

**Memory Problems at Work:
Their Range, Frequency and Severity**

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Memory Problems at Work: Their Range, Frequency and Severity

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This paper reports the results of two studies carried out on memory problems at work. The first study used a diary method to collect a corpus of memory problems. A taxonomy of memory problems was developed and implications for technological support for memory at work are discussed. The second study used a "Memory Lapse Questionnaire" to assess the relative frequencies and severities of various memory problems at work. The results of this questionnaire are reported and implications for the AIR project and its current programme of research are discussed.

INTRODUCTION

The aim of a research project at EuroPARC called "Activity-based Information Retrieval" (AIR) is to use technology to support human memory by increasing people's ability to recall or retrieve information relevant to their daily lives [Lamming & Newman, 1992]. The essential idea of this project is to automatically collect contextual information about human activities, and to use this contextual information to help the later recall of past activities. Although the AIR project is interested in the support of memory in many areas of human activity, a major focus has been on memory for work activities.

Very little, if any, research has been done on how memory is used at work. Yet if we are to build effective technological support for the workplace, it is important to know what kinds of memory problems people experience, how frequently different kinds of problems occur, and what kinds of consequences these problems can have. The two studies reported in this paper provide some preliminary data on the range, frequency and severity of various memory problems at work. The first study required people to write down their memory problems as they occurred. The second study used a questionnaire which asked people to rate the frequency and severity of various types of memory problems.

THE DIARY STUDY

A diary method is a good way of generating a corpus of naturally occurring memory problems. This method simply requires people to report any incident involving memory failure during the course of their daily activities. These reports can be in written form, or tape-recorded.

The advantage of diary methods is that they can provide a wide range of phenomena, often in rich detail. In this respect, diary studies have been quite successful in the field of human error [e.g., Norman, 1981; Reason and Mycielska, 1982]. In the field of memory, they are less common. This is unfortunate since a corpus of naturalistic data provides a good starting point for describing different classes of problems people tend to encounter.

Our aim was to construct a corpus of memory problems at work, and from this to develop a classification scheme. This taxonomy can then be used as a conceptual framework, describing the range of phenomena that we can expect to encounter. Without such a framework, it is possible that the technology we construct will become too narrowly focussed. A framework also allows us to ask how different categories of memory problems not previously considered might be supported, and to explore the range of possibilities.

Method

Memory problems were solicited at two institutions in Cambridge, England: Rank Xerox EuroPARC and the Medical Research Council Applied Psychology Unit (APU). About 30 people work at EuroPARC and about 70 at the APU. Both of these institutions are primarily research, as opposed to business, organisations. Instructions on reporting memory problems were given by hard copy to people at the APU, and by electronic mail to people at EuroPARC. A copy of the instructions distributed at the APU is shown in Appendix A.

The instructions encouraged people to jot down examples of various types of memory problems as they occurred at work. Several examples of the sorts of problems were given (e.g., difficulty in remembering: how to do something, where some object or information is, the names of places and/or people, etc.). Responses were collected over a period of about six weeks.

In addition, two people, one at each institution, carried around a portable microphone and audio tape recorder for about one week. They dictated their memory problems as they occurred, and the tapes were collected and then later transcribed.

The Corpus of Memory Problems

A total of 182 memory problems were collected; the great majority of these problems came from people at the APU. Several people at the APU generated many problems, while others generated only one or two. The two people who dictated rather than wrote their memory problems also generated a large number of them.

The problems collected covered a very wide range of memory problems at work, and the classification of the memory problems was a collaborative effort. Problems which were obviously similar in nature were grouped together. Other categories were more difficult to derive, but gradually a taxonomic scheme began to emerge as we considered the nature of the forgotten item, how the forgetting seemed to come about, and within what time frame the problem occurred. The scheme was developed with the realization that there are many different ways of approaching this type of classification

task. Where possible, the taxonomy was constructed in order to provide useful information for the types of research being carried out at EuroPARC in the context of the AIR project.

Problems were initially subdivided into three general classes: (I) retrospective memory problems, (II) prospective memory problems, and (III) action slips. Retrospective memory problems are those concerned with remembering past events or information acquired in the past. These sorts of problems include: forgetting where something was put, forgetting someone's name, forgetting a detail about a past event, and so on. Prospective memory problems are those concerned with a failure to remember to do something. These sorts of problems include: forgetting to post a letter, forgetting about a luncheon appointment, etc. Action slips are concerned with very short-term memory failures which cause problems for the actions currently being carried out. These sorts of problems include: forgetting what one is doing following an interruption, forgetting why one went upstairs, etc.

Retrospective memory problems (Class I) are divided into the following sub-categories:

- A. *Forgetting a person's name*— Forgetting someone's forename and/or surname. This includes situations both where the person is present and is not present.
- B. *Forgetting a word*— Forgetting a word with a known meaning.
- C. *Forgetting an item in a list*— Forgetting one of several items in a list.
- D. *Forgetting a past action or event*— Problems where the occurrence of an event or having done an action is completely forgotten.
- E. *Forgetting some aspect of past actions or events*— Forgetting partial information about a past action or event. Forgetting the source of learning something is included in this category.
- F. *Location lapses*— Forgetting where some object (physical or electronic) was put or last seen. (Note: these could also be in the above category, but are included as a separate category because of the frequency of this particular sort of problem.)
- G. *Procedural lapses*— Forgetting how to perform some action or series of actions.

Prospective memory problems (Class II) are not further subdivided; however, it is clear that they can be organised along a continuum. At one end of the continuum, the plans that are forgotten are quite general and amount to statements about planning to do something sometime that week or sometime in the near future. At the other end of the continuum are plans which depend on being enacted in more specific contexts: on next seeing a particular person, on next performing a particular activity, when next in a specific place, or at a pre-specified time. In between are plans which can be described as being somewhat time-constrained or constrained to certain contexts, but still retaining some degree of flexibility about when they can be performed.

Action slips (Class III) are divided into the following sub-categories:

- A. *Interrupted actions*— Failures to complete an action because of an external interruption or distraction by internal thoughts.

- B. *Incomplete or inadequate plans*— Failures to successfully carry out an action or series of actions due to poor planning.
- C. *Loss of intention during action*— Forgetting why something is being done or what the goal of an action is.
- D. *Mode errors*— Errors that result from mis-classifying the current situation and thus performing actions inappropriate for that situation.
- E. *Capture errors*— Performing actions as a result of routine or habit rather than what actions are intended.

The entire corpus of memory problems, organised by the classification scheme described above, is included in Appendix B. Table 1 shows the number of problems collected in each of the categories and sub-categories, and includes for each category an example problem from the corpus.

Just under half the problems collected were retrospective memory problems (Class I). The most commonly reported problems were forgetting people's names, forgetting some aspect of past actions or events, and forgetting where something was put. Prospective memory problems (Class II) accounted for just under 30% of the total, while action slips (Class III) accounted for just over 20% of the total. The most commonly reported action slips involved inadequate plans or interrupted actions.

Implications for Technological Support

Although many other classification schemes are possible, the scheme used in this study was developed specifically with the AIR project in mind. It is helpful in outlining the range of memory problems which occur at work. Of particular relevance for the AIR project, however, is how technology might be used to support and perhaps ameliorate memory problems. The three distinct categories (retrospective, prospective, and action slips) of memory problems are conceptually very different, and thus suggest very different kinds of technological support.

While making inferences on the basis of frequency data from diary studies must be treated with caution, the data confirm the prevalence of retrospective memory problems. Problems in retrospective memory clearly suggest the need to preserve a record of past events, and to develop an effective retrieval system for these events. As the corpus shows, many of these problems are autobiographical: they involve personal episodes occurring during the course of daily life. These episodes include events like recalling whether one attended a particular meeting, who was there, and what was said. Capturing details of events such as these is a major emphasis in the AIR project [e.g., Eldridge, Lamming & Flynn, 1992; Lamming & Newman, 1992; Newman, Eldridge & Lamming, 1991]. Browsing information about such events may be helpful when retrospective memory fails.

Other retrospective memory problems are concerned with forgetting "facts", such as words or names. It is not clear that the AIR project has techniques to address these kinds of semantic memory problems. More specialised kinds of memory aids which focus on the content, rather than the context, of activities are probably required.

Table 1. The number of memory problems collected in the diary study.

| Category | Number | Example Problem |
|---|--------|---|
| I. Retrospective Memory Problems (n = 85) | | |
| A. Forgetting a person's name | 17 | Forgot the name of a friend's girlfriend. |
| B. Forgetting a word | 5 | I've just forgotten the word for "taking a responsibility". |
| C. Forgetting an item in a list | 3 | By the time I got to Tuesday no. 2, I couldn't remember what no. 3 was, although I knew there was something else. |
| D. Forgetting a past action or event | 14 | Forgot whether had introduced John to Peter. Was with both of them and asked them "Have I introduced you two?" |
| E. Forgetting some aspect of past actions or events | 18 | I "remembered" John Smith giving a talk about some aspect of memory from his book, when in fact I hadn't seen him do this at all—I'd only read the book. |
| F. Location lapses | 21 | Lost expenses claim form I was supposed to fill in. Hunted high and low. Then picked up a file I had to start work on and found it there. |
| G. Procedural lapses | 7 | Still can't remember how to read an emacs file into an email message. |
| II. Prospective Memory Problems (n = 53) | | |
| | 53 | Had to phone my doctor. Had intended to do this last week but never remembered. At last remembered, but number was engaged. Forgot to try again. |
| III. Action Slips (n = 44) | | |
| A. Interrupted actions | 12 | When I left the APU building, someone opened the door for me. I quickly walked out. The next morning I saw my "name-switch" said "IN". |
| B. Incomplete or inadequate plans | 17 | Wrote letter saying I would enclose a program for a meeting, and then sealed up the envelope, omitting the program. |
| C. Loss of intention during action | 5 | Going to get a book from the library, for instance, and on the way there, almost forgetting what I'm going there for. |
| D. Mode errors | 6 | My login name in Manchester is Smith and in Cambridge is Mary. Remembered to log in as Mary, but then used Manchester password. |
| E. Capture errors | 4 | Intended to print out document on Mac laser writer (in Mac room) on way out last night. Took disk with me, but left the building on automatic pilot without printing out. |

Prospective memory problems are also quite common, as is evident from the large number of these problems in the corpus. Technological support for this kind of problem must of necessity be very different. The fundamental problem of prospective memory is being cued to remember in the appropriate context. Thus the problem of prospective memory is mainly one of “remembering to remember” rather than a deliberate, unsuccessful attempt to remember, as in retrospective memory. This suggests technology which is able to take account of context and of people's plans, and can trigger reminding signals based on those contexts.

The range of problems in the prospective memory class suggests that a variety of different kinds of contexts may be used as appropriate “trigger conditions”. In some cases, these trigger conditions might be other people; for example, “The next time I see John Smith I must remember to tell him about X”. A system which detects the co-presence of John Smith could then automatically trigger a reminding signal to tell him about X. Similarly, time, place, and perhaps even an activity could trigger a reminder. AIR technology can detect many of these kinds of contexts and could thus provide a good starting point for the development of a system to support prospective memory. The development of one such system is now under way [Sellen & Lamming, 1992].

The third class of memory problems in the corpus is that of “Action Slips”. The majority of these kinds of lapses involve short term memory problems: getting distracted and thus being thrown temporarily “off course”, going somewhere and forgetting one’s original intention, doing actions inappropriate for the situation due to habit or due to temporarily mis-classifying the situation. Most of these problems are the result of inattention, either due to externally generated distracting events, or due to general “absent-mindedness”. On detection, many of the slips in the corpus seemed to require only a small amount of mental or physical effort in order to recover. Others can require more effort; for example, in one problem, pressing the wrong sequence of keys on the computer led to wasted time and effort for recovery. In other cases, poor planning or a failure to “think ahead” can result in the need to do considerable backtracking.

It is not clear how to defend against these problems which result from the moment to moment wandering of attention, and the many distractions which bombard us every day. Nor is it clear how technology might help overcome inadequate planning for often trivial daily events. One difficulty is that action slips themselves represent a broad spectrum of behaviour, and it is probably impossible to develop any kind of general technological system to guard against them.

THE QUESTIONNAIRE STUDY

The diary study was successful in helping to describe and characterise the range of different kinds of memory problems which occur at work. It was also useful in that the resulting taxonomy made some broad distinctions which have implications for the design of technology to support memory. Diary studies are useful in that they capture a wide variety of sample problems. However, the frequency with which different kinds of problems are reported in a diary study is not necessarily representative of the true frequency with which they occur. For example, memory problems might not always be recorded immediately. If some kinds of problems are more easily forgotten than

others, these may be under-represented. It may also be that some kinds of memory failures are not easily noticed, and these would also be under-represented. Another possibility is that problems which have more severe consequences would be more likely to be reported, and thus be over-represented.

Because of these potential sources of bias, estimating the frequency and severity of different categories of memory problems is difficult on the basis of diary data alone. For this reason, a self-report questionnaire was developed. It should be noted, however, that self-report questionnaires also have some methodological problems. The estimates of frequency and severity must be interpreted as estimates of *perceived* frequency and severity. However, there is no reason to believe that these perceptions do not accurately reflect the *relative* frequencies of various sorts of memory problem. It may also be the case that *perceiving* problems as being frequent may encourage people to seek technological support for these problems, even if the true frequency of such problems is quite low.

The Memory Lapse Questionnaire

The aim of the “Memory Lapse Questionnaire” was to provide quantitative information on the frequency and severity of the various types of memory problems collected in the diary study. The initial form of the questionnaire was designed to probe for the categories of memory problems found in the diary study. Some sub-categories were further sub-divided to reflect areas of particular relevance for the AIR project. In addition, the questionnaire was checked for completeness by referencing various other questionnaires concerning everyday memory problems [i.e., Broadbent, Cooper, Fitzgerald & Parkes, 1982; Herrmann and Neisser, 1978; Sunderland, Harris & Baddeley, 1983].

The questionnaire was pre-tested by distributing it in hard copy form at EuroPARC. People were asked to respond to the questionnaire and provide feedback on any difficulties they had in understanding the questions. Minor modifications were made, and the revised questionnaire was pilot tested by sending it by electronic mail to three people at a Rank Xerox site in Welwyn Garden City. The final version of the questionnaire was distributed by electronic mail to about 400 people at various Rank Xerox sites in Welwyn Garden City.

The final version of the questionnaire is shown in Appendix C. The questionnaire consisted of: a brief introduction, instructions for returning the responses (either by electronic mail or anonymously by hard-copy), and instructions for making frequency and severity ratings. In addition, respondents were asked to indicate their gender and age. A total of 21 questions was asked, and related questions were grouped together. The questionnaire took approximately 10-15 minutes to complete.

The frequency judgements were obtained using a 5-point rating scale, where each question was rated for the frequency of occurrence over the last six months. The points on the scale were named and defined as follows (note: the numbers were used for scoring the responses but were not presented in the questionnaire):

| | | |
|----------------|-----|---------------------------------|
| <i>Never</i> | (0) | never in the last six months |
| <i>Rarely</i> | (1) | less than monthly |
| <i>Monthly</i> | (2) | at least monthly but not weekly |
| <i>Weekly</i> | (3) | at least weekly but not daily |
| <i>Daily</i> | (4) | daily or more. |

After responding to each of the 21 questions, respondents were then asked to put an asterisk (*) next to those three problems that they considered to be the most problematic when they occurred. This severity rating was to be made independently of the frequency rating.

Results from the Questionnaire

Responses were received from 118 people; 90 were males and 22 were females (6 respondents did not indicate their gender). Their ages ranged from 17 to 57 years, with an average age for the males of 38.4 and for the females of 31.9.

Table 2 summarises the results from the questionnaire. The questions are listed in decreasing order of mean frequency rating (*Never* = 0, *Daily* = 4). The number of respondents indicating each question as severe is shown in the last column of Table 2.

One observation, and perhaps note of caution, is that those problems that are rated as fairly frequent also tend to be rated as quite severe. This relationship is shown by a significant positive correlation ($r = .97$, $t(19) = 19.40$, $p < .001$) between the frequency and the severity ratings. The degree to which frequency and severity were treated as distinguishable concepts is thus questionable. We suspect that people's perceptions of frequency and severity are indeed influenced by one another. If a problem tends to recur, people may be more sensitive to that kind of problem and thus tend to see it as more bothersome. Conversely, problems which have severe consequences may be more likely to be remembered, and thus the frequency with which they occur overestimated.

Another observation is that the highest mean frequency ratings for any one question are just over 2.0, indicating that even the most frequent memory problems were perceived as occurring only monthly. This has implications for assessing the utility of any type of technological support for memory in a real work setting. If the occurrence of any one particular type of problem is in reality this low, assessing the utility of any particular technique over the general population will generate very few data points.

However, for some of the 118 respondents, many of the memory problems were reported as very frequent indeed. For example, 19 respondents indicated that they forgot an item in a list daily (Question 12), 18 indicated that they forgot the name of an unfamiliar person daily (Question 5b); and 13 indicated that they forgot interrupted activities daily (Question 2). (The distributions of the frequency ratings for all 21 questions are shown in Appendix D.) Thus, even though the average frequencies of occurrence are in general quite low, there are sub-groups of people for whom some types of problem are reported to be very frequent. Assessing technological solutions on these sub-groups may be a more feasible method of testing the utility of any particular solution.

Table 2. Summary of the Results from the Memory Lapse Questionnaire

| Question Number | Question | Mean Frequency Rating ^a | Severity ^b |
|-----------------|--|------------------------------------|-----------------------|
| 5b | How often do you forget someone's name whom you have only met once or twice? | 2.38 | 37 |
| 12 | How often do you forget one or more items from a set of items you are holding in mind (e.g. a mental list of things to do or say)? | 2.27 | 41 |
| 6a | How often do you forget where you put a paper document or book? | 2.01 | 40 |
| 3 | How often do you forget to take things with you, or leave things behind and have to go back for them? | 2.00 | 27 |
| 7 | How often do you have trouble remembering a particular word (i.e. when on the tip of your tongue)? | 1.92 | 17 |
| 1 | How often do you plan to do something or say you'll do something, and then completely forget about it until later? | 1.87 | 37 |
| 2 | How often do you start doing something, get interrupted, and then forget your previous activity? | 1.79 | 19 |
| 6b | How often do you forget where you put some other physical object? [<i>i.e., not a document</i>] | 1.70 | 14 |
| 10c | How often do you remember some fact or facts, but forget something important about who said it, where you read it, or where it came from? | 1.62 | 7 |
| 6c | How often do you forget where you stored an electronic document or application on your computer? | 1.61 | 22 |
| 11a | How often do you forget details of how to do something, even though you have done it once or twice before? [<i>i.e., on a computer</i>] | 1.51 | 19 |
| 5a | How often do you forget someone's name whom you know well? | 1.30 | 15 |
| 4 | How often do you go somewhere to do something, then forget why you're there when you get there? | 1.21 | 4 |
| 10a | How often do you forget something important about what was said in a conversation or meeting, but remember details about who was there, where it was, or when it took place? | 1.17 | 14 |
| 11c | How often do you forget details of how to do something, even though you have done it once or twice before? [<i>i.e., not on a computer</i>] | 1.01 | 3 |
| 10b | How often do you have trouble recalling important details of a conversation or meeting, such as who was there, or where or when it took place? | .97 | 6 |
| 9a | How often do you forget whether you have done something or not for some event that took place very recently? | .91 | 7 |
| 8 | How often do you remember some information, and then find out later that it is incorrect? | .86 | 4 |
| 9b | How often do you forget whether you took part or took some action in a distant past event? | .74 | 1 |
| 11b | How often do you forget details of how to do something, even though you have done it many times before? [<i>i.e., on a computer</i>] | .59 | 1 |
| 11d | How often do you forget details of how to do something, even though you have done it many times before? [<i>i.e., not on a computer</i>] | .37 | 0 |

^a Based on the following scale: 0 = never, 1 = rarely, 2 = monthly, 3 = weekly, 4 = daily.

^b Numbers are the number of respondents (out of 118) indicating that problem as severe.

Another issue with regard to individual differences is whether some people are simply more generally forgetful than others. This is consistent with anecdotal evidence (people often claim to be more absent-minded than other people) and with the testimony of elderly people. Averaging across the 21 ratings for each subject showed that the average “forgetfulness” of subjects covered a wide range, from .43 to 3.00. These average ratings were approximately normally distributed. Only 2 people had average ratings lower than .5, and only 3 people had ratings higher than 2.5. In addition, the rating assigned to any one of the 21 questions was significantly and positively correlated with the average of all other problems. For example, ratings of frequency on Question 12 (“How often do you forget one or more items from a set of items you are holding in mind?”) were significantly correlated with the average rating given to all other questions by that same person ($r = .73$). This points either to some kind of general problem of forgetfulness, or to a rating bias on the part of subjects.

Age was not significantly correlated with the average frequency rating assigned to all questions. This may be due to the fact that the age range was quite restricted and did not include people older than 57 years.

Implications for Technological Support

Again, of relevance to the AIR project is what types of technological support might be required to aid the problems identified in the results of the “Memory Lapse Questionnaire”. In particular, an important question is whether the very frequent and severe problems are being pursued by researchers at EuroPARC.

It appeared that forgetting names was mainly due to forgetting names for people who are relatively unfamiliar (Question 5b). This problem was also rated as being particularly troublesome when it occurred. Lamming and colleagues have been interested for some time in providing technological support for this type of memory problem. This particular problem probably calls for some kind of specialised memory aid, and the contextual information that might be required to aid the recall of names is not obvious, and may be quite dissimilar to the types of contextual information required for other problems.

Losing paper documents (Question 6a) was rated as being a more frequent problem than losing other physical objects or electronic documents (Questions 6b and 6c). In addition, losing paper documents was rated as the second most severe problem. Using contextual information to help locate documents could serve to reduce the frequency and severity of this particular problem. Newman and colleagues [e.g., Lamming & Newman, 1992] are interested in building systems to help people track both paper and electronic documents in offices.

Remembering a fact or facts, but forgetting the source of the fact (Question 10c) was rated as a fairly frequent problem. Less frequent problems were forgetting details of conversations and meetings (Question 10b), or the gist of these kinds of events (Question 10a). Completely forgetting performing some action or taking part in some event for something either recent (Question 9a) or in the distant past (Question 9b) were seen as less frequent and problematic. Retrieving information from automatically-generated diaries [Lamming & Newman, 1992; Newman, Eldridge & Lamming, 1991]

in part depends on making use of remembered aspects of context. The questionnaire study not only confirms that these kinds of memory failure are both frequent and problematic, but that being able to recall some aspect of past events is more likely than completely forgetting them. The success of AIR applications will in part depend on whether the important and relevant aspects of context can be captured.

Prospective memory problems (Question 1) were rated as being very frequent and were also one of the most severe problems. As previously discussed, this is an area of research currently being pursued by Sellen and colleagues at EuroPARC [e.g., Sellen & Lamming, 1992]. Technological support for prospective memory is being built which makes use of small, wearable computers with wireless communication capabilities and small display screens. This system allows people to set up reminders for themselves that can be triggered in a variety of different contexts either in terms of time, people, or location. When a particular context is encountered, the wearable computer issues an audio reminder. The wearer can then look at the small display screen in order to remember what it was they planned to do. This system can also provide support for remembering lists of things to do and say to people, thus addressing the second most frequent memory problem people report; that of keeping lists of things in mind (Question 12).

CONCLUSIONS

The diary study was useful in generating a corpus of memory problems which occur at work. The resulting taxonomy made possible some broad statements about technological support for various memory problems. Because of the difficulty in estimating frequencies of problems from a diary study, a questionnaire was developed and distributed.

The questionnaire study was useful in confirming that many problems frequently reported in the diary study were also rated as occurring frequently. For example, over 50 prospective memory problems were collected in the diary study and these were rated as occurring frequently in the questionnaire study. Of the retrospective memory problems, forgetting names was commonly reported in the diary study and was the most frequent problem in the questionnaire study. In addition, forgetting locations of documents emerged as a frequent problem in both studies. Although action slips were reported fairly frequently in the diary study, they were not rated as very frequent or severe in the questionnaire study.

Some implications for how technology can be used to support various types of memory problems have been discussed. In addition, the two studies reported here provide good evidence that many of the problems being tackled by researchers at EuroPARC are problems genuinely experienced by people at work.

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APPENDIX A: DIARY STUDY INSTRUCTIONS

Note: These instructions were placed in the mailboxes of all staff at the Applied Psychology Unit. Similar instructions were given by electronic mail to the staff at EuroPARC.

Memory Problems at Work

We are doing a project on how people use their memory at work, and particularly in memory problems at work. Here are some examples of the sorts of things we're interested in:

Difficulty in remembering:

- where some object or information is;
- to do something or to do it at a particular time;
- that something is going to happen;
- how to do something;
- that you've done something;
- the names of places and/or people;
- who told you something or what they told you.

What we would like you to do is to jot down examples of these sorts of memory problems when they occur while you're at work. If you have a memory problem that isn't like one of our examples, please jot it down anyway. Please put your examples in Debra's pigeonhole.

We are interested in all memory problems that occur in any work context: at your workstation, while you're at a meeting, while you're doing some paperwork, while you're having a chat—no memory problem will be rejected by us!

Thanks very much for your help.

APPENDIX B: CORPUS OF MEMORY PROBLEMS (n = 182)

Note: The names in the text have been changed to preserve anonymity.

I. RETROSPECTIVE MEMORY PROBLEMS (n = 85)

A. Forgetting a person's name (n = 17)

1. I can't put names to faces of many people around the Unit, even those who introduced themselves at the Unit "Welcome" meeting on Monday! Worst are people met regularly at conferences and meetings. Familiar faces, familiar names, but pairs are poorly associated.
2. The only memory problem I have, and naturally increasingly, is forgetting people's names. (Unless I've forgotten something.)
3. Forgot the name of the "video-man"; looked it up in the list and could recognize the name.
4. Forgot the name of the person coming to give a seminar today.
5. Forgot the name of a friend's girlfriend.
6. I've just forgotten the surname of somebody in Esprit. We were trying to compile a press list, and there's somebody in Esprit whose first name is John and I can't remember his second name.
7. We spent an awfully long time looking for the name of someone whose first name is John, who works in the EEC--and I can't remember for the life of me what his second name is. So we're looking to see if we can find it.
8. We are still scrambling about looking for the EEC names--we haven't found the John character, we found Peter's name by virtue of looking in a file. Smith Mary managed to track down, I'd forgotten his first name. And, what are we looking for now? There's somebody Mary's convinced we ought to know about, but she can't remember his name. so we're looking for him--Jones--no, I've got him.
9. John wanted me to organise two meetings, but although I did so, when Mary asked me if it was done, I couldn't remember one of the names (only one meeting had been set up).
10. I cannot remember the name of John Smith's youngest daughter! I remembered it, finally--Mary!
11. Arranged for John to see someone at Bridge House--when she asked me to confirm I could only remember the Christian name, then I remembered the surname, but wasn't sure so I went and checked up.
12. What is the name of the person working on the Esprit proposal with SAPE?
13. Forgetting an author's name--and so not being able to look up the reference.
14. I couldn't recall John Smith's name when looking at references on the cognitive treatment of depression.
15. I can't always recall John Smith's name when writing references from him--unless I have used it recently.
16. I frequently have problems remembering the names of people (even colleagues). The biggest problem is the names of patients--not only do I forget their names, but I will give them another, which I think is the correct name. Being corrected does not solve the problem--it takes several occasions before I can remember their correct name and realise that I am calling them the wrong name. With colleagues, I don't give them a new name, I will just forget their names.
17. New people. I'm told, but I never encode it because I'm always thinking about something else to do with them (very embarrassing). This is not forgetting because the info is never encoded.

B. Forgetting a word (n = 5)

1. Was writing a letter in which I needed to describe the organisation of the Journal of Child Psychology and Psychiatry--I could not remember the name of the bits of the journal which make up a volume (i.e. parts or numbers)--kept getting interference from the word "edition". Got there in the end (you'll be pleased to hear).

2. I've just forgotten the word for "taking a responsibility".
3. Not being able to think of the most fitting word to go in a sentence.
4. Computer jargon. Remembering what I have called several similar variables, confusing similar ones, and remembering the order of letter abbreviations. (Due to the confusion, I have to go back to the original versus remember).
5. Tip of the Tongue Phenomenon--You are looking for piece of information. You can find it, but you know other facts about the lost information. For example, the room where it took place. And--ugly sister phenomenon--blocking by other word.

C. Forgetting an item in a list (n = 3)

1. This last lapse was sufficient for me to think that I ought to give you a further list of memory lapses. So I started typing this list. However, by the time I got to Tuesday no. 2, I couldn't remember what no. 3 was, although I knew there was something else. I cued myself in by searching around my desk and finding the correspondence involved.
2. In discussion with two RAs in Manchester about the work they were doing in my absence. Was noting down things that I needed to bring up for them from Cambridge, but at one point forgot to write something down and could not remember what it was about 2 minutes later. Had to reconstruct entire conversation with them to retrieve it.
3. What did I want to write on this card [a list of memory problems]?

D. Forgetting a past action or event (n = 14)

1. Confusion about whether I had given Mary something (Hypertext reprints). Had no recollection of the event, let alone what happened.
2. While walking through University College, saw a sign that said that I was giving a talk on October 24th at the "National Hospital". But I had no recollection of agreeing to give this talk. In fact, I was giving another talk on the same day in Paris. I wrote a note to the organiser of talks, and when I was told that it was at the National Hospital: College of Speech Sciences"--I then remembered that my PhD student had asked me last May to give this talk. But since most of my other talks were scheduled in the beginning of this September, I forgot this one. Seeing "College of Speech Sciences" reminded me of this.
3. Noticed my printer needed a new ribbon. Found a ribbon that had been used but looked as if it might still have some life in it. Printed something out. Quite unable to remember whether I had actually switched the ribbon or not. Because the substitute ribbon was not brand new, couldn't tell from the print quality, and had to change ribbons again so I could compare quality. Since neither ribbon gives very good quality, I'm still not sure whether I had switched ribbons or not.
4. Forgot whether had introduced John to Peter. Was with both of them and asked them "Have I introduced you two?".
5. Forgot whether I had closed the window in Mary's office after we had finished meeting (me and another person, who were continuing after Mary had left).
6. Did I do that already or not?
7. Updating a Filemaker file. Shut it down and then thought I had forgotten to add a specific piece of information so opened it again. I had in fact put the information in already.
8. I've forgotten whether I've asked Mary to book some hotel reservations for me for Newcastle next week. I'll have to ask her when I get in next week.
9. Forgetting whether I have mailed/mailed things to people.
10. Was greeted by the photocopier by my first name by a tall dark stranger who obviously knows me. No idea who it was. (Take me aside to tell me quietly if you discover to save my being discovered to be prosopagnosic as well as amnesic).
11. Had I sent a reply to an RCG visitor? remembered that I had faxed him before; remembered that I had written another letter and that the letter had been typed. Even remember signing the letter. Just couldn't remember if I'd sent it. Went to check with Mary, who'd typed the letter for me. She said she'd sent it and signed it for me (pp).

12. Very tired and wanted someone's number. Found disc with names on it; before opening completely remembered that I had her number in a book right next to me, which would have been a lot easier to do.
13. In revising a chapter in my book, making the same point a second time because I did not remember that I had made it already.
14. People will say that they have told me something and I will forget that we even had a conversation on the topic.

E. Forgetting some aspect of past actions or events (n = 18)

1. Remembered the conclusion I made from reading a paper, but couldn't remember the reasons for coming to this conclusion.
2. What is a particular reference? I have to look it up. (Remember authors but not date; know authors but not which paper, etc.) This happens frequently.
3. I had heard a talk by Smith 2 or 3 years ago in Manchester. When I told him this, he denied having given a talk there and asked me what it was about. My mind went totally blank, although I remembered having been very impressed by the talk. I had a vague notion that it was something to do with magic. A few hours later I remembered it was about gambling behaviour in casinos. He did remember giving the talk (or at least didn't deny it) when I told him.
4. What environment did John write reference letter for a person in? I searched in Viewpoint, on Maxwell and Newton, and on the places on the Mac to which I have access. I couldn't find it. John must have done this at home on his Mac, or on a diskette.
5. In conversation with John Smith. I remembered that someone had recently told me about some new results on a famous case study that would be of interest to John Smith, but I could not remember who I had had the conversation with--although I remembered the location (sitting outside the common room in the sun). After a minute or so I remembered it was Mary Jones. (N.B. prior semantic confusion with Ellen Taylor!)
6. I "remembered" John Smith giving a talk about some aspect of memory from his book, when in fact I hadn't seen him do this at all--I'd only read the book.
7. What does this mean on my whiteboard?
8. At department meetings at a university, when hiring decisions are made, there are discussions about what the tenure decision will rest on for a given new hire. Three or more years later, when it's time to have that tenure discussion, no one can remember what the terms of the initial hire/tenure decision were at the meeting that happened years before.
9. I couldn't remember how Mary did her performance appraisal last year. I know that for most people they sent plain text and I transferred it and generally formatted it but I know that Mary and Ellen were sensitive about it. I didn't see either of their forms as far as I can remember. But I may be wrong....
10. I arranged to go to a meeting one weekend, forgot the date, and thought it was the weekend before that.
11. Chaucer Club memory: disagreement about what data had been presented. Both people had the same image of what was written on the board (C H A I R). Different memories of what he said and what he concluded.
12. John Smith asked me the optimal size of print. I couldn't think of the reference at the time. But it came to me that evening.
13. In writing a commentary for Behavior and Brain Sciences, I could not remember which chapters in my book contained: (1) my comparison between 2 alternatives as a figure, and (2) Smith et al.'s data on transfer from length of lines to intensity of electric shock as a table.
14. In the book I have just written, remembering where in the book: (1) I made a particular point, or inserted a particular figure, (2) remembering where in an article the author makes a particular point--sometimes he doesn't make it anywhere.
15. I am always remembering that I have read something, but can't exactly remember the information I need. So I have to go searching through my notes, the library, etc.
16. Forgot who told me about the computing problem at Addenbrookes.

17. Not being able to remember where a particular piece of information came from. Did I ever read it, or was it in a dream? e.g., rating 4 or 5 brands of whisky. The single Scottish brand received a lower rating than did the remaining American brands, yet most Americans prefer scotch.
18. Results from different groups on the same variable, and whether they were significantly different. (Too many similar variables, too many studies, insufficient time to think about/encode findings.)

F. Location lapses (n = 21)

1. Lost expenses claim form I was supposed to fill in. Hunted high and low. Then picked up a file I had to start work on and found it there.
2. Where a folder with faxes and addresses was. I was told that I had it; did remember the last time I saw it. Can't place it.
3. Lost a reprint that John Smith had given me. Much hunting. Eventually it turned up under a stack of things just as I was leaving.
4. I just forgot where on earth it was that I stored a photocopy of a book—and we spend 15 minutes—at least that--trying to find it.
5. I often forget in which drawer I've put something.
6. Forgot where this file was stored after my machine crashed and lost the icon. Found it very quickly though.
7. Things get lost, many times.
8. Lost a patient's file! spent 40 minutes looking. It did not turn up! Then later spent another 15 minutes. Still no luck--wrote to see colleague and phoned another to see if they have any ideas. Hoping it will turn up.
9. Have lost Hypertext reprints that Mary gave me at an AIR Meeting. I remember that she left them for me in a folder, but I have no idea where the folder is now. Have checked with other people who were also at meeting, but they don't seem to have it. Weeks later, it still hasn't shown up.
10. This morning I spent much of the morning, over an hour, trying to find some overhead projector foils, on my main talk of approximate modelling of cognitive activity. I had no idea where it was, I just searched all the heaps in my office, failed to find them, and only when I was trying to dictate this into Mary's original tape, did I remember that I'd probably given the copies of the foils to Mary for the AIR project.
11. I have to find the corrections for Smith's thesis, which John T. gave me about two months ago. I know that the university also sent me a copy about a month ago. I am hoping that I have filed them away. I know I haven't thrown them away; but, where they are still remains a question. I will let you know when I'm successful (note that I am assuming I will be successful!!)
12. I mis-described which drawer I keep my cups in. So when instructing someone where to find my cups, I made a left-right confusion and told them to get something from the bottom right-hand drawer when I meant to say the bottom left-hand drawer.
13. Have mislaid a photocopy I was looking at only this morning.
14. Wanted to find a book. I looked in my bag. Wasn't there. I did already put it on my table.
15. Forgot where I had put a printout of data. I still haven't found it. It is possible I never actually did print it out, but I do have some memories of doing so!
16. In the morning, answered a letter from someone who wanted some papers of mine, and left some manuscripts with the secretaries for photocopying. In the afternoon, was answering another letter that again needed accompanying manuscripts. Major search for one particular manuscript, forgetting that it was already with the secretaries who were copying it for the other letter.
17. Trying to find a hard copy of the invoice. Looked in a drawer, as person had intended to file it in the drawer. hadn't. Thought to look on desk (random). success--but accidental. Did not find it in the file that he'd originally thought.
18. Wrote down the phone number of person 2 while to talking to person 1 on the telephone. Later, after finishing the current phone call, looked for the number of person 2 that I'd written down.

Couldn't find it anywhere. Remembered I'd written it down on a bit of paper, but hunted all over my desk and couldn't find it. Then decided to re-construct the context of when I'd written the number down, and realised I had a fax from the person 1 with that person's number on it. Looked in my files for where I had put this fax, and there was the number of person 2 that I'd written down while on the phone to person 1.

19. Wanted to find CV. Knew it was in a folder the last time I saw it (imaged folder); knew about the last time I had it (when I was last up for promotion). Couldn't find it.
20. Trying to find a hard copy of the invoice. Looked in a drawer, as person had intended to file it in the drawer. Hadn't. Thought to look on desk (random). Success--but accidental. Did not find it in the file that he'd originally thought.
21. Difficulty remembering exactly under what category something is filed.

G. Procedural lapses (n = 7)

1. Still can't remember how to read an emacs file into an email message.
2. I forgot how to move a file from Newton over to my home directory. Not that I've ever been able to remember this.
3. I forgot how to read an emacs file into a ream mail message.
4. What I can't remember is how to work the video in my office, so I'm having real trouble trying to figure out what the controls are--I'm preparing for a talk this afternoon.
5. Forgot how to run a particular programme on one of the 3 computers I have. I'd run the programme 50 or 60 times before--but not for 4 months. fortunately I always make notes so could look it up.
6. Forgot how to e-mail John in California.
7. I have problems remembering how to do things with mechanical objects, computers. With mechanical things, I am shown how to work them (e.g., the video recorder) and then forget. Even if I have mastered it at one time, then if there is an interval before using it again, I have to go through part of the learning process again. Similarly with computers, if I am using a programme, I have to keep using it, otherwise I will forget how to use it.

II. PROSPECTIVE MEMORY PROBLEMS (n = 53)

1. Forgot (twice) to ask colleagues something (i.e., ask for information).
2. The first thing to point out is that it is almost impossible for me to remember incidents where I have forgotten things. You are absolutely right to advise people to jot things down as they occur. Even this is tricky though as one is completely "thrown" in the situation when this occurs and too preoccupied with the problem at hand to step back and say "Hey, I've got to document this." I am keeping a Frame window on my screen for the purpose of "jotting", to make it as effortless as possible.
3. We've got to put together an Esprit list for John Smith, and we've forgotten all about it.
4. Talking to Mary about money and budgets and stuff, she's shown me--she's going to show me, I guess, the statement about the month end, and it's just reminded us that I need to schedule the management meeting.
5. Looking at a heap of books on my desk, I realized I wanted to photocopy some parts of one of them.
6. I've forgotten to speak to Mary about something--something I've been carrying around in my head to talk to her about. What was it? I've forgotten what it was I wished to speak to her about. Oh, I know--the transition to UNIX.
7. On Friday to Monday 12th-15th of October I forgot to give my significant other copies of two papers from John which I was carrying around in my bag.
8. My second memory lapse of the day--my first was the suit--shoot, I've forgotten what it is I've forgotten! What the hell was it? Oh, I forgot to tell Mary that I needed a parking space this morning for about an hour, so I've just slung my car in and I will no doubt need to move it.
9. I just found this [memory problem form] on my desk. I had forgotten it was there.
10. Forgetting to attend Chaucer clubs and Tuesday lunchtime seminars.
11. Forgot that he was doing this [recording memory problems] today.
12. Had to phone my doctor. Had intended to do this all week but never remembered. At last remembered, but number was engaged. Forgot to try again.
13. OK. I've just remembered that I forgot to tell Mary to add to the list of reminders for me to contact John Smith at Brunel University, Professor of Computing, about some discussions I want to have with him.
14. I'm now on the M25 moving south towards Heathrow, and I've just been talking to Mary, and we jointly remembered that I had forgotten to contact someone called John Smith who we are thinking about potential collaborations with. I remembered simply because Mary reminded me and he had phoned in.
15. I was heading down to the kitchen at 12:00 to get some lunch, and remembered that I had a lunch date at 1:00.
16. Forgot to ask a colleague for a report of mine he'd borrowed and I needed it back. Was reminded of the report by a phone call from another colleague and, consequently, retrieved the report.
17. Realised that I'd forgotten my dad's birthday on the 18th.
18. I forgot that I was supposed to ask John Smith about a meeting.
19. Brought in my own low fat milk and kept forgetting to use it (3 times).
20. Just thinking about planning my week, and I remembered that I needed to pick up some clips of video from John.
21. Wanted to put a paper in Smith's pigeon hole. Every time I walked out, passed the pigeonholes and thought "Ah, yes, that paper".
22. I also have to write a letter to John Smith, which I'd forgotten about.
23. Just remembered that I ought to contact the Social and Applied Psychology Unit in Sheffield--I can do that when I'm at home on Monday morning.

24. I rely on my diary, year planner, personal notes, etc. for most things. If I'm out of my room, no diary, and several people ask me to do something, not all requests may be recalled when I get back to my desk.
25. I wrote a letter, put it in my writing set, and forgot to post it until 4 days later.
26. What did I forget? [asking John Smith--he answers "reference on ecological models"]. "Ecological Models"--Oh yes, I forgot a reference for John Smith on ecological models, which I now have to see if I can find.
27. I forgot to write to John Smith about Sun--Mary has just reminded me.
28. Another thing that I forgot--Mary asked me if I could return to her the slides that she lent me for a talk that I gave in Amsterdam, and I promised to ask Ellen to see if she could find them and return them to Mary. I'm now standing in front of her saying this to you hoping she's listening. OK.
29. Second, the real forgetfulness--John Smith reminded me that I had promised to make up a presentation pack for him last week and it had completely dropped out of my mind. Not written down I guess.
30. I arranged to meet in Cambridge somebody the next day. Later, my supervisor told me I could stay at home the next day. I accepted and stayed at home (London) having forgotten about the arrangement.
31. I forgot to close Mary's window after she'd asked (before leaving her room).
32. I was just thinking about next week, and I remembered that we need to think about John's going away. And what I remembered was that I needed to speak to Mary about that.
33. What am I doing? I'm driving down the A1M, and I've just been thinking about UNIX, surprisingly, and I remembered that we ought to include the UNIX on the next lab meeting agenda. So what I'll do now is to contact Mary now and tell her to put it on.
34. It's Thursday afternoon, and I've completely forgotten that Mary's here, so I'm on my way to talk to her now--and I've just been reminded by John.
35. Seeing John Smith just now reminded me that we still have to pursue the release of the IIF software for Toronto University--that's been on our agenda, it's just seeing him that reminded me to do that.
36. I just remembered that I had forgotten to give Mary a receipt--I went out to lunch. I must do that.
37. Doing my e-mail, I realised that I went to Oxford last week because I saw the e-mail about making the trip arrangements, and I haven't actually done any of the things that I agreed with John Smith that I would do as a consequence of that meeting early this week, i.e., they should have been done early this week.
38. Went to general office to check something. Intended to take post with me but forgot.
39. I forgot to send e-mail to John Smith that I made a mental note to do last week.
40. Another failure this morning was that I remembered that I should have written to a guy called John Smith to find out when he might want to come to the APU to spend a year as a graduate student; that was cued through talking about him and his software with somebody else.
41. At lunchtime today at the Graduate Centre I was given a letter by a friend of John Smith's to deliver by hand to the APU. When I arrived back at the APU, John Smith walked past me in the hall, and I didn't remember that I had a letter for him, but somebody with me remembered, and reminded me that I should give him the letter.
42. I forgot to phone Brussels. I only realised when I saw a document on my desk at 5:32.
43. This morning, before I went to lunch, Mary said would I please phone her straightaway after lunch when I got back, and I clean forgot all about it until Mary came into the room to see if I was going to be available later, when, of course, I remembered that I should have phoned her earlier.
44. Although I thought about it when I first came in this morning, my main memory error today was to forget to put on the tape recorder to remember my memory errors. Ho, Ho!

45. Told off by John for not logging off overnight. Then did it again. This happens because I turn my screen off so haven't any cues to tell me to switch off.
46. At end of a meeting, forgot to arrange date and time for next meeting. Remembered one hour before and 10 minutes after.
47. Before the meeting, someone asked me to give them a slot. I forgot until they reminded me (it was not included in the agenda in my head).
48. Forgot to raise an important issue with someone over lunch. Remembered a few minutes later.
49. At a meeting over supper, forgot to raise one out of four issues. My list reminded me. (Was preoccupied with who the meeting was with).
50. Forgot weekly diary entry. Cued by co-worker talking about the Diary.
51. At 11.00 am. Someone phoned while I was meeting with a colleague. Said I would call back in 10 minutes. Forgot to. Remembered 24 hours later.
52. Found this [the list of memory problems] in my drawer, having forgotten about it for 2 months.
53. Remembering to phone people later in the day at a non-specific time, e.g., p.m. I usually remember to phone if the time is specific, e.g., 4.00 p.m., but not if it's simply "some time this afternoon". (Usually remember when I put on my coat to go home!)

III. ACTION SLIPS (n = 44)

A. Interrupted actions (n = 12)

1. Planned to do something. Start the action--interruption--forgot the planned action.
2. Starting to write something in my diary, remembering I have to check something else and not finishing what I started (because something else assumed priority).
3. Went to Sun room to email someone. Read an incoming email message that meant I needed to look at my diary. Completely forgot about the outgoing message I had meant to send, even though I had carried relevant documents with me.
4. When I left the APU building, someone opened the door for me. I quickly walked out. The next morning I saw my "name-switch" said "IN".
5. I was on my way to take some post to the office when I thought I ought to do you a list of memory problems so I did so; and I have now brought it to your pigeonhole, only to find that I have left the post behind.
6. I pick a paper, book, etc. out of my pigeonhole at coffee/tea-time. Someone asks me to do something (sign a cheque, discuss a personnel problem, etc). I put down what I'm carrying and forget it for a while. If sufficiently long and if there are several interruptions, I forget where I left it.
7. Went downstairs to get tapes and keyboard. had phone call which interrupted. Couldn't remember why he'd come down--remembered tapes. Asked John what else? John said Keyboard.
8. One problem that happens to me quite frequently is as follows. I walk from lab to office (or vice versa) to get something that I need. While in the lab/office, something else distracts me and I go back to the other room without the object I set out for. I then remember what it was that I wanted and have to make a second journey.
9. I've just forgotten something else, and John interrupted me and I've forgotten what it was.
10. Went to print out long document from Macintosh. While it was printing, went for cup of tea. Forgot all about it until I was sitting in a seminar when I realised I might not be too popular for leaving a machine with active disk and files.
11. Went upstairs to get paper clips and to return cup and plate--came downstairs without paper clips. Went straight back up to get them.
12. In University of London library--did stacks of photocopying. Got flustered by complicated machine and left photocopies behind.

B. Incomplete or inadequate plans (n = 17)

1. Remembered to phone doctor again, but forgot that I needed the 061 for dialling Manchester.
2. Forgot to put my name on an "Outside Contacts" form I'd completed.
3. In meeting with John Smith (Child Psychiatry Unit), left my coat behind.
4. What I just tried to do was go out to lunch without any money, so I had to come back and get my wallet.
5. Did letter that had to be faxed to Sweden. checked that I had the fax number. However, then set off to the fax machine with the letter but without the number.
6. Always forget to return my cups to the kitchen and to close my window.
7. Wrote letter saying I would enclose a program for a meeting, and then sealed up the envelope, omitting the program.
8. Packed bag to take home, but left it behind in office. Realised when half way down corridor.
9. Off to fax room with letter to be faxed--forgot to take fax number (again!).
10. Something else was that I had forgotten that I was wearing all this [microphone, recorder, etc.], so I have to take it all off now.
11. I forgot that I had left my coat behind in Child Psychiatry (although I had remembered to tell you this!). They rang to remind me.
12. I've just climbed in my car at 8.20 going to work--in getting ready this morning, I have to give a talk at Wembley conference centre, and what I forgot to bring from home was a suit. so I'm having to do this without a suit. I forgot a suit. That's a business issue, by the way.
13. What I did was that I forgot to take down my son's phone number last night. I couldn't raise him when I phoned last night.
14. Went to print out a file on the Laserwriter attached to the Mac. Found that the Application I was using was not on the hard disk. Decided it was easier to do a printout on my own slow printer, rather than to copy the application on to a disk and return to the laser printer. However, later on (?the next day) I again took a disk down to the laser printer to print out, forgetting that the Mac did not have the relevant application.
15. Intended to print out a different document on laserwriter this morning. Took disk down to Mac room only to realize that the application I needed was not on the Mac hard disk. I did exactly the same thing a week or so ago. It does seem that any delay or interruption between intention and execution of an action is fatal!
16. When writing the appointment in diary, I found I had had another interesting lapse. John Smith and I are co-supervising a student called Peter. When I was in Manchester I had made an appointment to see Peter but had thought that it would be good to see if John could come. I find my diary says "3:30 John".
17. Remembering to take my tea mug back to the kitchen. I remember after I have returned to my office.

C. Loss of intention during action (n = 5)

1. I planned an action to go somewhere; during execution you forget what your goal is.
2. Going to get a book from the library, for instance, and on the way there, almost forgetting what I'm going there for.
3. Went downstairs to check if a fax had arrived, and forgot why I'd gone down. Retraced steps but didn't remember until 10 minutes later why I'd originally gone down.
4. In conversation and being aware of starting a sentence, not being quite sure of what I want to say, and having to work quite hard to recover and organise something whilst I am talking.
5. Forgetting the planned second half of a fairly long sentence while writing down the first half.

D. Mode errors (n = 6)

1. Wanted to play around with some files I had on the Manchester computer, so did a remote log on. Managed to access the files I wanted, but forgot that I was working on a Sun terminal, and that I did not know which keys to use to do things like editing files. Got in terrible mess with screen full of rubbish and unable to exit. This is the 2nd time I have done this.
2. My login name in Manchester is Smith and in Cambridge is Mary. Remembered to log in as Mary, but then used Manchester password.
3. [Wrote this e-mail note to you and] had forgotten that I was logged in as John.
4. Checking what is in mailbox, exiting, and after doing something else, looking at the screen, trying "8" (to read message 8) and making an error (because I'm not in my mailbox any more).
5. Twice in the course of using Filemaker, I pressed control S. This is a habit I have got into when using Word and Statview, where control S is used to save the file. However, in Filemaker, files are automatically updated and you do not need to use control S. If you press control S, you get into a Sort routine, which you then have to get out of again.
6. Once more went to wrong computer room. This time actually looked for a hole in the Sun into which I could insert my Mac disk.

E. Capture errors (n = 4)

1. Intended to print out document on Mac laser writer (in Mac room) on way out last night. Took disk with me, but left the building on automatic pilot without printing out.
2. Every time I come back from the shop, walk inside and turn to right, to go upstairs. But in fact I wanted to go to the kitchen, to prepare my lunch.
3. Three times this week I have gone to print something on laser printer, but then found myself sitting at a Sun workstation wondering what I am doing there. (I do use Suns to check e-mail, so it is a common destination for me.)
4. When writing down my doctor's appointment, I found I had written "12:20 Mary Smith" [own name] instead of "12:20 doctor". I do this sort of thing quite a lot.

APPENDIX C: MEMORY LAPSE QUESTIONNAIRE

Note: The format of the questionnaire as sent out by e-mail varied slightly from this due to the limited formatting options available in the electronic mail system.

Memory Lapse Questionnaire (by Abi Sellen and Marge Eldridge)

At EuroPARC we are designing a system which we hope will help people deal with the kinds of lapses or memory problems that everyone experiences from time to time. In order to do this effectively, we need to have some idea of what kinds of memory problems are the most frequent, and which are the most problematic. It would help us a great deal if you would fill out the following questionnaire. **THIS SHOULD TAKE ABOUT 10-15 MINUTES.** In return, we will be happy to summarise the results for those who are interested.

Be assured that your data will be kept confidential. We are interested in overall results rather than individual answers. If you wish to respond by e-mail, please forward this note by the 15th of May to: Memory:EuroPARC:RX. If you have any concerns about confidentiality, feel free to print a hard copy of this note and return it anonymously to: Marge Eldridge, Rank Xerox EuroPARC, 61 Regent Street, Cambridge CB2 1AB.

INSTRUCTIONS

MALE OR FEMALE (Optional)

AGE (Optional):

Part 1: Rating the Frequency of Memory Problems at Work

To indicate your frequency judgements, please use your best estimate of how often these things happen to you **AT WORK**, using the **LAST SIX MONTHS** as a basis for making these judgements. Please estimate frequency by choosing **ONE** of the following options for each question:

| | |
|---------|---------------------------------|
| Never | never in the last six months |
| Rarely | less than monthly |
| Monthly | at least monthly but not weekly |
| Weekly | at least weekly but not daily |
| Daily | daily or more |

If you are responding by e-mail, indicate your answers by deleting the options that do not apply. If you are responding on hard copy, circle the answer that applies. Please give only one answer per question.

Part 2: Rating the Severity of Memory Problems at Work

After you have rated the frequency of each problem, would you please put an asterisk (*) next to the number (or letter) of the **THREE** problems which tend to be the most problematic for you when they occur. In other words, indicate those 3 problems which require the most time and effort to deal with when they happen, regardless of how often they occur.

MEMORY LAPSE QUESTIONNAIRE

Note: The responses appeared as follows after each question:

Never in the last 6 months
Rarely
Monthly
Weekly
Daily.

1. How often do you plan to do something or say you'll do something, and then completely forget about it until later?
2. How often do you start doing something, get interrupted, and then forget your previous activity?
3. How often do you forget to take things with you, or leave things behind and have to go back for them?
4. How often do you go somewhere to do something, then forget why you're there when you get there?
- 5a. How often do you forget someone's name whom you know well?
- 5b. How often do you forget someone's name whom you have only met once or twice?
- 6a. How often do you forget where you put a paper document or book?
- 6b. How often do you forget where you put some other physical object?
- 6c. How often do you forget where you stored an electronic document or application on your computer?
7. How often do you have trouble remembering a particular word (i.e., when it's on the tip of your tongue)?
8. How often do you remember some information, and then find out later that it is incorrect?
- 9a. How often do you forget whether you have done something or not for some event that took place very recently?
- 9b. How often do you forget whether you took part or took some action in a distant past event?
- 10a. How often do you forget something important about what was said in a conversation or meeting, but remember details about who was there, where it was, or when it took place?
- 10b. How often do you have trouble recalling important details of a conversation or meeting, such as who was there, or where or when it took place?
- 10c. How often do you remember some fact or facts, but forget something important about who said it, where you read it, or where it came from?

Please answer 11a and 11b for **COMPUTER ACTIVITIES ONLY**

- 11a. How often do you forget details of how to do something, even though you have done it once or twice before?

11b. How often do you forget details of how to do something, even though you have done it many times before?

Please answer 11c and 11d for NON-COMPUTER ACTIVITIES ONLY

11c. How often do you forget details of how to do something, even though you have done it once or twice before?

11d. How often do you forget details of how to do something, even though you have done it many times before?

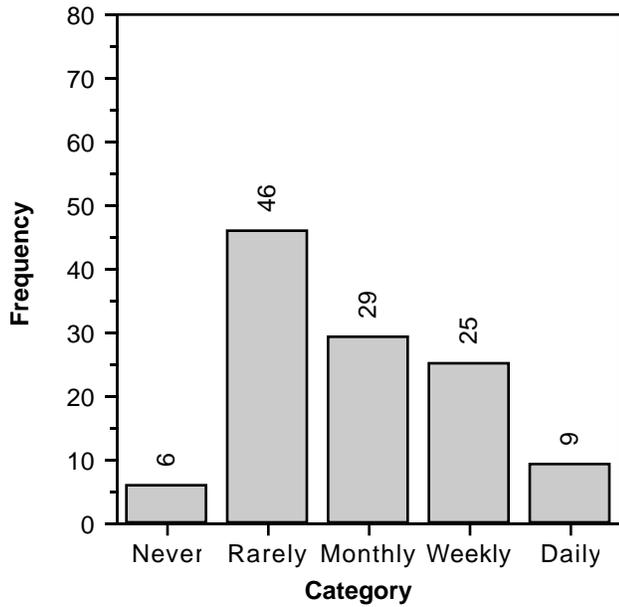
12. How often do you forget one or more items from a set of items you are holding in mind (e.g., a mental list of things to do or say)?

*****Don't forget to add the asterisks (see instructions for Part 2.)*****

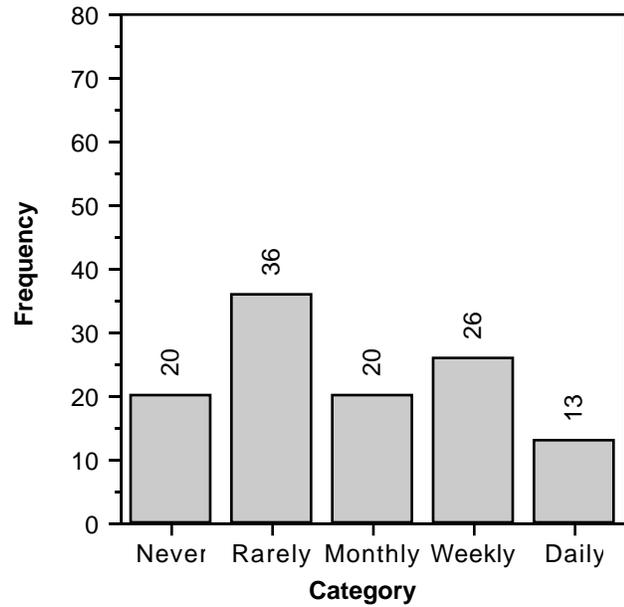
THANK YOU FOR TAKING THE TIME TO RESPOND TO THIS
QUESTIONNAIRE!

APPENDIX D: DISTRIBUTIONS OF FREQUENCY RATINGS

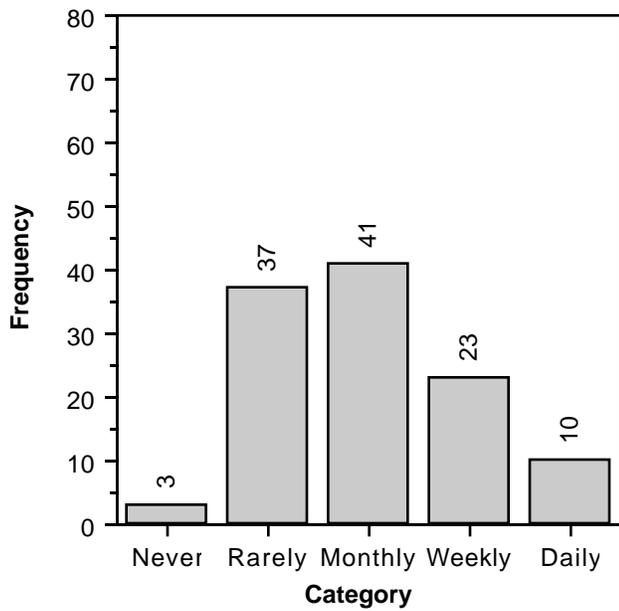
Q1. Forgetting things planned



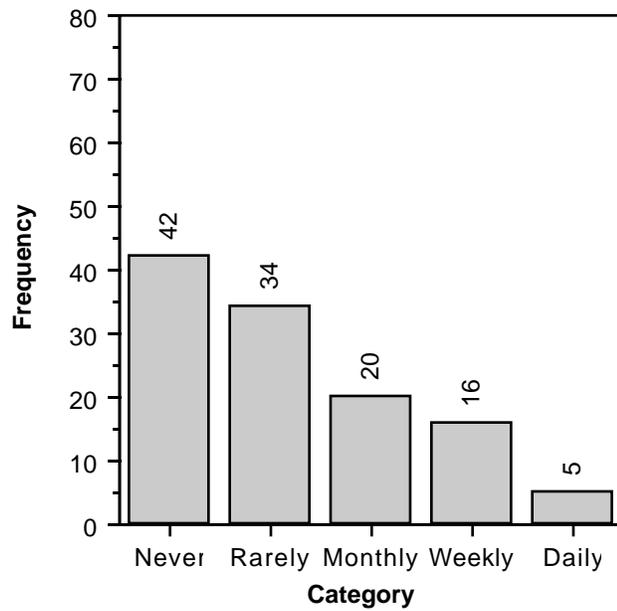
Q2. Forgetting interrupted activities



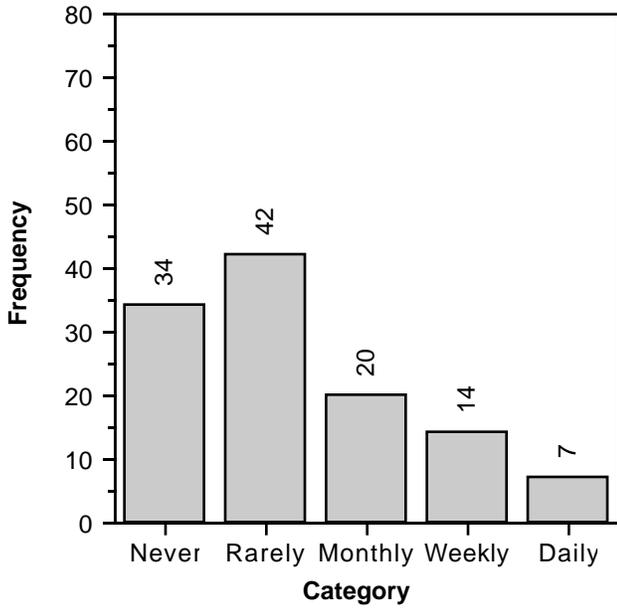
Q3. Leaving things behind



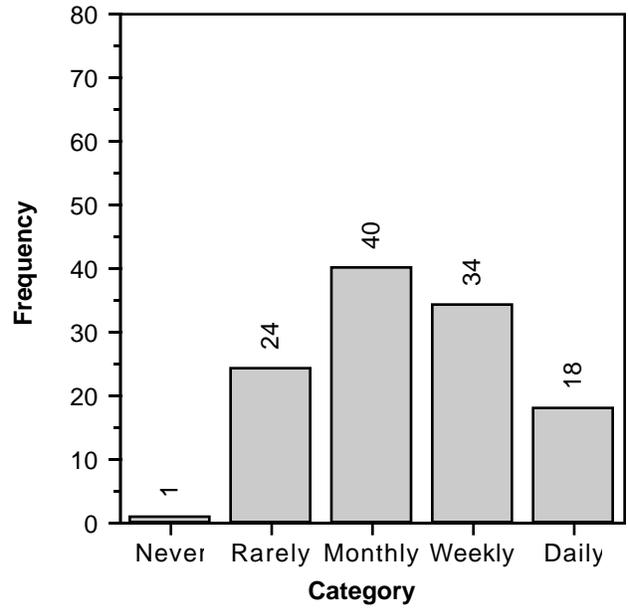
Q4. Going somewhere, forgetting why



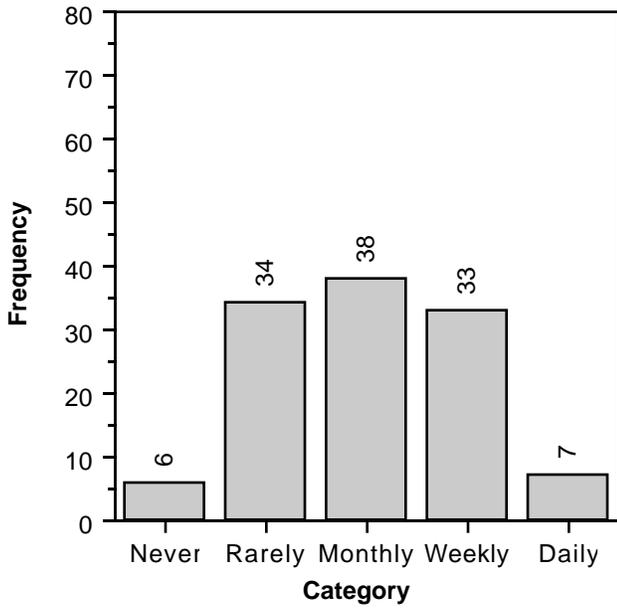
Q5a. Forget name of familiar person



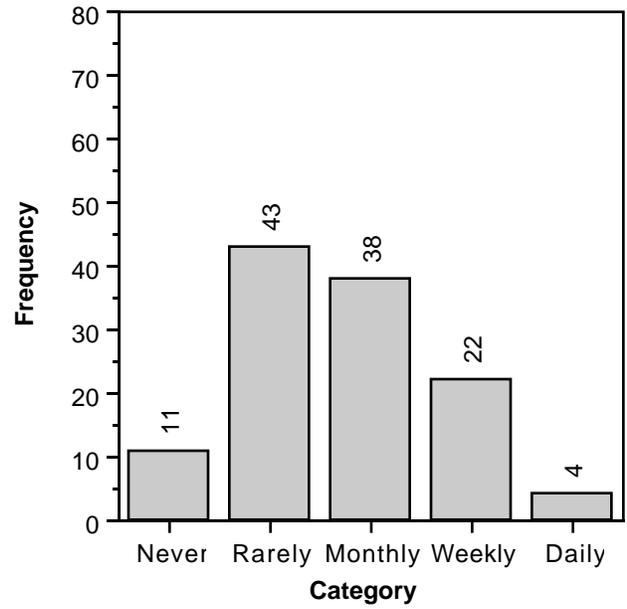
Q5b. Forget name of unfamiliar person



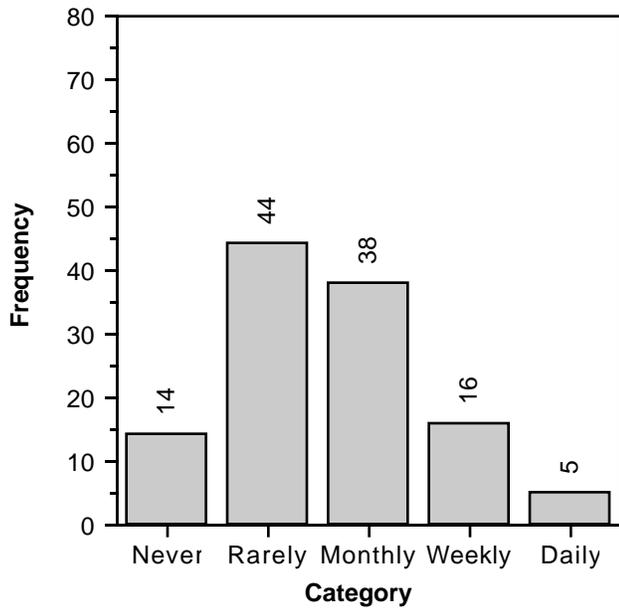
Q6a. Forget location of paper document



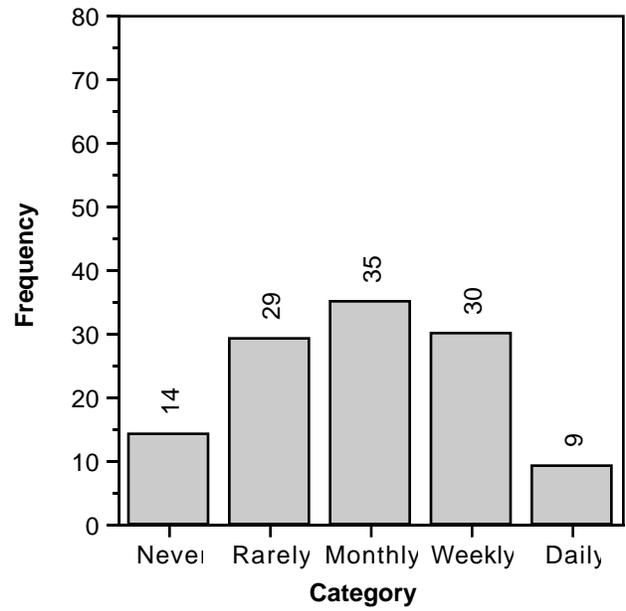
Q6b. Forget location of other object



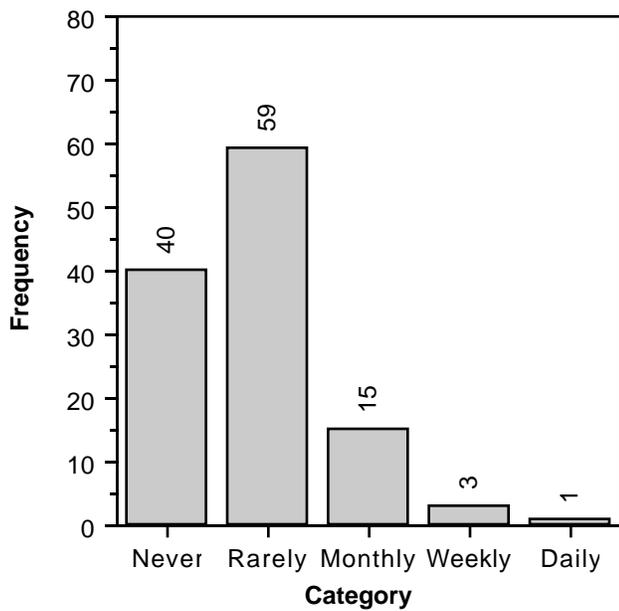
Q6c. Forget location of electronic document



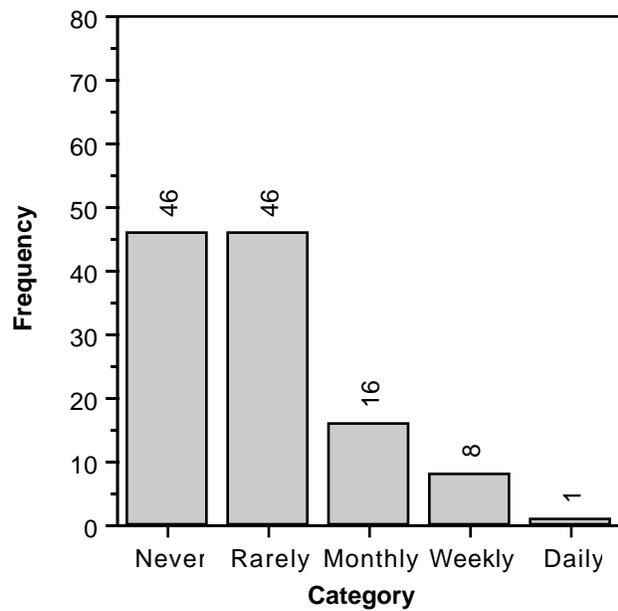
Q7. Forgetting a word



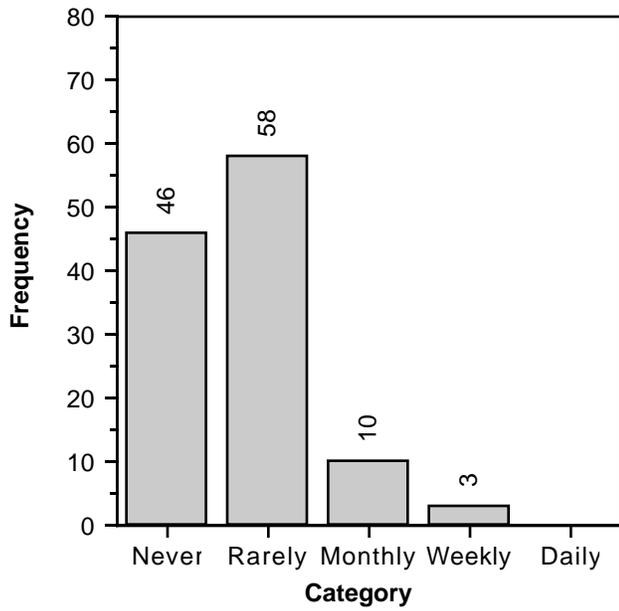
Q8. Misremembering something



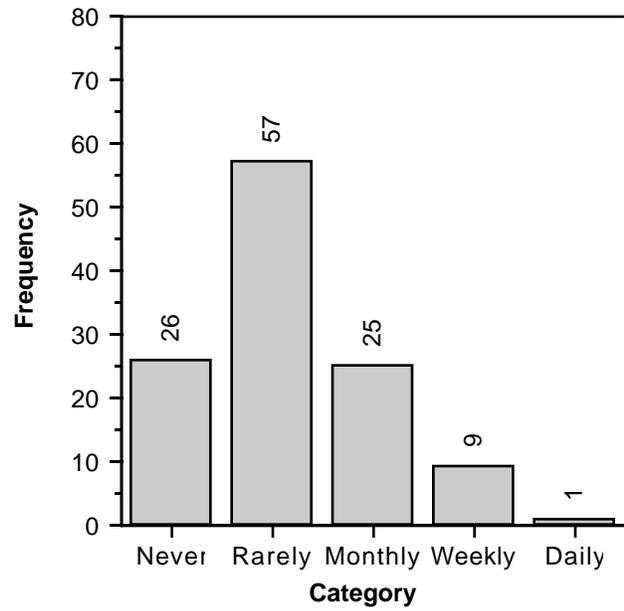
Q9a. Forgetting a recent past action



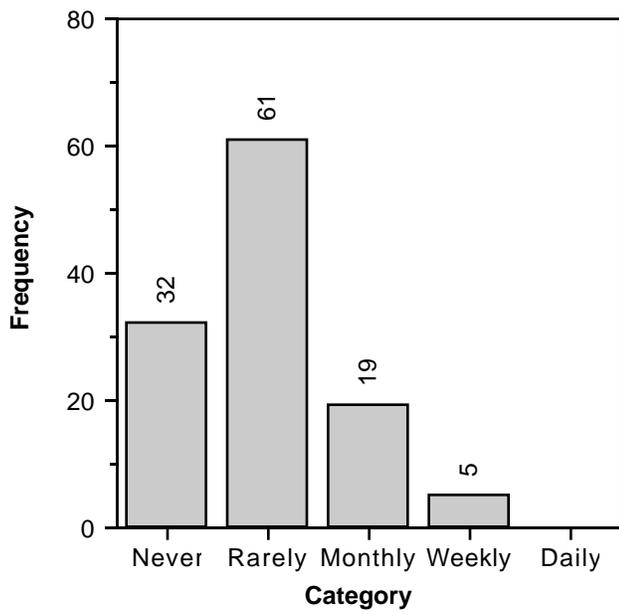
Q9b. Forgetting a distant past action



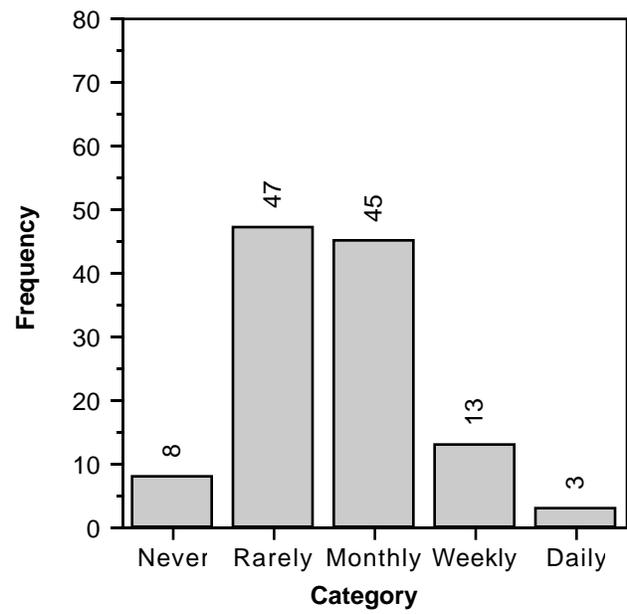
Q10a. Forget content, remember details



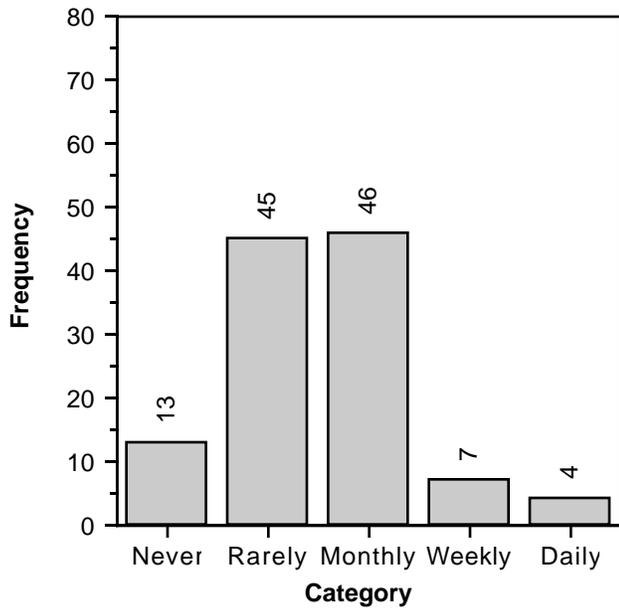
Q10b. Forget details, remember content



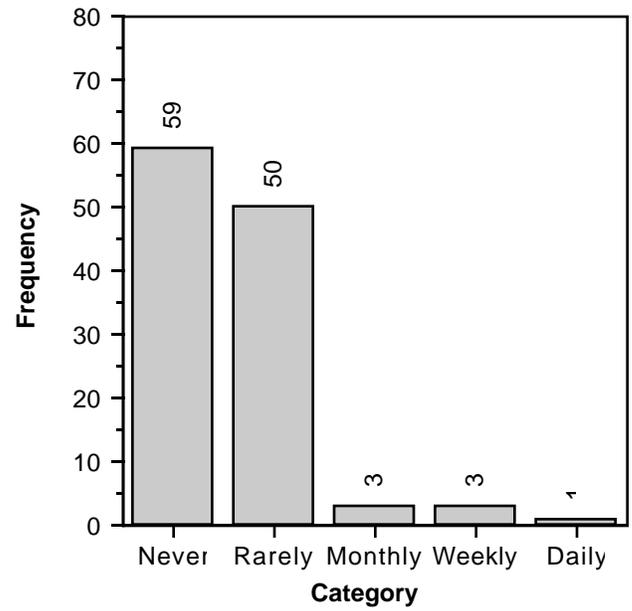
Q10c. Forget source of a fact



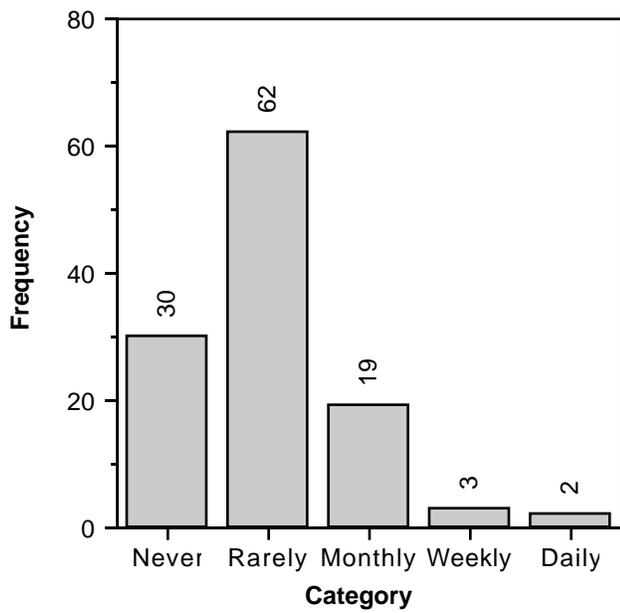
Q11a. Computer: Forget something infrequent



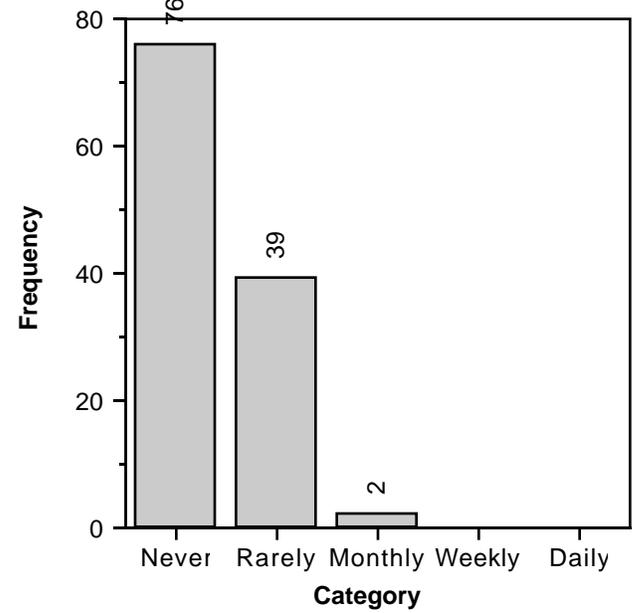
Q11b. Computer: Forget something frequent



Q11c. Non-computer: Forget something infrequent



Q11d. Non-computer: Forget something frequent



Q12. Forget items from a list

