WHAT MEMORY SKILLS ARE MOST IMPORTANT TO UNIVERSITY STUDENTS IN THE UNITED STATES AND NEW ZEALAND?

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Previous research investigated what memory skills were most important to students enrolled in a university memory skills course in the United States. This research extended the investigation to a broader sample of 85 United States students and to a similar sample of 85 New Zealand students. The students completed the Memory Improvement Questionnaire (MIQ), on which they rated the importance of 12 aspects of memory (e.g., remembering people's names, improving schoolwork or study skills). The most important aspects in both samples were schoolwork, remembering what they read, remembering facts and details, and remembering people's names. There were few relationships with gender, grades, or year in school. The findings suggest that there might be more similarities than differences among different kinds of students in what memory skills are most important to them.

Key words: memory skills, university students, schoolwork, study skills, cross-cultural comparison

Many studies have investigated the aspects of their memories for which people report failures and problems; this is usually done by measuring the reported frequency of occurrence of specified memory problems (e.g., Gilewski & Zelinski, 1986; Williams & Gruneberg, 2002). The present research took an approach to assessing memory concerns that is different from how often the memory problems occur — measuring which memory problems people most want to overcome. The more common frequency approach can identify *what* the problems are, whereas the present approach might better identify *how important* those problems are. Of course, it is possible that we might be able to infer the importance of memory problems from how often they occur, but it is also possible that some frequent memory problems are not very important in the seriousness of their effects on everyday life while other problems that occur less frequently might have very serious consequences when they do occur.

A second difference between the present research and most previous research on memory problems is in the population of interest. Previous questionnaire studies on everyday memory problems have typically surveyed cross-sections of the general population, or a general sample of the elderly or of students. The population of interest in this research is a more specific group — university students who are concerned enough

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about their memory problems to attend memory improvement workshops, which means that the memory problems being studied are ones that the students are taking some action to deal with.

Higbee (2005) investigated what aspects of their memories were most important to a general audience of people in a memory improvement seminar, who identified the aspects of memory that they most wanted to improve. In a follow-up study (that was actually published earlier), Higbee (2004) investigated the same question among university students who were enrolled in a memory skills class, and reported some similarities and a few differences between the students and the general audience. The purpose of the present research was to explore the generality of the findings of Higbee (2004), which is referred to in this article as “the previous study” — we extended the investigation in the previous study to a larger number of US university students in a slightly different setting, and also to other university students in a slightly different culture. Two quasi-experimental field studies were conducted.

STUDY 1

The previous study involved 36 students who were enrolled in a one-semester psychology course that focused on improving memory skills, and about half of the students were psychology majors. Study 1 was conducted to investigate the generality of the previous findings by involving students who were in a short memory workshop, and also by expanding the sample to a larger number of students who were a broader representation of majors from across the university.

Participants were students at the same university as those in the previous study, which was a large university in the western United States. A total of 91 students in eight sections of a one-hour memory improvement workshop participated. The workshop was one of many workshops on various study and academic skills that were offered to all students by the university Academic Support department. Six students were omitted because of incomplete information, leaving 85 students as participants. Table 1 summarizes the characteristics of these participants (“Study 1”) along with characteristics of the participants in the previous study (“Previous”). In Table 1 it can be seen that the participants in this study differed in several ways from participants in the previous study — including a larger number of students with a larger proportion of females, and a smaller proportion of advanced students (years 3–4) and of psychology majors. Grade point averages (GPAs) are based on the 65 students for whom GPAs were available.

At the beginning of each workshop all participants completed the Memory Improvement Questionnaire (MIQ), which was developed by Higbee (2004, 2005). The MIQ consists of the instructions and items presented in Table 2, and some demographic questions. A key word is italicized in each of the 12 items in Table 2 for convenience in referring to the items.

The means and standard deviations for all the item ratings are also reported in Table 2 (“US”). A repeated measures ANOVA was significant, $F(11, 924) = 20.02, p < .001$,

Table 1. Descriptions of the Participants in the Previous Study, in Study 1, and in Study 2

Description	Previous	Study 1	Study 2
Setting	1-semester course, US	1-hr workshop, US	3-hr workshop, NZ
Number	36 (23 m, 13 f)	85 (30 m, 55 f)	85 (30 m, 55 f)
Ages	17–26, $M = 21.40, SD = 2.30$	18–29, $M = 20.21, SD = 2.48$	17–29, $M = 20.36, SD = 3.28$
<i>N</i> for each Year in School (1st–4th)	1st = 3, 2nd = 6, 3rd = 10, 4th = 17	1st = 38, 2nd = 16, 3rd = 15, 4th = 16	1st = 54, 2nd = 11, 3rd = 6, 4th = 14
GPA	$M = 3.48, SD = .37$	$M = 3.35, SD = .37$	$M = 3.09, SD = .63$
Majors	47% psychology, 13 other majors	2% psychology, 39 other majors	3% psychology, 37 other majors

Table 2. Memory Improvement Questionnaire Instructions, Items, and Item Means (Standard Deviations) for Each Group

Listed below are some possible reasons why people might want to take a memory-improvement class (that is, memory problems they would most want to overcome, or aspects of memory they would most want to improve). For each reason, please write a number from 1–10 in the blank to indicate how important that reason is for you (1 = Not at all important, 10 = Extremely important). Feel free to write any comments or explanations for any of the reasons.

Items	US <i>M</i> (<i>SD</i>)	NZ <i>M</i> (<i>SD</i>)
a. ___ Remembering people’s <i>names</i>	7.64 (2.39)	7.15 (2.48)
b. ___ Remembering people’s <i>faces</i>	6.61 (2.94)	5.49 (2.83)
c. ___ Remembering what I <i>read</i>	8.78 (1.90)	9.06 (1.68)
d. ___ Remembering specific <i>facts</i> and details	7.69 (2.42)	8.93 (1.70)
e. ___ Remembering my <i>life</i> events or experiences	7.12 (2.62)	6.40 (2.69)
f. ___ Improving <i>schoolwork</i> or study skills	9.21 (1.54)	9.22 (1.78)
g. ___ Reducing the effects of <i>aging</i> on memory	6.65 (2.73)	6.31 (3.06)
h. ___ Remembering <i>places</i> (like locations or directions)	6.63 (2.53)	6.34 (2.45)
i. ___ Remembering word-for-word, or <i>verbatim</i> (like scripts, poems, or scriptures)	6.15 (2.55)	6.59 (2.28)
j. ___ Remembering <i>numbers</i> (like phone numbers, I.D. numbers, or PINs)	6.22 (2.45)	6.15 (2.47)
k. ___ Remembering everyday <i>tasks</i> (like errands, things to do, or appointments)	6.95 (2.63)	6.80 (2.52)
l. ___ Remembering everyday <i>actions</i> (like where I put something or whether I did something)	5.99 (2.88)	6.76 (2.69)
m. Other:		

and LSD pairwise comparisons showed which aspects of memory were rated as most important. *Schoolwork* was rated higher than all other items (all $p < .001$ except *read* $p < .01$), and *read* was higher than all remaining items ($p < .001$). Also, *facts* and *names* were rated higher than all remaining items except *life* (all $p < .01$ except *tasks* $p < .05$). *Schoolwork* also was positively correlated with two of the other highest rated items — *read* $r(83) = .58, p < .001$ and *facts* $r(83) = .33, p < .01$.

Comparisons were also made for subgroups based on gender, year in school, and academic performance (GPA). (All this information was self-reported on the MIQ anonymously by the students.) For gender, t-tests showed no significant differences between males and females. (All t-tests reported in this article included Bonferonni adjustments of alpha for multiple comparisons.) Year in school was positively correlated with 2 of the 12 items — *faces* ($r_s(83) = .25, p < .05$) and *numbers* ($r_s(83) = .26, p < .05$), and GPA was positively correlated with *names* ($r(63) = .29, p < .05$). (Spearman's rho was used for year in school because we assumed it to be an ordinal-level variable.) While these correlations are statistically significant, they are not very impressive in terms of proportion of variability accounted for (the largest r^2 being about .08).

STUDY 2

Like Study 1, Study 2 also investigated what aspects of memory are most important to students. It was conducted in a university setting that was similar to the workshops in Study 1, but it involved students in another culture who were also more ethnically diverse than in Study 1.

The participants were 87 students in three sections of a three-hour memory improvement workshop at a large university in New Zealand. Similar to the workshops in Study 1, the workshop was one of many workshops on various study and academic skills that were offered to all students by the university Student Learning Centre. Two students were omitted because of incomplete information, leaving 85 students as participants (coincidentally including the same number of males and females as in Study 1). Table 1 summarizes their characteristics ("Study 2"). Grade point averages are based on the 51 students for whom grades were available, and were converted to a 4-point scale from the letter-grade system used by the university.

In addition to the cultural differences between the United States (US) and New Zealand (NZ) settings, it also is likely that there was more diversity in the ethnicity and nationalities of the students in Study 2 than in Study 1. Although no data were collected directly on the ethnicity or nationalities of the samples in either study, it can reasonably be assumed that the samples reflected the make-up of the universities. The US university in Study 1 was predominantly US Caucasian, and although there were students from more than 100 other countries they represented a total of only about 5% of the enrollment. On the other hand, in the NZ university the students originating from more than 80 other countries represented a considerably bigger proportion of the enrollment, with approximately 8% Pacific Islands and 32% Asian students (although in both cases, many

were NZ-born). Of the remaining students, approximately 42% were European New Zealanders, 7% were Maori (the indigenous people of NZ), and 11% were “other” (including undeclared). Although NZ universities can be considered as belonging to the Western tradition of education provision (e.g., bachelor’s degrees are comparable overall to the British and Australian bachelor’s degrees), demographic and other changes in the last couple of decades have resulted in greater cultural diversity within these institutions. The NZ Ministry of Education (2005) described education provided in NZ as being “increasingly international in character” for numerous reasons including “a geographically mobile population of students, teaching staff and researchers.”

At the beginning of each workshop all participants completed the MIQ described in Study 1, with a few minor modifications in the wording of the items that obtained demographic information. (For example, year in school was reported as the numbers 1–4 rather than Freshman, etc., and grade averages were reported as letters rather than numbers.)

Table 2 reports the means and standard deviations for all the item ratings (“NZ”). A repeated measures ANOVA was significant, $F(11, 924) = 30.50$, $p < .001$, and LSD pairwise comparisons showed which aspects of memory were rated as most important. *Schoolwork*, *read*, and *facts* were rated higher ($p < .001$) than all other items and did not differ significantly from each other. *Names* was the next highest item, being rated higher than all remaining items except *tasks* and *actions* (all $p < .02$ except *aging* $p < .05$). Consistent with Study 1, *schoolwork* was the most highly rated item and also was positively correlated with the other two highest rated items (*read* $r(85) = .77$, $p < .001$ and *facts* $r(85) = .28$, $p < .01$).

Comparisons were also made for subgroups based on gender, year in school, and academic performance (letter grades converted to a 4.0 scale). (As in Study 1, this information was self-reported anonymously.) For gender, *t*-tests showed no significant differences between males and females. Year in school was positively correlated with *names* ($r_s(49) = .22$, $p < .05$) and grades were negatively correlated with 2 of the 12 items — *life* ($r(49) = -.37$, $p < .01$) and *numbers* ($r(49) = -.37$, $p < .01$). The largest r^2 was about .14, which is a little higher than in Study 1 but still not very impressive in proportion of variability accounted for.

Comparisons of the NZ students with the US students showed a significant difference on only 1 of the 12 MIQ items: *Facts* was rated by NZ students as being more important than for US students, $t(168) = -3.85$, $p < .001$ (see the means in Table 2).

DISCUSSION

Brouwers, Van Hemert, Breugelmans, and Van de Vijver (2004) have observed that cross-cultural psychology appears to be mainly “difference driven,” meaning that most researchers expect more differences than similarities. However, Brouwers et al. also observed that most studies find evidence for a combination of differences and similarities, and that there are increasing findings of similarities in addition to differences. The most

notable and consistent findings in the present research are the similarities in what is important between the two groups of students in the United States and New Zealand, and among the subgroups in each group. Both the US and NZ university students rated “improving schoolwork or study skills” as being their most important memory concern. It is not surprising that university students, whose life is centered around schoolwork, would be most concerned with improving their memory skills for school-related tasks. However, some of the other results and similarities are not quite as obvious as those for schoolwork.

The other two highest-rated items for both groups were “remembering what I read” and “remembering specific facts,” both of which were correlated with schoolwork for both groups of students. These ratings and correlations suggest that students perceive remembering what they read and remembering facts and details to be integral parts of schoolwork, a relationship which is probably consistent with the experiences of most students. However, Higbee (2005) found that in general audiences of non-students these two items were also among the highest-rated aspects of memory and were also correlated with the schoolwork item, which suggests that there is a broader interest in remembering what one reads and remembering facts that goes beyond just the school setting.

Another similarity between the US and NZ groups is in the pattern of findings among the subgroups — none of the top three rated items, and few other items, were related to gender, year in school, or grades for either group. The previous study had also found that few of the aspects of memory were significantly related to these variables or to the students’ majors. Specifically, most aspects of memory, including schoolwork, appear to be of equal importance to males and females, to newer students and advanced students, to students doing well and not-so-well, and to psychology majors and non-majors.

Remembering people’s names was the next highest rated aspect of memory after the three school-related items for both groups of students. This importance of memory for names is consistent with research on non-student samples, which has found that remembering names is *the* most frequent and most important memory concern (e.g., Chaffin & Hermann, 1983; Higbee, 2005; Reese, Cherry, & Norris, 1999). Also, remembering names and remembering faces were positively correlated both for the US students ($r(83) = .61, p < .001$) and for the NZ students ($r(83) = .54, p < .001$); this suggests that even though memory for faces might not be as important as for names, those students who were concerned about remembering names tended to also be concerned about remembering faces relative to other students.

The findings of this research regarding the relative importance of the various aspects of memory are also consistent with the ratings of the US students who were enrolled in a memory course, in the previous study. Those students also rated *schoolwork* as being the most important, and *read* and *facts* as being more important than the remaining aspects of memory. Similarly, they also rated memory for names as the next most important aspect.

The comparisons between the means showed that the US and NZ students differed from each other on only 1 of the 12 aspects of memory, “remembering specific facts and details.” However, we might note that alternative ways of viewing the data might show some other kinds of differences; for example, the rankings of items within the list indicates that *actions* is ranked at the bottom of the list (11th) by the US students but in the

middle (6th) by the NZ students.

“Remembering specific facts and details” also showed a higher level of agreement among the NZ students (see the standard deviations in Table 2). This difference suggests a possible difference in the demands that are placed on (and/or perceived by) students in the two educational systems that might be worth exploring further. Unlike the US system where the first few years of university focus largely on general education, the NZ system requires students to declare their majors from the first year in the university (at least in broad terms like arts, business, engineering, health sciences, and natural sciences). University students in NZ may therefore experience an earlier (and perhaps more sudden) requirement to understand and appreciate the detail and depth involved in their majoring subjects, and many may initially erroneously equate this requirement with simply memorizing huge amounts of detailed information. This condition may have been particularly evident among the students who attended the memory skills course, many of whom may have been looking to the course for better ways of managing their course demands.

Another area that might be explored in future research is extending the study to investigate non-Western university student views (e.g., Japan, China, India). Both of the universities in the present research were Western style universities (the New Zealand university system being based on the British model). Might students in non-Western universities have different priorities in improving their memories? For example, Li (2005) described how differences in Western and Chinese cultural beliefs about learning affect people’s individual beliefs and their actual learning, and differences have even been found between Chinese and Japanese university undergraduates in the extent to which they use elaboration in learning and in their reports of memory search failure (Toyota & Yonetami, 2001).

A practical application of this research is that developers and instructors of university memory courses and workshops might want to focus on those aspects of memory that students rated as important in this study. It is crucial that such courses address the very issues about memory that students consider as important — not only for the sake of meeting student expectations, but also because those issues they consider important are likely to link to the actual day-to-day demands and challenges they face. Equipping students with effective strategies for dealing with those demands and challenges will therefore likely lead to improvements in their confidence and overall academic performance. In addition, it might be worthwhile to include these important aspects of memory as an integrated part of broader study skills courses (such as effective reading or active learning strategies) to enhance memory for material that is being read or learned as opposed to solely teaching memory skills in isolation.

This research indicates that schoolwork and other related aspects of memory are the main concerns of university students, and that students’ concerns other than schoolwork are similar to memory concerns of general audiences of non-students (specifically memory for names). In addition, the similarities among the three different groups of students in the US memory course, the US memory workshops, and the NZ memory workshops, as well as among the subgroups in each group, suggest that there is some

generality in the findings — different kinds of students have similar memory concerns. Thus, there appear to be more similarities than differences in memory concerns among the different kinds of university students in both cultures.

REFERENCES

- Brouwers, S. A., Van Hemert, D. A., Breugelmans, S. M., & Van de Vijver, F. J. R. 2004. A historical analysis of empirical studies published in the *Journal of Cross-Cultural Psychology* 1970–2004. *Journal of Cross-Cultural Psychology*, **35**, 251–262.
- Chaffin, R., & Hermann, D. J. 1983. Self reports of memory abilities by old and young adults. *Human Learning*, **2**, 17–28.
- Gilewski, M. J., & Zelinski, E. M. 1986. Questionnaire assessment of memory complaints. In L. W. Poon (Ed.), *Clinical memory assessment of older adults* (pp. 93–107). Washington, D. C.: American Psychological Association.
- Higbee, K. L. 2004. What aspects of their memories do college students most want to improve? *College Student Journal*, **38**, 552–556.
- Higbee, K. L. 2005. What aspects of their memories do people most want to improve? *Cognitive Technology*, **10**, 15–17.
- Li, J. 2005. Mind or virtue: Western and Chinese beliefs about learning. *Current Directions in Psychological Science*, **14**, 190–194.
- New Zealand Ministry of Education. 2005. *The New Zealand education system: An overview*. Retrieved February 27, 2006 from <http://www.minedu.govt.nz/index.cfm?layout=document&documentid=7481&indexid=6671&indexparentid=6663>
- Reese, C. M., Cherry, K. E., & Norris, L. E. 1999. Practical memory concerns of older adults. *Journal of Clinical Geropsychology*, **5**, 231–243.
- Toyota, H., & Yonetami, M. 2001. A comparative study of elaboration and memory activities between Japanese and Chinese undergraduates. *Seinan Gakuin University Child Education*, **27**, 135–154. (In Japanese)
- Williams, S., & Gruneberg, M. 2002. Memory failures in supermarket shoppers: Evidence for age and gender differences. *Cognitive Technology*, **7**, 34–38.

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