall scores at Immediate recall, as a function of food variety.