



al-Burhān

JOURNAL OF QUR'ĀN AND SUNNAH STUDIES

VOLUME 6, NUMBER 2, AUGUST 2022



INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

eISSN: 2600-8386

al-Burhān Journal of Qur'ān and Sunnah Studies

AbdulHamid AbuSulayman Kuliyah of Islamic Revealed Knowledge and Human Sciences
International Islamic University Malaysia
Volume 6, Number 2, 2022

Honorary Advisors:

- | | |
|---|--|
| Prof. Dr. Abdullah Saeed, <i>University of Melbourne, Australia.</i> | Prof. Dr. Mohamed Abullais al-Khayrabadi, <i>International Islamic University Malaysia</i> |
| Prof. Dr. Abdul Hakim Ibrahim al-Matroudi, <i>SOAS, Univ. of London.</i> | Prof. Dr. Muhammad Mustaqim Mohd Zarif, <i>USIM, Malaysia.</i> |
| Prof. Dr. Awad al-Khalaf, <i>University of Sharjah, United Arab Emirates.</i> | Prof. Dr. Serdar Demirel, <i>Ibn Haldun University, Istanbul, Turkey.</i> |
| Prof. Dr. M. A. S. Abdel Haleem, <i>SOAS, Univ. of London.</i> | Prof. Dr. Israr Ahmad Khan, <i>Social Sciences University of Ankara, Turkey.</i> |
-

- Editor-in-Chief** : Dr. Khairil Husaini Bin Jamil, *International Islamic University Malaysia.*
Language Editor (Eng) : Dr. Muhammad Adli Musa, *International Islamic University Malaysia.*
Language Editor (Arb) : Dr. Amar Fettane, *International Islamic University Malaysia.*

Members of Editorial Board :

- | | |
|---|---|
| Assoc. Prof. Dr. Abdulcebbar Kavak, <i>Karabük Üniversitesi, Turkey.</i> | Assoc. Prof. Dr. Noor Mohammad Osmani, <i>International Islamic University Malaysia (IIUM).</i> |
| Assoc. Prof. Dr. Haziyah Hussin, <i>Universiti Kebangsaan Malaysia (UKM).</i> | Dr. Umar Muhammad Noor, <i>Universiti Sains Malaysia (USM).</i> |
| Dr. Muhammad Fawwaz Muhammad Yusoff, <i>Universiti Sains Islam Malaysia (USIM).</i> | Dr. Zunaidah Mohd. Marzuki, <i>International Islamic University Malaysia (IIUM).</i> |
| Dr. Naim Hank, <i>Karabük Üniversitesi, Turkey.</i> | |

© 2022 IIUM Press, International Islamic University Malaysia. All rights reserved.
e-ISSN 2600-8386

Published Online by:

IIUM Press, International Islamic University
Malaysia, P.O. Box 10, 50728 Kuala Lumpur,
Malaysia.
Phone (+603) 6421 5014
Website: <http://www.iium.edu.my/office/iiumpress>

Correspondence:

Editorial Board, al-Burhān Journal,
Research Management Centre,
International Islamic University Malaysia,
P.O Box 10, 50728 Kuala Lumpur, Malaysia
Tel: (603) 6421 5541 / 6126
E-mail: alburhan@iium.edu.my
Website: <https://journals.iium.edu.my/al-burhan/index.php/al-burhan/index>

Indexing and Abstracting: al-Burhān is currently indexed in and abstracted by MyJurnal and Directory of Open Access Journal (DOAJ).

Disclaimer: The publisher and editorial board shall not be held responsible for errors or any consequences arising from the use of information contained in this journal; the views and opinions expressed do not necessarily reflect those of the editors and publisher.



al-Burhān Journal of Qurʾān and Sunnah Studies, 6:2 (2022) 1-19.
<https://journals.iium.edu.my/al-burhan/index.php/al-burhan/index>
Copyright © IIUM Press
e-ISSN 2600-8386



Practical Demonstration: A Method for Generating Behavioural Evidence to Study Memorisation of the Holy Qurʾān

Nikhath Parveen*

ABSTRACT: Practical Demonstration evolved as a method of data collection for investigating the memorisation of the Holy Qurʾān and its attendant learning processes. Its objective was to generate data that must be authentic, have ecological validity and be empirical, and at the same time be replicable and have conceptual clarity. It is a structured interaction between the researcher and the subject about a particular aspect of the memorisation process that has been automatized, is beyond conscious awareness and taken for granted by the subjects. Trying to elicit information about such a phenomenon through questioning gave imprecise answers, especially in the case of children. So, the researcher asked the subjects to 'show her' rather than 'tell her'. Practical demonstrations were used extensively both during the participant observation and semi-structured interviews. They yielded rich evidence on certain aspects of the memorisation process such as multi-modal learning including visual imagery of a particular page; coordination of the articulatory system and the phonological loop during initial stages of memorisation; development of metamemory and its role in learning and memorising; error-monitoring, detection, and rectification; types of errors; and developing a system of retrieval cues and retrieval structure.

Keywords & Phrases: Practical demonstration; Qurʾānic memorisation; mental imagery; retrieval structure; long-term working memory.

* Research Scholar, Department of Psychology, Osmania University, Hyderabad, Telangana, India. Email: parveennikhath@yahoo.com

Introduction

Memorisation of the Holy Qur'ān involves learning to read the Arabic script with precise enunciation, memorising it and reciting it with zero-error proficiency. This high level of skill is called mastery learning paradigm,¹ which is implemented on a large scale in India as thousands of students are trained to gain mastery-level proficiency on the domain specific performance parameters of reciting the Holy Qur'ān. In contrast to students of memorisation, many students in general education schools lag behind their same age peers in learning the knowledge components reflective of subjects such as mathematics and general sciences such as physics and chemistry, because minimum cut-off marks are sufficient for promotion to higher classes. The significant paradigmatic shift in memorisation is that task-referenced norms anchored to mastery learning of memorisation are given precedence over age-referenced norms of learning achievement. Therefore, investigating its learning practices and learning outcomes would contribute to insights on how to promote mastery learning for a large number of students in diverse educational settings.

1. Rationale for Practical Demonstrations

Justification for the development and use of practical demonstrations was established within the ambit of the basic theoretical framework of grounded theory and its emphasis on generating empirical and authentic data that has ecological validity.² It was chosen to investigate the phenomenon of memorisation of the Holy Qur'ān in India and to construct a grounded theory of cognitive processes as it is an area of novice research. Grounded theory methodology (GTM)³ confers 'structured freedom' that advocates broad outlines for carrying out research, provides a cogent underlying philosophy for its methods and gives freedom to the researcher to approach his subject with openness.⁴ Constant interactions between the collected data, its analysis and theory building throughout the research process encouraged this researcher to explore other options for data generation when the interviews and participant observation failed to provide adequate explanations.⁵ Strauss and Corbin's recommendation for a systematic identification of causes and their consequences, from the broadest level to the minutest level and all the intermediate levels in between and integrating them into the theory and the importance of asking questions about all the conditions that impact a phenomenon under investigation provided theoretical and practical validation for the utilisation of

¹ Bloom in 1971 as cited in: Thomas R Guskey, 'Lessons of Mastery Learning', *Educational, School, and Counseling Psychology Faculty Publications* 14 (2010).

² Anselm Strauss and Juliet Corbin, *Basics of Qualitative Research: Grounded Theory Procedures and Techniques* (Newbury Park, CA: Sage Publications, 1990).

³ Anselm Strauss and Juliet Corbin, 'Grounded Theory Methodology: An Overview.', in *Handbook of Qualitative Research*, ed. N.K. Denzin and Y.S. Lincoln (Thousand Oaks, CA: SAGE, 1994), 273–85.

⁴ Nikhat Parveen, 'The Grounded Theory Methodology in Psychology: A Review', *The International Journal of Indian Psychology* 6, no. 1 (2018), <https://doi.org/10.25215/0601.083>.

⁵ Strauss and Corbin, 'Grounded Theory Methodology: An Overview.'

practical demonstrations. Practical demonstration fills in the conceptual and informational gaps that would not be satisfactorily explained by data generated from participant observation and semi-structured interviews. They evolved as a methodological innovation for generating behavioural data together with semi-structured interviews and participant observation. Another important reason for using them was to confirm observations generated during the participant observations and as impromptu experiments.

2. About the Research Domain

The Muslim religion is based on the Holy Qur'ān. In India, the students are taught to read the Arabic script with exact pronunciation and memorise it. Students are instructed in the correct pronunciation and memorisation of the Holy Qur'ān's Arabic script. They are simply taught how to read the Arabic script fluently; they are not taught how to comprehend the Arabic language, which prevents them from developing semantic grasp of Qur'anic passages.⁶ After completion of memorisation of the Holy Qur'ān, some students continue to pursue higher educational qualification such as the 'Alim' course in which they learn the Arabic language. Memorisation is a case of development of superior memory.⁷ The performance outcomes for memorisers are the precise reproduction of the text, with accurate diction, and zero-error recital so that the recitation of a memoriser is as faithfully identical and intelligible as a native Arabic-speaking reciter's recital. Memorisers follow a standard print of the Holy Qur'ān of about 600 pages, with 15 lines on each page. Its structural organization divides it into progressively smaller segments, and each has a distinct name and numerical code. The first level segmentation are the 30 divisions called *Para* (N=30) which are approximately 20 pages each. They are followed by the chapters (N=114) which are of unequal lengths and distributed across the 30 divisions. Further, each of the 30 divisions are subdivided into sections which have only a numerical code with reference to the *para*, and each division has variable number of sections (N= 16 to 22). The sections contain the verses which are the smallest level segmentation, and they are numbered with reference to their chapter. Every student has his personal copy of the Holy Qur'ān, and invariably memorises, revises, and gets assessed with reference to it. This structural organization prevents retroactive and proactive interferences and provides a cognitive map to navigate the text.

⁶ See for further elaboration: Nikhat Parveen, 'Investigating the Memorization of the Quran Using the Grounded Theory Methodology', *The Qualitative Report* 26, no. 7 (2021): 2226–44, <https://doi.org/10.46743/2160-3715/2021.4752>.

⁷ John Wilding and Elizabeth Valentine, *Superior Memory* (London: Psychology Press/Erlbaum (UK) Taylor & Francis, 1997).

3. Rationale for Practical Demonstration as Qualitative Research Methodology Tool

The researcher utilised qualitative research methods,⁸ specifically the grounded theory methodology to study the memorisation of the Holy Qur'ān in India and to generate in-depth knowledge about it, and its specific learning processes.⁹ Grounded theory gives freedom to the researchers to use multiple data collection methods and the rest of the article contains considerable details about the research study that is closely related to the methodological innovation of practical demonstration, and is indispensable for the readers to know in order to appreciate it as a method and the data it generated, its analyses and interpretation.

4. Steps in the Research Study of Memorisation of Holy Qur'ān in India

The steps involved in this research study were pre-data stage, followed by data collection stage which included engaging in participant observation, construction of an interview schedule for collecting data through semi-structured interviews, and practical demonstrations, collecting formats and documents utilised during the memorisation process, coding data, and analysing it, displaying data, and writing the research report.

4.1 Sample of the Study

The total sample comprised of thirteen (N=13) individuals distributed into three groups who were students of memorisation, teachers of memorisation and participant observation sample. Semi-structured interviews were conducted for a group of seven individuals comprising students (N=4) and teachers (N=3). Participant observation sample included the teacher (N=1) and students (N=5) besides the researcher. Practical demonstrations were conducted on the students of the interview group and the students of the participant observation group (N=9).

4.2 The Pre-Data Stage in the Research Study

The process of research began with the query of 'how do students memorise the Arabic text of the Holy Qur'ān without learning to comprehend the Arabic language?' This led to the first iteration of theoretical sampling which was identifying an initial sample of subject to gain a preliminary understanding of the memorisation process. This was the pre-data stage in which informal interviews were conducted during which three students who were engaged in memorising the Holy Qur'ān were interviewed. The researcher visited a seminary in which students were taught the memorisation of the Holy Qur'ān and

⁸ Uwe Flick, *An Introduction to Qualitative Research* (London: Sage Publications, 2006); Alison Karasz, 'Qualitative and Mixed Methods Research in Cross-Cultural Psychology', in *Fundamental Questions in Cross-Cultural Psychology*, ed. F.J.R. Van De Vijver, A. Chasiotis, and S.M. Breugelmans (Cambridge: Cambridge University Press, 2011), 214–34.

⁹ For more elaboration, see: Parveen, 'Investigating the Memorization of the Quran Using the Grounded Theory Methodology'.

interacted with their teachers who themselves had already committed the Holy Qur'ān to memory; interacted with a professor of psychology with expertise in cognitive psychology, professors in the department of Arabic who had also memorised the Holy Qur'ān and a professor in the department of oriental studies. The conclusions of the pre-data stage were that although memory has been vastly researched in Cognitive Psychology, the memorisation of the Holy Qur'ān has not been the subject of a systematic and empirical study in Psychology. It is a significant phenomenon not only in Cross-Cultural Psychology but also Cognitive Psychology because memorisation of the Holy Qur'ān occurs in the absence of semantic comprehension, and it is a unique case of development of superior memory of a large amount of textual material by students.

4.2.1 Memorisation of the Holy Qur'ān and Its Three Stages

Memorisation of the Holy Qur'ān can be characterised as a serial learning task with cued recall. The order of input or encoding and the order of output or retrieval are exactly the same and follow in the predetermined sequence. Proactive and retroactive interference are controlled and eliminated through a process of memory strengthening¹⁰ through a strict rehearsal schedule that reflects the principles of 'deliberate practice'.¹¹

Memorisation occurs in three stages and each of the stages is characterised by its unique features and performance outcomes that have strict proficiency parameters. Stage 1 involves learning the phonemics of the Arabic language without semantic comprehension and a student is deemed proficient if he is able to enunciate all the morphemes precisely with a native-like diction and with zero-errors. In Stage 2, fluency development in reading the connected text is given importance. The student must apply all the phonetic and prosodic rules that he has learnt at the earlier stage and should not read the words and sentences with inappropriate breakages which might lead to incorrect meaning of the text or it being meaningless. Stage 3 involves the actual memorisation of the text, and a student should be able to read, memorise and recite with zero-errors, precise diction, and fluency.

4.2.2 The Four Daily Recitals

The instructional methodology is exemplified by four distinct daily recitals. The student must recall three retrieval cycles daily besides the day's memorised lesson. The current lesson (CL) is the primary memorisation of the text which is being memorised for the first time and consists of the amount of text that a student memorises for a particular day. The short retrieval cycle (SRC) consists of the last five memorised lessons immediately preceding the CL. The intermediate retrieval cycle (IRC) consists of the 1/30th division (the

¹⁰ Kenneth R. Koedinger, Albert T. Corbett, and Charles Perfetti, 'The Knowledge-Learning-Instruction Framework: Bridging the Science-Practice Chasm to Enhance Robust Student Learning', *Cognitive Science* 36, no. 5 (July 2012): 757–98, <https://doi.org/10.1111/J.1551-6709.2012.01245.X>.

¹¹ K. Anders Ericsson, Ralf Th Krampe, and Clemens Tesch-Römer, 'The Role of Deliberate Practice in the Acquisition of Expert Performance', *Psychological Review* 100, no. 3 (1993): 363–406, <https://doi.org/10.1037/0033-295X.100.3.363>.

Para) preceding the CL and includes recitation of the SRC again, and the long retrieval cycle (LRC) consists of recall of all the 1/30th divisions that have been memorised up to the division but excludes the division within which the CL occurs. The students' daily recitation schedule includes multiple assessments by multiple assessors, which are captured in the 'Recital Tracking Sheet'. This format includes the amount of CL, SRC, IRC and LRC that was recited by the student, and the names of each of the assessors who assessed him. The assessors include besides the teacher, a peer assessor who is a fellow student. It is the responsibility of the student to fill in the details in this format and keep it updated. Feedback is given separately for the CL and the three retrieval cycles. It is not aggregated. The feedback for CL and SRC is given as a small tick mark under the concerned text of the personal copy of the student. The format of the 'Error Tracking Sheet' is used to assess IRC and LRC separately and it is to be filled by the peer assessor or the teacher who has assessed the student. The scrutiny of the error tracking sheet shows that standardized criteria of evaluation of the performance are established, and there is no scope of ambiguity about the assessment parameters. The feedback is given on a real-time basis: it is immediate, concrete, non-personal, and goal directed.

4.2.3 Unique Features of Its Instructional Methodology

These unique features that set it apart from general education include minimal stress laid on the time taken to achieve proficiency in the performance parameters specified at each of the three stages of learning and memorisation. A student progresses sequentially from one stage to the next only after attaining requisite proficiency. The student is allowed to set his own pace of learning and memorisation based on his performance in the preceding lesson, and his capability to memorise daily is based on his zone of proximal development (ZPD).¹² There is a significant amount of variation in the quantity of text that is memorised daily by different students and also by the same student on different days: sometimes a student may memorise only 5 lines or less, while on another day he may memorise 15 lines and more. The singular criterion is zero-error recitation in all the four recitals of the day.

4.3 Data Generation and Collection Methods

The methods for data collection included participant observation, interviews and collection of formats. The researcher also utilised practical demonstration to collect data during participant observation and interviews.

As participant observer, the researcher enrolled in a seminary and completed the first stage of memorisation.¹³ Extensive field notes recorded the behaviours, daily activities, events, and other features of memorisation.

¹² Lev Vygotsky, 'Interaction between Learning and Development', in *Readings on the Development of Children*, ed. Mary Gauvain and Michael Cole (New York: W.H. Freeman & Company, 1978), 29–36.

¹³ Deborah Cohen and Benjamin Crabtree, 'Qualitative Research Guidelines Project', Robert Wood Johnson Foundation, 2006, <http://www.qualres.org/HomeAbou-3452.html>.

Two interview schedules were constructed¹⁴ for students and teachers separately to generate reliable and comparable qualitative data through semi-structured interviews. Documents include unfilled formats of the 'recital tracking sheet' and the 'error monitoring record' that were utilised to capture the data about the students' memorisation process including their daily recitals and their errors.

4.3.1 Data Collection by Using Interview Schedule

Data collection was an iterative process in which the data from the first subject was collected and analysed straightaway, and the results informed the collection of further data. The researcher had used semi-structured interviews for collecting data from the participants. It provided a structure for gathering necessary data for the research, and at the same time it afforded the freedom to follow-up interesting leads with the subjects during the process of interviewing, such as how they were encoding the material and retrieving it. The researcher constructed and used a semi-structured interview schedule to provide reliable, comparable qualitative data. She designed and used two forms of the interview schedule for the students and for the teachers.

4.3.2 Data Collection through Participant Observation by Researcher

Participant observation used as the domain of memorisation of the Holy Qur'ān is unexplored and little is known to explain the behaviour of people in this setting¹⁵ and its benefits were that it fostered an in-depth and rich understanding of the phenomenon, the socio-cultural setting and the behaviour of the participants in that setting. It also provided the foundation for theory development.¹⁶ The researcher was able to develop a relationship with the participants due to their immersion and sustained involvement in the seminary environment, which encouraged free and open communication among its members. The process of inquiry was open-ended, flexible, based on facts gathered in the concrete social settings, and the use of direct observation along with other methods of gathering information gave a 360-degree perspective of the situation.¹⁷ The researcher's role was that of an 'active member' as it involves a functional role in addition to an observational role.¹⁸ So, the researcher enrolled as a student in the seminary with two objectives: to complete Stages 1 and 2 of the memorisation processes and to interact with the other students as their peer, and to collect data for the research study. The researcher explained her objectives to the head of the seminary and solicited her cooperation. This facilitated trust and acceptance and increased her identification with members of the setting. The researcher wrote field notes and tried to provide a detailed, coherent description of what she observed.¹⁹ The research question and study design provided

¹⁴ James P. Spradley, *The Ethnographic Interview* (New York: Holt, Rinehart & Winston, n.d.).

¹⁵ Cohen and Crabtree, 'Qualitative Research Guidelines Project'.

¹⁶ Cohen and Crabtree.

¹⁷ Jorgensen in 1989 as cited in: Cohen and Crabtree.

¹⁸ Adler & Adler in 1987 as cited in: Cohen and Crabtree.

¹⁹ Burgess in 1991 as cited in: Cohen and Crabtree.

some theoretical criteria to decide what to record, and when, where, and how to record field notes. Analysis of notes as they were being prepared was preliminary analysis that fostered self-reflection, which was crucial for understanding and construing meaning, and revealed emerging categories of axial codes. The researcher maintained two documents for her field notes in the seminary: her 'daily diary of learning' in which she tracked her own learning process, difficulties she encountered, mistakes she made, clarifications she sought, her 'aha' moments, the progress she made, her teacher's and her peer-assessors' interactions with her regarding her learning were captured in this document. 'Seminary Notes' was the second document, it was about other students in the seminary in which she captured her interactions with the students and the teacher, how the students were memorising and revising, the progress they were making, the amount of material they were memorising as their CL, their memorisation and retrieval schedules that reflected the rate of their progress, and the process metamemory developing in them and conducted a number of practical demonstrations with the students.

4.3.3 Collecting Texts and Documents

The researcher collected and analysed the following documents used in the daily work of the seminary during the memorisation process to develop understanding:²⁰ Daily diary of the student consisting of the Recital Tracking Sheet, Error-Monitoring Sheet, Report Card of the student and Head-Teacher's Register of students. Blank formats of the daily diary and error monitoring sheet were collected, analysed, and translated into English from the Urdu language. When analysing these documents, the researcher focused on the fact that they were created and standardized to capture real-time data during the memorisation process with the purpose of providing formative feedback to identify the exact lacunae and improve the student's performance.²¹ The daily diary is used to provide concrete, authentic, objective data on each of the student's recitals. It is significant that the identified errors are all phonetic mistakes: incorrect enunciation, wrong pronunciation, insufficient or excessive stress on syllables, and phrases or verses that were forgotten or inserted incorrectly. Semantic mistakes are not identified. The report card is a brief standardised document to capture the bi-annual and annual examinations results of the students. The register is maintained by the head-teacher to monitor the students' attendance, track progress of the student - whether it is slow, steady, or fast, if a student is able to memorise a new lesson every day, time taken to memorise a *Para* or 1/30th division of the Holy Qur'anic text. These documents were analysed in tandem with other data that was collected. Filled up formats of the students were not used as the basic purpose was to understand what kind of data was given importance during the memorisation process, how it was systematically captured and for what purpose it was used. The number and types of

²⁰ Cohen and Crabtree.

²¹ Valerie J. Shute, 'Focus on Formative Feedback', *Review of Educational Research* 78, no. 1 (2008): 153–89.

errors committed were not parameters for measuring the performance outcomes, they were data for improvement purposes.

5. Development of Practical Demonstration

Practical demonstrations evolved in an effort on the part of the researcher to appreciate a phenomenon which was an area of uncharted research domain. The data that was generated through semi-structured interviews gave answers and explanations that were in conscious awareness of the subjects, but when enquired about some aspects of memorisation and for details they gave incomplete answers or were at a loss for words or the stock answer was that you simply repeat it till it gets fixed in your memory. Participant observation clarified some of the research issues and the researcher discovered some explanations to how memorisation occurred as the social-cultural milieu of the seminary was appreciated and many of its instructional practices were observed at close quarters, their rationale and their implementation and the learning outcomes they promoted were understood. But the researcher was still not able to find answers, in cognitive terms, about how a student mastered a six-hundred pages of text in a language he did not understand and recalled a target verse without confusing it with another one. Responses to interview questions and participant observation gave descriptions of the actions of the subjects, but the researcher was looking for insights of the descriptions. 'Tell me about...' queries were inadequate, so the researcher decided to ask, 'show me how you do it?' and this led to the development of 'practical demonstrations' as tool for data generation, both during interviews and in participant observation.

5.1 Interpreting Practical Demonstrations

Interpretation and discussion of the practical demonstrations were in the theoretical formulations of theories and models that formed sources of secondary data²² including skilled memory theory of Chase and Ericsson,²³ long-term working memory (LT-WM)²⁴ and the concept of spatialisation.²⁵

Expertise research provided a broad framework to interpret memorisation and these practical demonstrations in terms of deliberate practice, and efficient use of memory

²² Kathy Charmaz, *Contrasting Grounded Theory: A Practical Guide Through Qualitative Analysis* (London: Sage Publications, 2014).

²³ William G. Chase and K. Anders Ericsson, 'Skill and Working Memory - Technical Report No. 7', in *The Psychology of Learning and Motivation - Advances in Research and Theory*, ed. G.W. Bower, vol. 16 (Academic Press, 1982), 1-58, [https://doi.org/10.1016/S0079-7421\(08\)60546-0](https://doi.org/10.1016/S0079-7421(08)60546-0).

²⁴ K. Anders Ericsson and Walter Kintsch, 'Long-Term Working Memory.', *Psychological Review* 102, no. 2 (1995): 211-45, <https://doi.org/10.1037/0033-295X.102.2.211>.

²⁵ Alessandro Guida and Magali Lavielle-Guida, '2011 Space Odyssey: Spatialization as a Mechanism to Code Order Allows a Close Encounter between Memory Expertise and Classic Immediate Memory Studies', *Frontiers in Psychology*, 7 June 2014, 573, <https://doi.org/10.3389/FPSYG.2014.00573>.

and other cognitive structures and processes which are common for all people.²⁶ Exceptional performance is rare in most domains, however in the case of memorisation of the Holy Qur'ān, hundreds of children in the age group of 10 to 20 years complete it.

Of the three principles of skilled memory formulated by Chase and Ericsson, the second principle about retrieval structure that organizes and stores information for easy access and retrieval from long-term memory is particularly applicable to memorisation.²⁷ The role of 'deliberate practice' in memorisation is contributory in improving performance.²⁸

Long-term working memory (LT-WM) theory explains the memorisers working memory capacity and controls proactive and retroactive interferences.²⁹ They utilise retrieval structure and retrieval cues to encode, store and retrieve the verses of the Holy Qur'ān from LT-WM efficiently. The structural organization of the text of the Holy Qur'ān is employed as the retrieval structure. Stored verses in LT-WM can be accessed instantaneously after an interruption by reactivating the relevant retrieval cues which demonstrates the systematic creation of a LT-WM for a memoriser. The retrieval demands for memorisation of the Holy Qur'ān are unambiguous, that is, the precise reproduction of the text in the exact sequential order of the book (i.e., serial learning) with accurate diction so that there is zero-error performance and the recitation of a memoriser from any part of the world is as faithfully identical and intelligible as a native Arabic-speaking memoriser's recital. Proactive and retroactive interference in encodings and retrievals of over 6000 verses are controlled and eliminated with cued recall of the retrieval structure. Rapid and flexible access to encoded information is the output criteria for memorisation, however rapid and flexible encoding is not an input criterion. Concurrent memory tasks can be performed without loss of efficacy in recall after memorisation has stabilized in the LT-WM.

Jurowski, Jurowska, and Krzeczowska found that visual strategies in the form of creating images is one of the most useful mnemonics employed to encode and organize learnt material.³⁰ The students generate, store, review and allude to an analogous image of each of the over 600 pages comprising the Holy Qur'ān. Kosslyn's work on image scanning and the strategies used for it demonstrate that it is functionally equivalent to perceptual scanning of the object.³¹ The students encode an image of the page of the Holy Qur'ān during the process of primary memorisation and subsequent SRC, IRC and LRC.

²⁶ K. Anders Ericsson and Andreas C. Lehmann, 'Expert and Exceptional Performance: Evidence of Maximal Adaptation to Task Constraints', *Annual Review of Psychology* 47 (1996): 273–305, <https://doi.org/10.1146/ANNUREV.PSYCH.47.1.273>.

²⁷ Chase and Ericsson, 'Skill and Working Memory - Technical Report No. 7'.

²⁸ Ericsson, Krampe, and Tesch-Römer, 'The Role of Deliberate Practice in the Acquisition of Expert Performance'.

²⁹ Ericsson and Kintsch, 'Long-Term Working Memory.'

³⁰ Malgorzata Krzeczowska, Kamil Jurowski, and Anna Jurowska, 'Comprehensive Review of Mnemonic Devices and Their Applications: State of the Art', *International E-Journal of Science, Medicine & Education* 9, no. 3 (2015): 4–9, <https://doi.org/10.56026/IMU.9.3.4>.

³¹ Robert J. Sternberg, *Cognitive Psychology*, 4th ed. (Belmont, CA: Thomson-Wadsworth, 2006).

Guida and Lavielle-Guida, after an extensive review of research, propose that the 'serial order information' of the to-be learnt material is coded and stored through a 'positional coding mechanism' where a positional tag or a context is associated with it.³² This serial order information called 'spatialization' suggests that the 'initial words of a line of words have a left spatial value while the last words of the same line of words have a right spatial value', items are ordered spatially as they enter 'verbal immediate memory'. This 'left to right' serial ordering is applicable to orthographies which have a writing system that has a left-to-right orientation, but for Arabic which is written from 'right to left', the serial order sequence or the spatialization begins from right towards left. Spatialization is employed to explain Chase and Ericsson's skilled memory theory's second construct of retrieval structures³³ and also Ericsson and Kintsch's LT-WM.³⁴ Spatialization shows retrieval structures to be in-built to immediate memory (WM and STM) as they are built on a basic and universal process followed by humans in their use of language and thinking.

This process, elucidated by Guida and Lavielle-Guida,³⁵ could explain how the voluminous material in the Holy Qur'ān is encoded as it takes advantage of the spatialization process: the personal copy of the Holy Qur'ān, usually with 15-lines per page is used during the course of memorisation which standardizes the spatialization of the text. The Holy Qur'ān has an in-built structural organization based on the segmentation of its text into progressively smaller divisions and the numbering system for them. Forming a visual image of a page is important for encoding the text while memorising, for encoding the retrieval cues which are later used to retrieve the exact text. This stress on a particular text and a personal copy reiterates the importance of visuo-spatial sketchpad in encoding, storage, and recall.³⁶ Visuo-spatial sketchpad or visual WM enables in building a visual LT-WM. So, imagery seems to form a crucial link in constructing and accessing the memorisation of the Holy Qur'ān.

6. Some Examples of Practical Demonstration

The rest of the article presents some important practical demonstrations that yielded significant research findings, the objective in conducting them, the procedures about how they were conducted, analysed, and interpreted, and how they clarified the specific research issue. Some important research issues that were corroborated through practical demonstrations were the creation and usage of analogous mental image of the page, spatial retrieval cues in the form of the exact line on which a verse is occurring

³² Guida and Lavielle-Guida, '2011 Space Odyssey: Spatialization as a Mechanism to Code Order Allows a Close Encounter between Memory Expertise and Classic Immediate Memory Studies'.

³³ Chase and Ericsson, 'Skill and Working Memory - Technical Report No. 7'.

³⁴ Ericsson and Kintsch, 'Long-Term Working Memory.'

³⁵ Guida and Lavielle-Guida, '2011 Space Odyssey: Spatialization as a Mechanism to Code Order Allows a Close Encounter between Memory Expertise and Classic Immediate Memory Studies'.

³⁶ Alan Baddeley, 'Working Memory: Theories, Models, and Controversies', *Annual Review of Psychology* 63 (2012): 1–29, <https://doi.org/10.1146/ANNUREV-PSYCH-120710-100422>.

during recitation, visual retrieval cues which are the words of the verses, retrieval structure, and speed of access through different retrieval paths.

6.1 Practical Demonstration: Retrieval Structure and Retrieval Cues

Objective: To demonstrate the behavioural evidence of the retrieval structure, its structural features, and retrieval cues that act as peg words.³⁷

Procedure: The researcher asked the subject about how he discriminates between oft-repeated words and phrases that occur multiple times in the text of the Holy Qur'ān. In response, the subject demonstrated the following: *Para* no. 21, Chapter *Luqmān*, section no.10 is 1-page long. The subject identified the oft-repeated words and phrases occurring in it and the similar verses that occur in the previous *Para* and section. The researcher verified the responses of the subject by referring to the text of the Holy Qur'ān concurrently.

Example 1: 2nd verse of *para* 21, section 10 occurred previously in *para* 20, section 4, verse no.2. In the former verse only the last word of the verse is different from the latter verse.

Example 2: *Para* 21, section 10, 5th verse recur exactly in *para* 1, section 1, verse no.5. The wordings are exact.

Example 3: *Para* 21, section 10 verse no.9 recurs exactly in *para* 5, section 5 in chapter Maida, verse no. 57. A part of the phrase recurs in *Para* 5, section 15 in chapter *al-Nisā'*, verse no. 122.

Example 4: *Para* 21, section 10, part of verse no. 10 recurs in *Para* 14, chapter *al-Nahl*, Section 8 part of verse no.15

Results: The subject was able to recall all the above instances correctly as verified by the researcher, and also without prompting from the researcher.

Analysis and Discussion: These retrieval cues, i.e., *Para* number, section number, and verse number, are a significant contributor specifically for maintaining the distinction between oft-repeated words/ phrases/ verses. Verse number in general does not form part of the retrieval cues, but in these specific cases of oft-repeated words/ phrases, it forms part of the retrieval cues.

These results offer strong support and behavioural evidence for existence of a well-defined retrieval structure that forms the long-term working memory (LT-WM) for memorisers of the Holy Qur'ān. Its structural features follow the segmentation of the text of the Holy Qur'ān into 30 equal divisions called the *Para* which are numbered and have a specific name, each division is divided into sections ranging from 16 to 22, which are numbered with reference to the *Para* in which they occur, but they don't have a specific name. There are 114 chapters of unequal lengths and distributed across the divisions. These chapters also have a specific name and number. The verses are numbered with

³⁷ Ericsson and Kintsch, 'Long-Term Working Memory.'

reference to the chapter in which they occur. These names and numbers of the *para*, section, chapter are the main, but not the only retrieval cues.

6.2 Practical Demonstration: Mental Image of the Page

Objective: To verify the use of the page of the text in the form of a mental image.³⁸

Procedure: The researcher communicated the task requirements to the subject, i.e., the subject must close his eyes and count the lines on the page of the Holy Qur'ān and identify the number of the line on which a particular verse appears. The researcher chose a *para* and a section and communicated these details to the subject. Then she read a particular verse and asked the subject on which line it appears. The researcher verified the answers in the text of the Holy Qur'ān concurrently. Multiple instances of the above tasks were conducted.

Results: The subject gave the right answer when the verse appeared on the top half of the page but when the verse was on the bottom half of the page, he missed the correct line by one line only.

Analysis and Discussion: This PD shows the utilisation of mental imagery in memorisation. It acts as a spatial retrieval cue; the image of the page seems to be analogous rather than photographic.³⁹ This PD provides 'behavioural evidence' that students who are memorising the Holy Qur'ān form an analogous mental image of the page of the text and further they utilise this image 'to verify object properties' which in this case are the verses printed on the lines of the page.

6.3 Practical Demonstration: Number of the Verse as A Retrieval Cue

Objective: To identify retrieval cues that facilitate encoding, storage, and easy recall, specifically to identify if the number of the verse is an important retrieval cue, if it was a peg word.⁴⁰

Procedure: The researcher read out the verse and asks the subject to identify its number. *Para* 18, Chapter *al-Mu'minūn* which was part of LRC was chosen, the subject requested to read out verses from the first 2 pages of the chapter only as they are not taught to remember the number of the verse. When the *para* was chosen, it was from *Para* 1 to 20 because he has already memorised them, and from *para* 21 to 29 were yet to be memorised. The researcher verified the responses from a text of the Holy Qur'ān concurrently.

Example 1: The researcher read out to him verse no.3 and he immediately said verse number 3. Then the researcher asked him from where he had started his sub-vocal recital before identifying the verse, and he said he identified it directly.

³⁸ Edward E. Smith and Stephen M. Kosslyn, *Cognitive Psychology- Mind and Brain* (New Delhi: Prentice-Hall of India Pvt. Ltd., n.d.).

³⁹ Smith and Kosslyn.

⁴⁰ Ericsson and Kintsch, 'Long-Term Working Memory.'

Example 2: The researcher read out to subject verse no.9 and asked him its number. He recited to himself and counted on his finger and identified the verse number correctly as 9. The researcher asked him from where he had started his recital and he said he began from the 5th verse.

Example 3: The researcher read out to him verse no.14 and asked him its number. Again, he recited to himself and counted on his fingers before identifying the verse's number as 14. The researcher asked for the beginning of recital, and he said 9th verse.

Results: During the subsequent verbal protocol and debriefing, the researcher asked him why he was not able to identify these two verses directly as he did with the first one and he said he may be confused and recite the wrong verse as the number of the verse is not taught to them.

Analysis and Discussion: The number of a particular verse is not part of the repertoire of retrieval cues that are consciously taught and encoded, stored, and recalled for retrieval of a particular verse. Hence, serial learning is occurring sequentially, and each verse is not a standalone unit. Each verse forms the retrieval cue for the successive verses.

The researcher suspected that numbering a verse might be imbibed without awareness. So, to test this assumption, text material was chosen that was rehearsed in the LRC and formed part of the LT-WM to check if the number of the verse was utilised as a retrieval cue without conscious intention.

In e.g.,1, he was able to recall the number of the verse directly, without serial recall as it was from among the first few verses of the chapter, and proactive interference from other numbers was minimal.

In e.g., 2 and 3, he was able to recall the number of a particular verse only after serial recall and followed a circuitous path. He recalled 5 or 6 verse preceding the target verse and recited all of them sequentially till he identified the target verse. Then he counted their respective numbers and identified the number of the target and informed the researcher. He recited to himself quietly. This PD demonstrates that the number of a particular verse does not form part of its set of retrieval cues. However, it is not completely ignored either- he did recall the numbers through the circuitous process. This could mean that the numbers of some of the verses that occur at the beginning of the chapter are encoded into the retrieval structure as retrieval cues due to incidental learning.

Therefore, behavioural evidence for two important concepts is demonstrated in this practical demonstration. LT-WM is constructed through multiple rehearsals for memory strengthening. A retrieval structure and retrieval cues are embedded into the LT-WM which allows the students speedy access to each individual verse, which maintains temporal distinction between over 6000 verses that inhibits and eliminates proactive and retroactive interferences between verses and oft-repeated phrases.

6.4 Practical Demonstration: Retrieval Paths

Objective: To map the structural features of the retrieval structure of the text of the Holy Qur'ān, and to map its retrieval paths.

Procedure: The researcher instructed the subject to recall the names of all the *para* in sequence and name them as the researcher asks for them. When he named the 1st *para* the researcher asked him for the names of the chapter that occur in it which he identified accurately. The practical demonstration continued in a similar manner for all the *para*: first name the *para* and then name one or more chapters that form part of that particular *para*. In some instances, a particular chapter forms part of two adjoining *para*. He was able to identify such instances accurately and recalled the name of such a chapter twice when he was recalling the names of both the *para* in which it occurs. The researcher verified his answers simultaneously in a copy of the Holy Qur'ān.

Results: He made a few mistakes which were noted with a cross mark (X)

Para 12: Chapters *Yūnus*; *Ibrāhīm* (X); *al-Ra'd*. Chapter *Ibrāhīm* does not occur in this *para*.

Para 13: chapters *Hūd* (X); *al-Ḥijr*. Chapter *Hūd* does not occur in this *para*.

Para 14: Chapters *al-Naḥl*- recalled the name of the chapter after recalling the first verse by himself.

Para 17: Chapters *Muḥammad* (X); *al-Ḥajj*. Chapter *Muḥammad* does not occur in this *para*.

Para 19: Chapters *al-Qaṣaṣ* (X); *al-Naml*. The researcher had to read the 1st verse of Chapter *al-Qaṣaṣ* and he was able to recall the name of the chapter

Para 20: Chapters *al-'Ankabūt*. Recalled the name of the chapter after recalling the first verse by himself.

Para 21: accurately recalled all the chapters till Chapter *Sabā'*.

Para 30: recalled names of all 32 chapters, in some cases he recalled the first verse of the chapter before he recalled the name of the chapter.

Analysis and Discussion: Whenever he gave an inaccurate answer, he was able to recall the correct answer within one or two attempts. He was not giving random answers and guessing, he was doing a focused search within a particular search space. Whenever he gave an incorrect response, it was the name of a chapter that occurred in the subsequent *para*.

His CL is in the *Para* 21, so he recalled the names of chapters till *Para* 21. The researcher encouraged him to recall from the subsequent *Para* 22 to 29, but he refused because he will make mistakes. This practical demonstration shows that he is following the retrieval structure of the Holy Qur'ān, and he is recalling the material in the same order in which he had encoded it and revised it repeatedly. The primary retrieval cue is the *para*, its name and number. The names of the chapter that occur in a *para* are anchored to the primary cue. The Holy Qur'ān has 30 approximately equal divisions ($1/30^{\text{th}}$) called *para*, and each is divided into four approximately equal quarters. Further each $1/30^{\text{th}}$ division is divided into sections ranging from 16 to 22 which could be one page long to two pages long. Each *para* has a distinct name and number, while the four quarters and sections are

numbered. Superimposed on this main retrieval structure is another subsidiary retrieval structure which is the chapter-wise structure. There are 114 chapters of unequal lengths distributed across the 30 divisions. The smallest chapter has only three short lines, while the longest one is spread over two and a quarter *para*. Each chapter has a unique name and number. So, there are an additional set of retrieval paths leading to specific verses, which are numbered. During encoding and each subsequent retrieval cycles, all the retrieval cues are named and practiced. So, these sets of retrieval cues streamline the retrieval path to increase the ease of accessibility of verses.

In three of the above instances, he was able to recall the names of the chapter after recalling the first verse occurring in it respectively, so this shows that the first verse is an important retrieval cue for the subsequent verses.

He has not yet completed the memorisation process and completed the prescribed number of revisions. After he does so, he may be flexible in the identification and recall operations independent of following the ordered sequence of the retrieval structure and his speed of access would increase manifold.

6.5 Practical Demonstration: Serial Learning

Objective: To confirm that preceding verses are the retrieval cues for the succeeding verses, which is characteristic of serial learning.⁴¹

Procedure: The researcher read out a verse and the subject had to recall the subsequent verse. The researcher chose a verse to read out randomly. The researcher verified the responses in a text of the Holy Qur'ān concurrently.

Example 1: The researcher read out from *Para 6*, chapter *al-Mā'idah*, verse 29 and the subject started his recital even from the middle of the same verse and continued to recall verse no. 30.

Example 2: The researcher read out from *Para 7*, chapter *al-An'ām*, verse number 55, and as in the previous instance he recited from the middle of the verse and continued with verse no. 56.

Results: This PD included many more examples, and it was the easiest for him because it was reflective of his examination structure, and he was well practiced in it.

Analysis and Discussion: The preceding verse is the retrieval cue for its successor as it is a case of serial learning.⁴²

In the hierarchy of retrieval cues, the topmost position is of the *para* that is the 1/30th division, which is the master cue. Then there are a number of other secondary retrieval cues which could be the chapter; the section that is in a *para*; and the four quarters of the *para*. One or more of these secondary level cues may be activated. The third level of retrieval cues are the ones that nearer to the target verse, and they could be the first few

⁴¹ Robert L. Solso, *Cognitive Psychology*, 6th ed. (London: Pearson Education, 2005).

⁴² Solso.

words occurring on the first line of a particular page, the preceding verse or verses of a target verse, and the final retrieval cue are the first few words of the target verse itself.

During the learning stage or primary memorisation of the CL encoding occurs in terms of the hierarchy of the retrieval structure. As the CL progresses into the SRC and then IRC and later the LRC, the retrieval cues become increasingly differentiated. This is reflective of the temporal distinction that is one of the factors contributing to inhibition and elimination of interferences. After repeated practice of recall, access becomes distinct for each verse. As a student gains mastery through deliberate practice, he begins to access a target verse through the shortest possible retrieval path.⁴³ So, while accessing a particular verse, the search path may not be strictly hierarchical.

Conclusion

Practical demonstrations were structured interactions between the researcher and the subjects about a particular aspect of the memorisation process that has been automatized, is beyond conscious awareness and taken for granted by the subjects. As a method of data generation, they were valuable in clarifying some important issues that were confounding the research study and provided significant behavioural evidence. These set of practical demonstrations and many others conducted during interviews and participant observations have illuminated some important facts involved in memorisation of the Holy Qur'ān: that students do indeed form analogous mental images of six-hundred pages of the text that anchors their retrieval; that multiple retrieval cycles strengthen memory in the absence of semantic comprehension and improve accessibility to the material as retrieval paths are streamlined.

References

- Baddeley, Alan. 'Working Memory: Theories, Models, and Controversies'. *Annual Review of Psychology* 63 (2012): 1–29. <https://doi.org/10.1146/ANNUREV-PSYCH-120710-100422>.
- Charmaz, Kathy. *Contrasting Grounded Theory: A Practical Guide Through Qualitative Analysis*. London: Sage Publications, 2014.
- Chase, William G., and K. Anders Ericsson. 'Skill and Working Memory - Technical Report No. 7'. In *The Psychology of Learning and Motivation - Advances in Research and Theory*, edited by G.W. Bower, 16:1–58. Academic Press, 1982. [https://doi.org/10.1016/S0079-7421\(08\)60546-0](https://doi.org/10.1016/S0079-7421(08)60546-0).
- Cohen, Deborah, and Benjamin Crabtree. 'Qualitative Research Guidelines Project'. Robert Wood Johnson Foundation, 2006. <http://www.qualres.org/HomeAbou-3452.html>.
- Ericsson, K. Anders, and Walter Kintsch. 'Long-Term Working Memory.' *Psychological Review* 102, no. 2 (1995): 211–45. <https://doi.org/10.1037/0033-295X.102.2.211>.
- Ericsson, K. Anders, Ralf Th Krampe, and Clemens Tesch-Römer. 'The Role of Deliberate

⁴³ Ericsson, Krampe, and Tesch-Römer, 'The Role of Deliberate Practice in the Acquisition of Expert Performance'.

- Practice in the Acquisition of Expert Performance'. *Psychological Review* 100, no. 3 (1993): 363–406. <https://doi.org/10.1037/0033-295X.100.3.363>.
- Ericsson, K. Anders, and Andreas C. Lehmann. 'Expert and Exceptional Performance: Evidence of Maximal Adaptation to Task Constraints'. *Annual Review of Psychology* 47 (1996): 273–305. <https://doi.org/10.1146/ANNUREV.PSYCH.47.1.273>.
- Flick, Uwe. *An Introduction to Qualitative Research*. London: Sage Publications, 2006.
- Guida, Alessandro, and Magali Lavielle-Guida. '2011 Space Odyssey: Spatialization as a Mechanism to Code Order Allows a Close Encounter between Memory Expertise and Classic Immediate Memory Studies'. *Frontiers in Psychology*, 7 June 2014, 573. <https://doi.org/10.3389/FPSYG.2014.00573>.
- Guskey, Thomas R. 'Lessons of Mastery Learning'. *Educational, School, and Counseling Psychology Faculty Publications* 14 (2010).
- Karasz, Alison. 'Qualitative and Mixed Methods Research in Cross-Cultural Psychology'. In *Fundamental Questions in Cross-Cultural Psychology*, edited by F.J.R. Van De Vijver, A. Chasiotis, and S.M. Breugelmans, 214–34. Cambridge: Cambridge University Press, 2011.
- Koedinger, Kenneth R., Albert T. Corbett, and Charles Perfetti. 'The Knowledge-Learning-Instruction Framework: Bridging the Science-Practice Chasm to Enhance Robust Student Learning'. *Cognitive Science* 36, no. 5 (July 2012): 757–98. <https://doi.org/10.1111/J.1551-6709.2012.01245.X>.
- Krzeczkowska, Malgorzata, Kamil Jurowski, and Anna Jurowska. 'Comprehensive Review of Mnemonic Devices and Their Applications: State of the Art'. *International E-Journal of Science, Medicine & Education* 9, no. 3 (2015): 4–9. <https://doi.org/10.56026/IMU.9.3.4>.
- Parveen, Nikhat. 'Investigating the Memorization of the Quran Using the Grounded Theory Methodology'. *The Qualitative Report* 26, no. 7 (2021): 2226–44. <https://doi.org/10.46743/2160-3715/2021.4752>.
- . 'The Grounded Theory Methodology in Psychology: A Review'. *The International Journal of Indian Psychology* 6, no. 1 (2018). <https://doi.org/10.25215/0601.083>.
- Shute, Valerie J. 'Focus on Formative Feedback'. *Review of Educational Research* 78, no. 1 (2008): 153–89.
- Smith, Edward E., and Stephen M. Kosslyn. *Cognitive Psychology- Mind and Brain*. New Delhi: Prentice-Hall of India Pvt. Ltd., n.d.
- Solso, Robert L. *Cognitive Psychology*. 6th ed. London: Pearson Education, 2005.
- Spradley, James P. *The Ethnographic Interview*. New York: Holt, Rinehart & Winston, n.d.
- Sternberg, Robert J. *Cognitive Psychology*. 4th ed. Belmont, CA: Thomson-Wadsworth, 2006.
- Strauss, Anselm, and Juliet Corbin. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park, CA: Sage Publications, 1990.
- . 'Grounded Theory Methodology: An Overview.' In *Handbook of Qualitative Research*, edited by N.K. Denzin and Y.S. Lincoln, 273–85. Thousand Oaks, CA: SAGE, 1994.
- Vygotsky, Lev. 'Interaction between Learning and Development'. In *Readings on the*

Development of Children, edited by Mary Gauvain and Michael Cole, 29–36. New York: W.H. Freeman & Company, 1978.

Wilding, John, and Elizabeth Valentine. *Superior Memory*. London: Psychology Press/Erlbaum (UK) Taylor & Francis, 1997.