DISCUSSION TWO:

After reading Chapter 5, Methods and Strategies in Research in the course text, choose an original peer-reviewed research article from the Week Two Articles List (Links to an external site.) provided (or get approval from the instructor for another article). The list of articles will allow you to become familiar with a variety of methodologies used in the study of neurobehavioral symptoms as well as an extensive range of disorders that are appropriate for study in this field. As a professional in the field of psychology, you will often be asked to summarize and evaluate relevant research in the field for various audiences in an oral presentation.

Each student must evaluate a unique article that is not being reviewed by another classmate. You must "claim" your article by Day 1 by posting your choice in the Ashford Cafe. You will create a video of your oral presentation based on the criteria listed below and post a link to your video in the discussion forum by Day 3. Use YouTube.com or Screencast-o-matic to create and upload your video to the discussion forum. Refer to the YouTube WebCam Quick-Start Guide (Links to an external site.) or Screencast-o-matic Quick-Start Guide (Links to an external site.) for step by step instructions. It is highly recommended that you review the YouTube Privacy Policy (Links to an external site.) or Screencast-o-matic Privacy Policy (Links to an external site.) information prior to submitting your video.

Your 5 minute video presentation must include the following elements:

- Brief overview
- An analysis of the research methodology used
- Independent and dependent variables
- Study design
- Explanation of the results
- Strengths and weaknesses of the study
- Suggestions for how to improve the research design or methodology

Note to Students: This assignment requires that you produce a visual presentation, supply a spoken audio narrative, and to listen the audio narrative of others. Note you are also asked to provide a transcript of your presentation. If you have a documented disability accommodation that might interfere with your ability to complete this assignment you may contact your instructor to develop a comparable alternative assignment. If you have other issues that you feel may be a barrier to your ability to complete this course or this assignment please contact the Office of Access and Wellness at: access@ashford.edu.

DISCUSSION TWO & ARTICLE X

Journal of Neuropsychology (2013), 7, 132–138

The British Psychological Society

www.wileyonlinelibrary.com

Brief communication

Preservation of person-specific knowledge in semantic memory disorder: A longitudinal investigation in two cases of dementia

Catherine Haslam[1]* and Mazen Sabah[2]

[1]Psychology, College of Life and Environmental Sciences, University of Exeter, UK
[2]Neurology Department, Royal Devon and Exeter Hospital, UK

The double dissociation involving person-specific and general semantic knowledge is supported by numerous patient studies, though cases with preservation of the former are few. In this paper, we report longitudinal data from two cases. Their knowledge in both domains was preserved at the start of the investigation, but progressive deterioration was primarily observed on tests of general semantics. These data strengthen the evidence-base for preservation of person-specific knowledge in semantic memory disorder, and support its separate representation from object knowledge.

The double dissociation involving person-specific and general semantic knowledge is well recognized, but largely reliant on cases showing spared general semantics and impaired person knowledge. The reverse dissociation is rare, raising questions about the contribution of task difficulty in its presentation (see Thompson *et al.*, 2004). Furthermore, support for the dissociation comes primarily from cross-sectional patient evaluations. The cases reported here strengthen the evidence base in support of the double dissociation in two ways. First, we offer two new cases of preserved person knowledge in semantic memory disorder, and second, we demonstrate this in the first longitudinal investigation of the dissociation.

Many patients are reported to show sparing of general semantics and impairment of person-specific knowledge (e.g., Hanley, Young, & Pearson, 1989), but only three (i.e., FH, ML, and, MA) show the reverse dissociation (Kay & Hanley, 2002; Lyons, Hanley, & Kay, 2002; Thompson *et al.*, 2004), required to support the functional and neural separation of these domains. Investigations of their neural correlates have focused largely on localizing regions involved in general semantic processing, and most researchers agree this is mediated by a left temporal network (e.g., Mummery, Patterson, Hodges, & Price, 1998; Vandenberghe, Price, Wise, Josephs, & Frackowiak, 1996). Localizing

* *Correspondence should be addressed to Catherine Haslam, Psychology, College of Life and Environmental Sciences, University of Exeter, Exeter, EX4 4QG, UK (e-mail: c.haslam@exeter.ac.uk).*

DOI:10.1111/j.1748-6653.2012.02030.x

regions involved in person knowledge has proved challenging. There is evidence of right temporal damage in patients with impaired person naming and semantics (e.g., Hanley *et al.*, 1989), increased right hemisphere activation in decision-making tasks involving people (Mitchell, Heatherton, & Macrae, 2002), and greater priming when semantically related face primes are presented to the left visual field (Vladeanu & Bourne, 2009). However, there are also patients who show the opposite pattern of left temporal damage with selective impairment of person knowledge (e.g., Hodges & Graham, 1998), and evidence of bilateral activation in person-specific knowledge tasks (e.g., Kampf, Nachson, & Babkoff, 2002). Thus, additional data are required to clarify questions over the neural representation of person-specific knowledge.

In this paper, we report two new cases of preserved person knowledge in the presence of general semantic disorder. These patients were followed longitudinally – over a period of 6 years in one and 2 years in another – and their knowledge in both domains was assessed. During this time, both patients showed progressive decline in general semantics but sparing in their knowledge about famous people.

Method

Participants

Two patients, PR and PK, participated in this investigation. Both presented with vascular disease and generalized progressive decline, making definitive diagnosis difficult.

PR, a retired salesman, was referred for investigation of language problems in 1999.[1] This presented as word-finding problems, but by 2001 had extended to naming and comprehension. Various diagnoses were queried, including primary progressive aphasia and vascular dementia, with findings from MR brain imaging (in June 2005) providing some support for the latter given evidence of multiple focal areas of increased signal in periventricular and subcortical white matter regions bilaterally. However, there was also evidence of periventricular leucomalacia and a moderate degree of generalized cerebral atrophy. Monitoring of PR's semantic knowledge commenced in August 2002 when he was 76 years of age. Table 1 shows results of general neuropsychological evaluation at that time revealing deficiencies in naming, fluency, attention, and problem solving. Deficits in memory, although present, were confined to the auditory-verbal domain, raising questions about the contribution of language dysfunction to performance. In contrast, general semantic and visuospatial processing was within normal limits.

PK, a retired civil engineer, was also referred for language evaluation. He was assessed in 2004 at which time he presented with word-finding and naming deficits, and difficulties in reading, spelling, and arithmetic. Immediate memory was impaired (as indexed by auditory-verbal tasks), but delayed memory performance (which included non-verbal and recognition tasks) was in the average range. Repeat assessments in 2005 and 2007 showed deterioration in most areas, and an additional decline in attention. PK was recruited in 2008, at which time further assessment showed general preservation of visuospatial abilities, face recognition and non-verbal memory, but impairment in naming, fluency, problem solving, and one test of semantic knowledge (i.e., Pyramids and Palm Trees [PPT]). In January 2009, Magnetic Resonance Image (MRI) scanning revealed asymmetrical cerebral atrophy more marked in the left temporal lobe (see

[1] *PR was one of three patients reported in another paper focusing on graphemic buffer disorder in progressive patients (see Haslam, Kay, Tree, & Baron, 2009).*

Table 1. Neuropsychological profiles of patients

Test	Patients	
	PR	PK
General ability:		
NART (correct/50)	29	-
Performance IQ (WAIS-III[II] or WASI):	106[II]	70*
Attention and executive function:		
Digit span	3F*, 2B*	5F
Block design (WAIS-III[II] or WASI, scaled score)	5[II]*	1*
Matrix reasoning (scaled score)	11	7*
Attention (RBANS, index score)	-	82*
Semantic memory:		
Spoken word-picture matching (PALPA 47)	40/40	40/40
PPT (three pictures)	49/52	45/52*
Fluency and naming:		
COWAT (FAS)	14*	-
Category fluency (animals)	11*	7*
Graded naming test	15/30*	11/30*
General memory:		
Warrington RMT: faces	41/50	45/50
Words	34/50*	24/50*
RBANS: immediate memory	-	69*
Delayed memory	-	93
Face recognition:		
Benton's face Recognition (long form)	43	40
Visuospatial processing		
Visuospatial/construction index (RBANS)	-	109
VOSP: object perception		-
Screening test	20	-
Incomplete letters	20	-
VOSP: space perception		
Dot counting	10	-
Position discrimination	20	-
Cube analysis	10	-

Notes. NART, National Adult Reading Test; WAIS-III, Wechsler Adult Intelligence Scale 3rd Edition; WASI, Wechsler Abbreviated Scale of Intelligence; PALPA, Psycholinguistic Assessment of Language Processing Ability; PPT, Pyramids and Palms Trees Test; COWAT, Controlled Oral Word Association Test; RMT, Recognition Memory Test; RBANS, Repeatable Battery for the Assessment of Neuropsychological Syndromes; VOSP, Visual and Object Space Perception. *Indicates impaired performance for which the criterion was two *SD*s lower than age mean.

Figure 1). In addition to widespread small vessel ischaemic changes, there was a small high signal region in the superior left thalamus, consistent with small lacunar infarction.

Materials

General semantic knowledge was measured with the three-picture and three-word versions of the PPT test (requiring participants to match one of two alternatives to a target), the Written Word-picture Matching Test from the Psycholinguistic Assessment

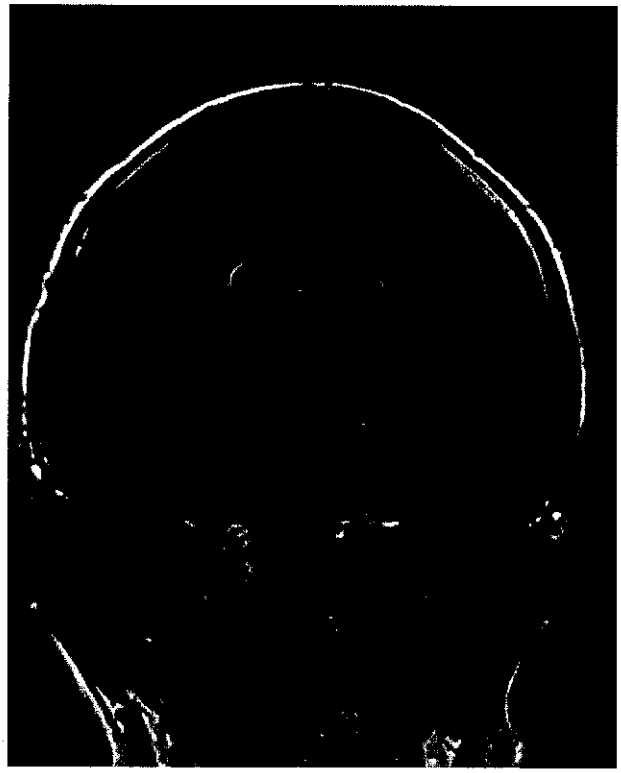

Figure 1. MRI flair sequence demonstrating small vessel disease and hemispheric asymmetry.

of Language Processing Ability battery (PALPA 48, requiring participants to identify a picture from five alternatives to match a target), Shallice's Synonym Matching test (requiring participants to choose a synonym among two written words to match a target), and object naming from the Matched Faces and Objects Test (Lyons *et al.*, 2002). Person knowledge was assessed using the Hodges and Ward famous face familiarity test (see Haslam, Kay, Hanley, & Lyons, 2004, requiring identification of the famous face from four alternatives), face naming from the Matched Faces and Objects Test, the Bogart and Bacall test of semantic association (based on the PPT, requiring participants to match one of two alternative famous names to a target; see Kay & Hanley, 2002), face-name matching (requiring participants to choose the famous face from five alternatives to match a name; Haslam *et al.*, 2004), and a Temporal Judgment test (requiring participants to identify the name of the person who became famous first, from Haslam *et al.*, 2004).

Three substitute tests were administered in PK's final session, to replace tasks, he found too complex. These comprised the PALPA 51 (used instead of the three-word PPT, requiring participants to choose an associative match from four alternatives for a target), Test 12 from the Birmingham Object Recognition Battery (BORB; used instead of the three-picture PPT, requiring participants to match one of two pictures to a target), and tests of face and name semantic association (based on, and used instead of, the Bogart and Bacall).

Procedure

Knowledge was examined on four occasions. On each, assessment was conducted over a 3-month period during which the above tests (in addition to others that were not the focus of this study) were completed. Individual sessions were brief, taking between 30 and 45 min, given the patients' tendency to fatigue. There, was no strict order in presentation, but different versions of the same test were separated by a minimum of two sessions and the number of person and object knowledge tests presented in each session was balanced. The delay between assessment phases was 2 years for PR and 4–9 months for PK.

Results

PR's performance in both domains was either within the control range or, in the case of person knowledge tests, better than chance (range in $\chi^2(1) = 18$–38.4, all $ps < .001$), on first examination. The only exception was naming performance, but this was not surprising given PR's initial referral for language problems and its presentation in other cases of person-specific knowledge preservation (e.g., Thompson *et al.*, 2004). For this reason, a four-alternative recognition task was added for PK. As evident in Table 2A, performance on remaining tests of person-specific knowledge was stable in the 6-year period that PR was monitored, while a progressive decline, in the range of 8–25 points, was observed in all tests of general semantics.

A similar, but more rapid, decline in general semantics emerged in PK. Like PR, he was impaired in naming tests on initial assessment, showed general preservation on word-picture matching, and performance on person knowledge tests was either within normal limits or better than chance (range in $\chi^2(1) = 11.4$–34.7, all $ps < .01$). Table 2B shows a clear deterioration on tests of general semantics, but stability in person knowledge. However, in the final phase, performance on the faces component only of semantic association was better than chance ($\chi^2(1)_{\text{Faces}} = 8.17$, $p = .004$; $\chi^2(1)_{\text{Names}} = .17$, $p = .68$). Nevertheless, PK's biographical knowledge on the whole remained stable, in contrast to his knowledge of general semantics, which deteriorated progressively.

Discussion

This paper provides the first longitudinal investigation of semantic knowledge in two patients where the decline affected general semantic, but not person-specific, knowledge. This pattern was clear in PR whose knowledge of both categories was spared initially, with progressive disease over 6 years only affecting general semantics. PK showed a similar pattern of decline over a shorter period. As progressive disease only affected one category of knowledge, we argue that the present cases provide the strongest behavioural evidence of the rarer form of the double dissociation in which knowledge about famous people is preserved. Evidence from structural brain scanning in the case of PK, showing temporal asymmetry more marked in the left, also extends the neurological evidence-base in association with person knowledge sparing. Consistent with some previous research, it highlights the important role that the right hemisphere plays in supporting person knowledge.

Table 2. Performance on general semantic and person-specific knowledge tests for (A) PR and (B) PK

(A)

Date	General semantic knowledge						Person knowledge		
	Semantic association		Word-picture	Synonym	Object	Face	Face	Semantic	Face-name
	PPT words	PPT pictures	matching	matching	naming	naming	recognition	association	matching
August–October 2002	49/52	51/52	40/40	50/58	24/62*	26/62*	32/32	60/72	22/22
May–August 2004	48/52	45/52*	36/40*	-	15/62*	17/62*	32/32	63/72	21/22
September–November 2006	40/52*	43/52*	37/40*	46/58*	6/62*	10/62*	32/32	62/72	21/22
January–March 2008	41/52*	39/52*	31/40*	25/58*	2/62*	6/62*	32/32	60/72	22/22

(B)

Date	General semantic knowledge						Person knowledge		
	Semantic association		Word-picture	Object naming	Face naming	Face	Semantic	Face-name	Temporal
	PPT words	PPT pictures	matching	and recognition	and recognition	familiarity	association	matching	judgment
May–July '08	46/52*	45/52*	39/40	$N = 7/62^*$ $R = 56/62$	$N = 15/62^*$ $R = 56/62$	29/32	61/72	22/22	27/30
April–June '09	45/52*	39/52*	36/40*	$N = 4/62^*$ $R = 54/62$	$N = 16/62^*$ $R = 60/62$	31/32	62/72	21/22	27/30
February–April '10	-	13/24* (discontinued)	32/40*	$N = 0/62^*$ $R = 44/62$	$N = 6/62^*$ $R = 59/62$	31/32	60/72	21/22	28/30
August–October '10	6/16* (PALPA 51)	15/30* (BORB 12)	28/40*	$N = 1/62^*$ $R = 45/62$	$N = 6/62^*$ $R = 59/62$	29/32	Faces = 22/24 Names = 7/11 (discontinued)	20/22	28/30

Notes. PPT, Pyramids and Palm Trees Test; PALPA, Psycholinguistic Assessment of Language Processing Ability; N, naming; R, recognition.
*Indicates impaired performance relative to normative data, where available.

Acknowledgements

We would like to acknowledge Drs. Rachel Baron and Jeremy Tree who assisted with data collection in the case of PR.

References

Hanley, J. R., Young, A,W., & Pearson, N. A. (1989). Defective recognition of familiar people. *Cognitive Neuropsychology, 6*, 179–210.

Haslam, C., Kay, J., Hanley, R., & Lyons, F. (2004). Biographical knowledge: Domain-specific or domain-neutral? *Cortex, 40*, 451–466.

Haslam, C., Kay, J., Tree, J., & Baron, R. (2009). Dysgraphia in dementia: A systematic investigation of graphemic buffer features in a case series. *Neurocase, 15*, 338–351.

Hodges, J. R., & Graham, K. S. (1998). A reversal of the temporal gradient for famous person knowledge in semantic dementia: Implications for the neural organisation of long-term memory. *Neuropsychologia, 36*, 803–825.

Kampf, M., Nachson, I., & Babkoff, H. (2002). A serial test of the laterality of familiar face recognition. *Brain and Cognition, 50*, 35–50.

Kay, J., & Hanley, J. R. (2002). Preservation of memory for people in semantic memory disorder: Further category-specific semantic dissociation. *Cognitive Neuropsychology, 19*, 113–133.

Lyons, F., Hanley, J. R., & Kay, J. (2002). Anomia for common names and geographical names with preserved retrieval of names of people: A semantic memory disorder. *Cortex, 38*, 23–35.

Mitchell, J. P., Heatherton, T. F., & Macrae, C. N. (2002). Distinct neural systems subserve person and object knowledge. *Proceedings of the National Academy of Sciences, 99*, 15238–15243.

Mummery, C. J., Patterson, K., Hodges, J. R., & Price, C. J. (1998). Functional neuroanatomy of the semantic system: Divisible by what? *Journal of Cognitive Neuroscience, 10*, 766–777.

Thompson, S. A., Graham, K. S., Williams, G., Patterson, K., Kapur, N., & Hodges, J. R. (2004). Dissociating person-specific from general semantic knowledge: Roles of the left and right temporal lobes. *Neuropsychologia, 42*, 359–370.

Vandenberghe, R., Price, C., Wise, R., Josephs, O., & Frackowiak, R. S. J. (1996). Functional anatomy of a common semantic system for words and pictures. *Nature, 383*, 254–256.

Vladeanu, M., & Bourne, V. J. (2009). Examining the hemispheric distribution of semantic information using lateralized priming of familiar faces. *Brain and Cognition, 69*, 420–425.

Received 9 Aug 2011; revised version received 6 Feb 2012

Assignment 2

For this assignment, you will select a topic for your grant proposal (i.e., Final Project due in Week Six). Then you will write the Specific Aims section and create a preliminary bibliography. You will conduct a search in the Ashford University Library and/or on PubMedCentral (Links to an external site.) to locate at least 10 scholarly peer-reviewed articles that are relevant and that support your funding request. Create your preliminary annotated bibliography and ensure that your resources are relevant and supportive of the Specific Aims as well as the Background and Significance sections of your grant proposal (the Background and Significance sections will be written in Week Three). See a sample annotated bibliography (Links to an external site.) from the Ashford Writing Center for assistance.

Compose the Specific Aims section following the Grant Proposal Guidelines (Links to an external site.). See the Sample Grant Proposal Template (Links to an external site.) as an example and use it as a template for your Grant Proposal. The assignment should be one page, excluding the bibliography.

Carefully review the Grading Rubric (Links to an external site.) for the criteria that will be used to evaluate your assignment.

Grant Proposal Guidelines – Final Project

Sample

Instructions: *This assignment involves preparing a grant proposal requesting support for a 12-month research project. The total amount of support you may request is $60,000 (including direct and indirect costs). You will choose a specific topic in neuroscience or neuropsychology and develop a grant proposal based on a review of the literature and identification of a research hypothesis. The grant proposal must be six to eight double-spaced pages in length (not including title page, references list, and appendix), 12-point font, and formatted according to APA style as outlined in the Ashford Writing Center. You must use at least 15 peer-reviewed sources in addition to the text.*

The components of your proposal are outlined below. View the Sample Grant Proposal to see an example of a completed proposal in APA format. ***Use the Grant Proposal Template to create your grant proposal.***

NOTE: All titles should be centered and all content should be formatted as in the Grant Proposal Template and the Sample Grant Proposal, not as outlined below in this guidelines document.

Title Page (1 page):

- Title of your grant proposal
- Your full name
- Course name and number
- Instructor's name
- Date submitted

Specific Aims: (1 page)

Clearly and concisely state the goals of your grant proposal. Summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved. List the specific objectives of your grant proposal (e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology).

Background: (6 - 8 pages for Background, Significance, Proposed Study, and Budget Justification sections)

The goal of this section is to provide a well-developed literature review that provides the basis for the research problem and illustrates to the reader that you are knowledgeable about the scope of the theory. Research as many studies pertaining to the theory as possible, and summarize them in a succinct manner.

In most respects, this section is precisely what you do when you write the introduction section to a research paper. Your background section should clearly state the rationale for the topic you have chosen. It includes the literature review you conducted to identify an area of neuroscience or neuropsychology that has not yet been studied. At the end of this section, you should clearly specify your research hypotheses.

Significance:

Explain the importance of the problem or critical barriers to progress in the field that the proposed project addresses. Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields. Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.

Grant Proposal Guidelines

Proposed Study:

This section will very much resemble a typical methods section like the one you would write in an empirical paper (except that the data have not yet been collected). You should describe the study that you are proposing to conduct to test your hypothesis. This section should include the following subsections:

- **Participants:** include a description of the population that will be used for the study. Point out any procedures, situations, or materials that may be hazardous to personnel and precautions to be exercised.
- **Procedures:** include a description of how the study will be conducted including any instruments that will be used and how the data will be collected.
- **Hypotheses and Analysis:** state hypotheses of the proposed study and general outline of how data will be collected and used to accomplish the specific aims of the project.

Budget Justification:

Provide a brief summary justifying your budget and the needs for the items listed in Appendix A: Budget. The actual numbers will be listed in Appendix A. The budget for this proposal is limited to $60,000.

References:

Cite a minimum of 15 peer-reviewed articles from the Ashford University Library or PubMed Central (PMC). All sources must be current (published within the 10 years unless it's a seminal work) and relevant to your topic. Format all sources in APA style as outlined in the Ashford Writing Center.

Appendix A: Budget: (see Grant Proposal Template, Appendix A)

A typical grant proposal has a very detailed budget. For our purposes here, you should include an appendix with a completed budget. Your figures are just an estimate so feel free to make up the budget numbers and figures. Use the template called Summary Proposal Budget in the Grant Proposal Template, Appendix A to create your budget. There is also an optional Budget Calculation Spreadsheet to help you calculate your figures. The goal of this exercise is for you to spend time thinking about the costs of conducting research. Here are some examples of expenses you could include:

Direct Costs:

- **Personnel**:
  - Graduate research assistant salary – 20-hours per week for 12 months is roughly $25,000 (this covers salary, tuition, and fringe benefits).
  - Principal Investigator Salary - make-up your annual salary and divide it by 12, then multiple this number by the number of months of salary you wish to pay yourself (this can range from 1-12 months; and from 10% to 100% effort).
- **Equipment:**
  - List major purchases (greater than $5000) that will be necessary to complete your project (e.g., computers, video equipment, physiological measures, expensive software, etc.) and costs.
- **Travel**
  - Conference Travel
  - Other (e.g., travel for research assistant if needed for study)
- **Participant Support**
  - Costs for subject participation (e.g., reimbursement for time, travel, etc.)
- **Other**
  - Computers or other equipment less than $5000
  - Miscellaneous Expenses (e.g., postage, phone bills, photocopying, etc.)

Grant Proposal Guidelines

Indirect Costs:

Multiply the total direct costs budget by 0.375. This amount (37.5%) represents the indirect costs of your grant application. This money goes to the university toward operating costs, overhead, etc.

Total Costs:

Sum up your direct and indirect costs (must not exceed $60,000).