

**Item Noise versus Context Noise: Using the List Length Effect
to Investigate the Source of Interference in Recognition
Memory**

Angela Kinnell

*A thesis submitted in fulfilment of the requirements for the degree of
Doctor of Philosophy*

**School of Psychology
The University of Adelaide**

August, 2009

References

- Anderson, J.R., & Bower, G.H. (1972). Recognition and retrieval processes in free recall. *Psychological Review*, 79, 97-123.
- Atkinson, R.C., & Juola, J.F. (1973). Factors influencing speed and accuracy of word recognition. In S. Kornblum (Ed.) *Attention and performance IV* (pp. 583-612). New York: Academic Press.
- Atkinson, R.C., & Juola, J.F. (1974). Search and decision processes in recognition memory. In D.H. Krantz, R.C. Atkinson, R.D. Luce, & P. Suppes (Eds.) *Contemporary developments in mathematical psychology (Vol. 1): Learning, memory and thinking* (pp. 243-293). San Francisco: Freeman.
- Bahrick, H. P., Bahrick, P. O., & Wittlinger, R. P. (1975). Fifty years of memory for names and faces: A cross-sectional approach. *Journal of Experimental Psychology: General*, 104, 54-75.
- Banks, W. P. (1970). Signal detection theory and human memory. *Psychological Bulletin*, 74, 81-99.
- Bowles, N. L., & Glanzer, M. (1983). An analysis of interference in recognition memory. *Memory & Cognition*, 11, 307-315.
- Buratto, L. G., & Lamberts, K. (2008). List strength effect without list length effect in recognition memory. *The Quarterly Journal of Experimental Psychology*, 61, 218-226.
- Cary, M., & Reder, L. M. (2003). A dual-process account of the list-length and strength-based mirror effects in recognition. *Journal of Memory and Language*, 49, 231-248.

- Chalmers, K. (2005). Basis of recency and frequency judgements of novel faces: Generalised strength or episode-specific memories? *Memory*, *13*, 484-498.
- Chen, M. H., Shao, Q. M., & Ibrahim, J. G. (2000). *Monte carlo methods in bayesian computation*. New York: Springer.
- Clark, S. E. (1992). Word frequency effects in associative and item recognition. *Memory & Cognition*, *20*, 231-243.
- Clark, S. E. (1999). Recalling to recognize and recognizing recall. In C. Izawa (Ed.), *On human memory: Evolution, progress, and reflections on the 30th anniversary of the Atkinson-Shiffrin model* (pp. 215-243). Mahwah, NJ: Lawrence Erlbaum Associates.
- Clark, S. E., & Burchett, R. E. R. (1994). Word frequency and list composition effects in associative recognition and recall. *Memory & Cognition*, *22*, 55-62.
- Clark, S. E., & Gronlund, S. D. (1996). Global matching models of recognition memory: How the models match the data. *Psychonomic Bulletin & Review*, *3*, 37-60.
- Clark, S. E., & Hori, A. (1995). List length and overlap effects in forced-choice associative recognition. *Memory & Cognition*, *23*, 456-461.
- Clark, S.E., Hori, A., & Callan, D. E. (1993). Forced-choice associative recognition: Implications for global-memory models. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *19*, 871-881.
- Clark, S. E., & Shiffrin, R. M. (1992). Cuing effects and associative information in recognition memory. *Memory & Cognition*, *20*, 580-598.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Criss, A. H. (2006). The consequences of differentiation in episodic memory: Similarity and the strength based mirror effect. *Journal of Memory and Language*, *55*, 461-478.

- Criss, A. H. (2009). The distribution of subjective memory strength: List strength and response bias. *Cognitive Psychology*, *59*, 297-319.
- Criss, A. H., & Malmberg, K. J. (2008). Evidence in favor of the early-phase elevated-attention hypothesis: The effects of letter frequency and object frequency. *Journal of Memory and Language*, *59*, 331-345.
- Criss, A. H., & McClelland, J.L. (2006). Differentiating the differentiation models: A comparison of the retrieving effectively from memory model (REM) and the subjective likelihood model (SLiM). *Journal of Memory and Language*, *55*, 447-460.
- Criss, A. H., & Shiffrin, R. M. (2004a). Context noise and item noise jointly determine recognition memory: A comment on Dennis and Humphreys (2001). *Psychological Review*, *111*, 800-807.
- Criss, A. H., & Shiffrin, R. M. (2004b). Interactions between study task, study time, and the low-frequency hit rate advantage in recognition memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *30*, 778-786.
- Criss, A.H., & Shiffrin, R.M. (2004c). Pairs do not suffer interference from other types of pairs or single items in associative recognition. *Memory & Cognition*, *32*, 1284-1297.
- Curran, T., Schacter, D. L., Norman, K. A., & Galluccio, L. (1997). False recognition after a right frontal lobe infarction: Memory for general and specific information. *Neuropsychologia*, *35*, 1035-1049.
- de Zubicaray, G. I., McMahon, K. L., Eastburn, M. M., Finnigan, S., & Humphreys, M. S. (2005). fMRI evidence of word frequency and strength effects during episodic memory encoding. *Cognitive Brain Research*, *22*, 439-450.
- Dennis, S. (1995). *The Sydney Morning Herald word database*. Available: <http://psy.uq.edu.au/CogPsych/Noetica>.

- Dennis, S., & Humphreys, M. S. (2001). A context noise model of episodic word recognition. *Psychological Review*, *108*, 452-478.
- Dennis, S., Lee, M. D., & Kinnell, A. (2008). Bayesian analysis of recognition memory: The case of the list-length effect. *Journal of Memory and Language*, *59*, 361-376.
- Diana, R. A., & Reder, L. M. (2005). The list strength effect: A contextual competition account. *Memory & Cognition*, *33*, 1289-1302.
- Diana, R. A., Reder, L. M., Arndt, J. & Park, H. (2006). Models of recognition: A review of arguments in favor of a dual-process account. *Psychonomic Bulletin & Review*, *13*, 1-21.
- Dunn, J. C. (2004). Remember-know: A matter of confidence. *Psychological Review*, *111*, 524-542.
- Estes, W. K. (1955). Statistical theory of distributional phenomena in learning. *Psychological Review*, *62*, 369-377.
- Farah, M.J., Wilson, K.D., Drain, M., & Tanaka, J.N. (1998). What is “special” about face perception? *Psychological Review*, *105*, 482-498.
- Gardiner, J. M. (1988). Functional aspects of recollective experience. *Memory & Cognition*, *16*, 309-313.
- Gardiner, J. M., & Java, R. I. (1990). Recollective experience in word and nonword recognition. *Memory & Cognition*, *18*, 23-30.
- Gardiner, J. M., & Richardson-Klavehn, A. (2000). Remembering and knowing. In E. Tulving & F. I. M. Craik (Eds.), *The Oxford handbook of memory* (pp. 229-244). Oxford: Oxford University Press.
- Gillund, G., & Shiffrin, R. M. (1984). A retrieval model for both recognition and recall. *Psychological Review*, *91*, 1-67.

- Glanc, G. A., & Greene, R. L. (2007). Orthographic neighborhood size effects in recognition memory. *Memory & Cognition*, *35*, 365-371.
- Glanzer, M., & Adams, J. K. (1990). The mirror effect in recognition memory: Data and theory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *16*, 5-16.
- Glanzer, M., Adams, J. K., Iverson, G. J., & Kim, K. (1993). The regularities of recognition memory. *Psychological Review*, *100*, 546-567.
- Gravetter, F. J., & Wallnau, L. B. (1985). *Statistics for the behavioral sciences*. Minnesota: West Publishing Co.
- Greene, R. (2004). Recognition memory for pseudowords. *Journal of Memory and Language*, *50*, 259-267.
- Gronlund, S. D., & Elam, L. E. (1994). List-length effect: Recognition accuracy and variance of underlying distributions. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *20*, 1355-1369.
- Hintzman, D. L. (1984). MINERVA 2: A simulation model of human memory. *Behavior Research Methods, Instruments, & Computers*, *16*, 96-101.
- Hirshman, E., & Arndt, J. (1997). Discriminating alternative conceptions of false recognition: The cases of word concreteness and word frequency. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *23*, 1306-1323.
- Hockley, W. E. (1991). Recognition memory for item and associative information: A comparison of forgetting rates. In W. E. Hockley & S. Lewandowsky (Eds.), *Relating theory and data: Essays on human memory in honor of Bennet B. Murdock* (pp. 227-248). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Hockley, W. E. (1992). Item versus associative information: Further comparisons of

- forgetting rates. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *18*, 1321-1330.
- Howard, M. W., & Kahana, M. J., (2002). A distributed representation of temporal context. *Journal of Mathematical Psychology*, *46*, 269-299.
- Humphreys, M. S., Bain, J. D., & Burt, J. S. (1989). Episodically unique and generalized memories: Applications to human and animal amnesics. In S. Lewandowsky, J. C. Dunn, & Kirsner, K. (Eds.), *Implicit memory: Theoretical issues* (pp. 139-156). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Humphreys, M. S., Wiles, J., & Dennis, S. (1994). Towards a theory of human memory: Data structures and access processes. *Behavioral and Brain Sciences*, *17*, 655-692.
- Jacoby, L. L., & Dallas, M. (1981). On the relationship between autobiographical memory and perceptual learning. *Journal of Experimental Psychology: General*, *110*, 306-340.
- Jang, Y., & Huber, D. E. (2008). Context retrieval and context change in free recall: Recalling from long-term memory drives list isolation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *34*, 112-127.
- Joordens, S., & Hockley, W. E. (2000). Recollection and familiarity through the looking glass: When old does not mirror new. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *26*, 1534-1555.
- Juola, J.F., Fischler, I., Wood, C.T., & Atkinson, R.C. (1971). Recognition time for information stored in long-term memory. *Perception and Psychophysics*, *10*, 8-14.
- Knowlton, B. J., & Squire, L. R. (1995). Remembering and knowing: Two different expressions of declarative memory. *Journal of Experimental Psychology: General*, *21*, 699-710.
- Lauwerier, H. (1991). *Fractals: Images of chaos* (S. Gill-Hoffstadt, Trans.). New Jersey:

- Princeton University Press. (Original work published 1987).
- Lockhart, R. S., & Murdock, B. B., Jr. (1970). Memory and the theory of signal detection. *Psychological Bulletin*, *74*, 100-109.
- Lunn, D. J., Thomas, A., Best, N., & Spiegelhalter, D. (2000). WinBUGS – A Bayesian modelling framework: Concepts, structure, and extensibility. *Statistics and Computing*, *10*, 325-337.
- Malmberg, K. J., Steyvers, M., Stephens, J.D., & Shiffrin, R. M. (2002). Feature frequency effects in recognition memory. *Memory & Cognition*, *30*, 607-613.
- Mandler, G. (1980). Recognizing: The judgment of previous occurrence. *Psychological Review*, *87*, 252-271.
- Martinez, A.M., & Benavente, R. (1998). *The AR Face Database*. CVC Technical Report #24.
- Martelli, M., Majaj, N.J., & Pelli, D.G. (2005). Are faces processed like words? A diagnostic test for recognition by parts. *Journal of Vision*, *5*, 58-70.
- McClelland, J.L., & Chappell, M. (1998). Familiarity breeds differentiation: A subjective likelihood approach to the effects of experience in recognition memory. *Psychological Review*, *105*, 724-760.
- McKenzie, W. A., & Tiberghien, G. (2004). Context effects in recognition memory: The role of familiarity and recollection. *Consciousness and Cognition*, *13*, 20-38.
- Mensink, G.M., & Raaijmakers, J.G.W. (1988). A model for interference and forgetting. *Psychological Review*, *95*, 434-455.
- Mensink, G.M., & Raaijmakers, J.G.W. (1989). A model for contextual fluctuation. *Journal of Mathematical Psychology*, *33*, 172-186.
- Mickes, L., Wixted, J. T., & Wais, P. E. (2007). A direct test of the unequal-variance signal

- detection model of recognition memory. *Psychonomic Bulletin & Review*, *14*, 858-865.
- Monsell, S. (1978). Recency, immediate recognition memory, and reaction time. *Cognitive Psychology*, *10*, 465-501.
- Mulligan, N., & Hirshman, E. (1995). Speed-accuracy trade-offs and the dual process model of recognition memory. *Journal of Memory and Language*, *34*, 1-18.
- Murdock, B. B., Jr. (1982). A theory for the storage and retrieval of item and associative information. *Psychological Review*, *89*, 609-626.
- Murdock, B. B., & Kahana, M. J. (1993a). Analysis of the list-strength effect. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *19*, 689-697.
- Murdock, B. B., & Kahana, M. J. (1993b). List-strength and list-length effects: Reply to Shiffrin, Ratcliff, Murnane, and Nobel (1993). *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *19*, 1450-1453.
- Murnane, K., & Shiffrin, R. M. (1991). Interference and the representation of events in memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *17*, 855-874.
- Nobel, P. A., & Huber, D. E. (1993, August). *Modeling forced-choice associative recognition through a hybrid of global recognition and cued-recall*. Paper presented at the 15th annual meeting of the Cognitive Science Society, Boulder, CO.
- Nobel, P. A., & Shiffrin, R. M. (2001). Retrieval processes in recognition and cued recall. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *27*, 384-413.
- Norman, K. A., Tepe, K., Nyhus, E., & Curran, T. (2008). Event-related potential correlates of interference effects on recognition memory. *Psychonomic Bulletin & Review*, *15*, 36-43.

- Ohrt, D. D. & Gronlund, S. D. (1999). List-length effect and continuous memory: Confounds and solutions. In C. Izawa (Ed.), *On human memory: Evolution, progress, and reflections on the 30th anniversary of the Atkinson-Shiffrin model* (pp. 105-126). Mahwah, NJ: Lawrence Erlbaum Associates.
- Pike, R. (1984). A comparison of convolution and matrix distributed memory systems. *Psychological Review*, *91*, 281-294.
- Raaijmakers, J. G. W., & Shiffrin, R. M. (1981). Search of associative memory. *Psychological Review*, *88*, 93-134.
- Ratcliff, R., Clark, S. E., & Shiffrin, R. M. (1990). List-strength effect: I. Data and discussion. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *16*, 163-178.
- Ratcliff, R., & Murdock, B. B. (1976). Retrieval processes in recognition memory. *Psychological Review*, *83*, 190-214.
- Ratcliff, R., Sheu, C. F., & Gronlund, S. (1992). Testing global memory using ROC curves. *Psychological Review*, *99*, 518-535.
- Reder, L. M., Nhouyvanisvong, A., Schunn, C. D., Ayers, M. S., Angstadt, P., & Hiraki, K. (2000). A mechanistic account of the mirror effect for word frequency: A computational model of remember-know judgements in a continuous recognition paradigm. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *26*, 294-320.
- Reed, A.V. (1973). Speed-accuracy trade-off in recognition memory. *Science*, *181*, 574-576.
- Reed, A.V. (1976). List length and the time course of recognition in immediate memory. *Memory & Cognition*, *4*, 16-30.
- Rouder, J. N., Speckman, P. L., Sun, D., Morey, R. D., & Iverson, G. (2009). Bayesian t tests

- for accepting and rejecting the null hypothesis. *Psychonomic Bulletin & Review*, 16, 225-237.
- Schulman, A. I. (1974). The declining course of recognition memory. *Memory & Cognition*, 2, 14-18.
- Shepard, R. N. (1967). Recognition memory for words, sentences and pictures. *Journal of Verbal Learning and Verbal Behavior*, 6, 156-163.
- Shiffrin, R. M. (1970). Forgetting: Trace erosion or retrieval failure? *Science*, 168, 1601-1603.
- Shiffrin, R., Ratcliff, R., Murnane, K., & Nobel, P. (1993). TODAM and the list-strength and list-length effects: Comment on Murdock and Kahana (1993a). *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 19, 1445-1449.
- Shiffrin, R. M., & Steyvers, M. (1997). A model for recognition memory: REM - retrieving effectively from memory. *Psychonomic Bulletin & Review*, 4, 145-166.
- Snodgrass, J.G., & Corwin, J. (1988). Pragmatics of measuring recognition memory: Applications to dementia and amnesia. *Journal of Experimental Psychology: General*, 117, 34-50.
- Sternberg, S. (1966). High-speed scanning in human memory. *Science*, 153, 652-654.
- Strong, E. K., Jr. (1912). The effect of length of series upon recognition memory. *Psychological Review*, 19, 447-462.
- Tulving, E. (1985). How many memory systems are there? *American Psychologist*, 40, 385-398.
- Underwood, B. J. (1978). Recognition memory as a function of length of study list. *Bulletin of the Psychonomic Society*, 12, 89-91.
- Underwood, B. J., & Freund, J. S. (1970). Word frequency and short-term recognition

- memory. *American Journal of Psychology*, 83, 343-351.
- Wagenmakers, E. J., & Grunwald, P. (2006). A Bayesian perspective on hypothesis testing: A comment on Killeen (2005). *Psychological Science*, 17, 641-642.
- Waugh, N. C., & Norman, D. A. (1965). Primary Memory. *Psychological Review*, 72, 89-104.
- Weeks, C. S., Humphreys, M. S., & Hockley, W. E. (2007). Buffered forgetting: When targets and distractors are both forgotten. *Memory & Cognition*, 35, 1267-1282.
- Whittlesea, B. W. A., & Williams, L. D. (2000). The source of feelings of familiarity: The discrepancy-attribution hypothesis. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 26, 547-565.
- Wixted, J.T. (2007). Dual-process theory and signal detection theory of recognition memory. *Psychological Review*, 114, 152-176.
- Xu, J., & Malmberg, K.J. (2007). Modelling the effects of verbal and nonverbal pair strength on associative recognition. *Memory & Cognition*, 35, 526-544.

Appendix A

Word stimuli from Experiment 1.

High Frequency	force	speed	calmly	lager
above	grand	spent	carer	latent
added	heard	stage	catchy	lilac
advice	highly	stand	cheat	magnet
agreed	hotel	stock	cigar	mammal
allow	inside	study	cloudy	manor
appeal	itself	survey	coarse	mince
attack	joint	tried	cobra	nought
basis	latest	visit	corpse	patio
became	legal	impact	covert	pesto
bought	listed	wants	daisy	raider
bring	living	worth	dampen	riddle
built	lower		demon	rodeo
cannot	member	Low Frequency	diver	salsa
cause	modern	ablaze	dreamt	screw
charge	mother	addict	elope	shrunk
claim	moved	amber	encore	skate
comes	needed	apron	enlist	snail
common	person	armour	excite	stalk
cover	phone	aspire	exert	syrup
debate	player	atrium	fable	tanker
double	press	bingo	finite	trait
drive	raised	blurb	fright	uphold
effect	remain	boiler	fussy	vanish
ensure	royal	breezy	gladly	witch
event	safety	broom	glove	
expect	seemed	bunny	greasy	
extra	single	burrow	heater	
figure	social	cadet	hinge	
	sound		hourly	

Word stimuli from Experiment 2

High Frequency	beyond	death	green	longer
across	break	demand	ground	middle
agent	career	design	happy	moment
ahead	chance	dollar	heart	nearly
annual	child	doubt	horse	option
answer	choice	eight	human	order
anyone	class	either	indeed	paper
award	coast	estate	island	period
began	couple	father	letter	pretty
	cross	field	light	radio

reason	woman	delete	lucid	sewer
region	wrong	dispel	manure	shave
review		dough	memoir	socket
river	Low	edible	module	spike
round	Frequency	evoke	motif	swarm
sector	abyss	fathom	mulch	teapot
sense	acacia	fickle	navel	tempt
simple	alcove	flank	nylon	torso
space	aural	fluffy	oblige	unison
sport	banjo	fungi	odour	vacate
style	barley	giggle	opaque	verve
summer	barren	gypsy	parrot	vomit
table	beige	hassle	pillow	waltz
title	bikini	haste	poise	worsen
track	blight	hiccup	quail	yearn
travel	burger	humid	ranch	
united	cameo	idiom	redeem	
video	candle	ignite	rhyme	
whole	chisel	joyful	savvy	
winner	craze	lizard	scrape	

Word stimuli from Experiment 3 (note these words are a selection from the previous two experiments and were randomly paired at study).

High	child	expect	middle	sense
Frequency	choice	father	modern	simple
above	claim	field	moment	single
across	class	figure	mother	social
annual	cover	force	option	sound
answer	cross	grand	order	space
basis	dollar	green	paper	speed
became	double	ground	period	sport
bring	either	happy	person	stand
career	ensure	heard	phone	stock
advice	coast	heart	player	study
agent	exert	horse	press	style
ahead	common	hotel	pretty	summer
allow	couple	human	radio	survey
anyone	death	impact	reason	table
appeal	debate	inside	region	title
attack	demand	island	remain	track
award	design	joint	review	travel
began	doubt	legal	river	united
beyond	drive	letter	round	video
bought	effect	light	royal	visit
break	eight	listed	safety	whole
chance	estate	longer	sector	winner
charge	event	member	seemed	woman

worth
wrong

**Low
Frequency**

ablaze
abyss
armour
aspire
bikini
bingo
broom
bunny
acacia
addict
alcove
apron
atrium
banjo
barley
barren
blight
blurb
boiler
breezy

burger
burrow
cadet
cameo
candle
catchy
cobra
corpse
demon
dispel
encore
enlist
cheat
chisel
cigar
coarse
covert
craze
daisy
delete
diver
dough
edible
elope
evoke

excite
fable
fathom
fickle
finite
fluffy
fright
fungi
giggle
glove
gypsy
hassle
haste
heater
hiccup
hinge
humid
idiom
ignite
latent
lilac
lizard
lucid
magnet
mammal

manure
memoir
module
motif
mulch
navel
nought
nylon
oblige
odour
opaque
parrot
patio
pesto
pillow
poise
quail
raider
ranch
redeem
rhyme
riddle
rodeo
salsa
savvy

scrape
screw
sewer
shave
shrunk
skate
snail
spike
stalk
swarm
syrup
tanker
teapot
tempt
torso
trait
unison
uphold
vacate
vanish
verve
vomit
waltz
witch
yearn

Appendix B

Face stimuli from Experiment 4.

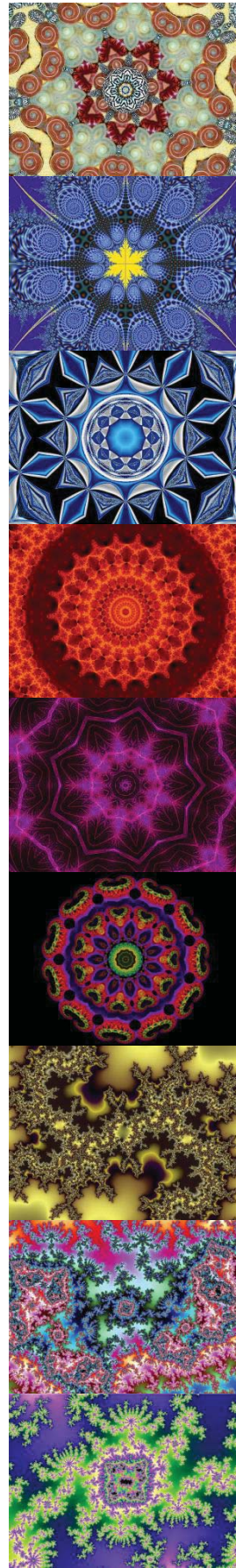
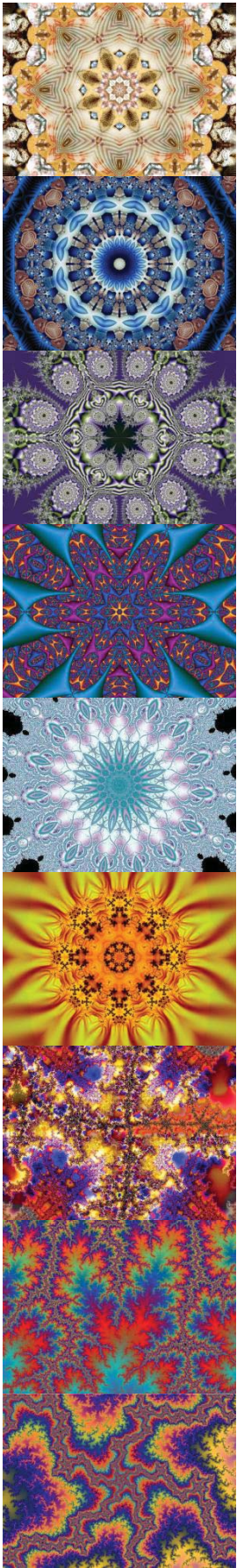
NOTE:

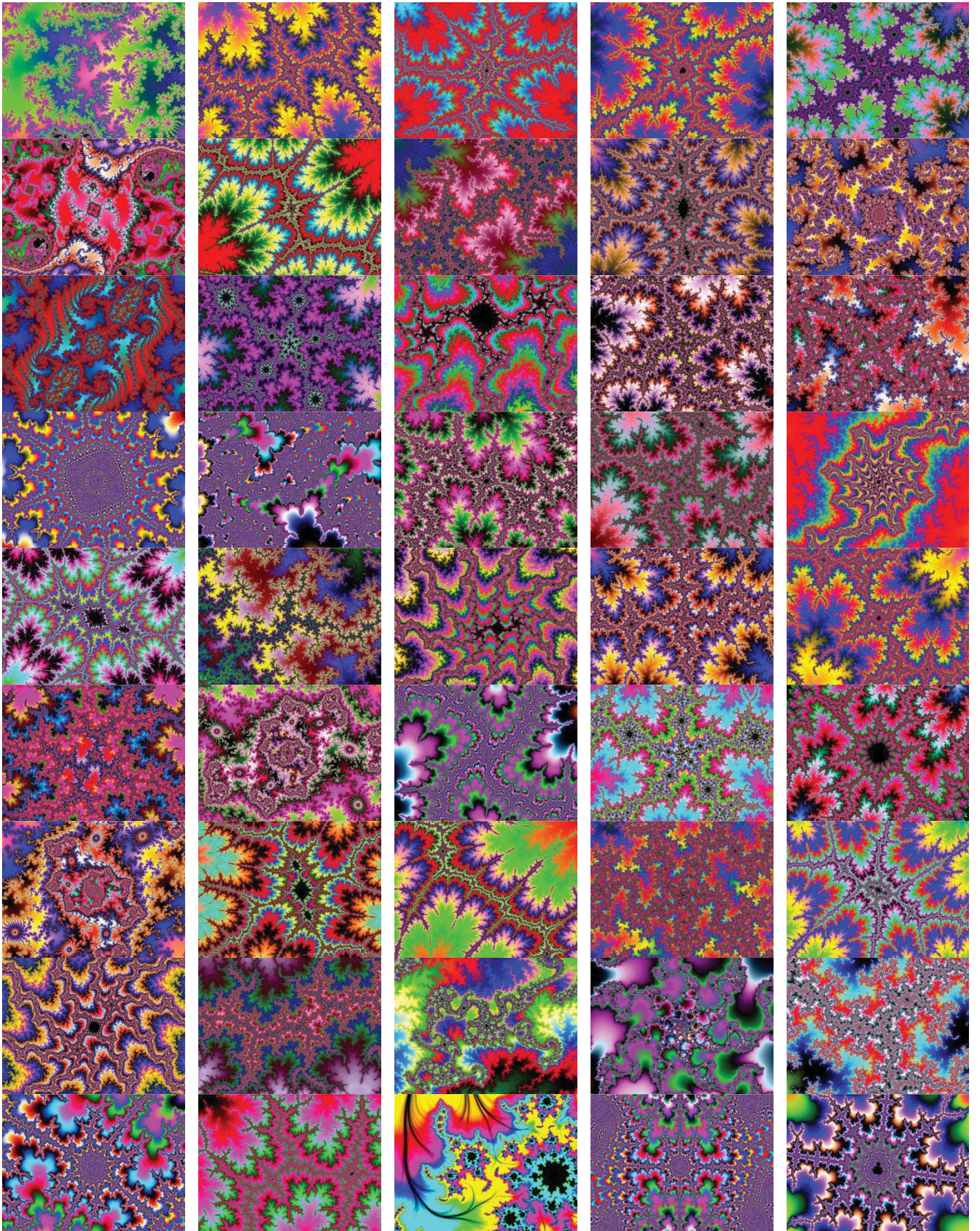
Appendix B is included in the print copy of the thesis held in the University of Adelaide Library.

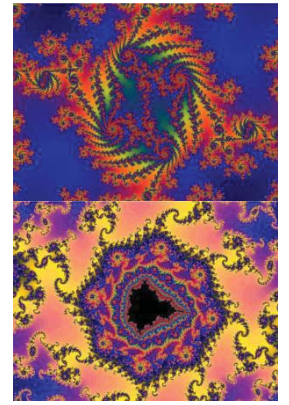
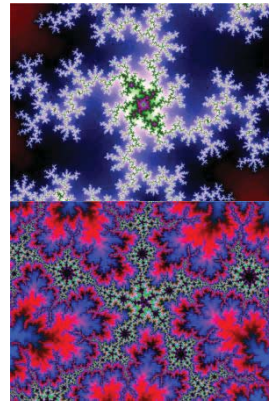
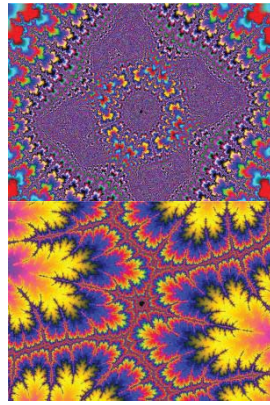
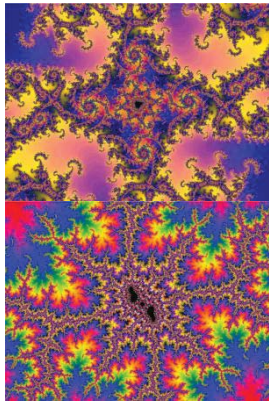
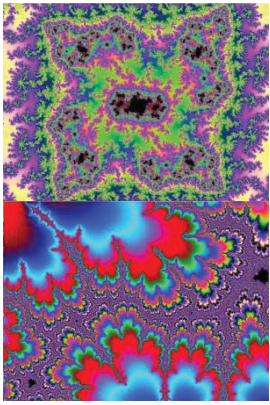
Appendix C

Fractal stimuli from Experiment 5.







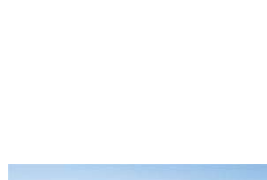


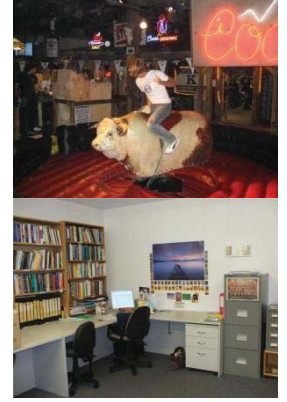
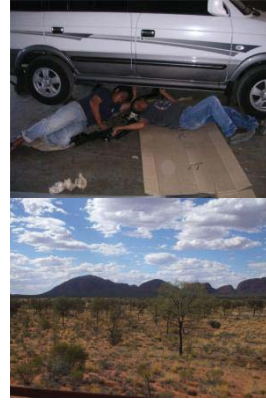
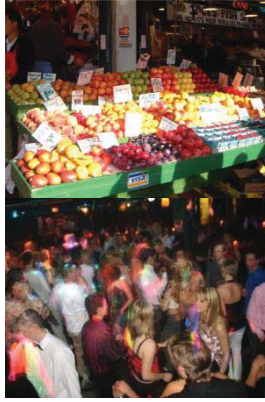
Appendix D

Photograph stimuli from Experiment 6.









NOTE:
Some photos have been omitted due to privacy issues they are available in the print copy of the thesis held in the University of Adelaide Library.

Appendix E

Table 1

ANOVA results revealing the effect of list length on the hit rate for all experiments using both the within subjects and between subjects (first list only) analysis. Results that are statistically significant are marked with an asterisk(). Grey shading is used to indicate the results about which the conclusions drawn changed depending on the analysis.*

	Within Subjects Analysis	Between Subjects Analysis
Experiment 1 – Attention		
Retroactive Pleasantness	$F(1, 39) = 1.55, p = .22$	$F(1,38) = 1.01, p = .32$
Retroactive Read	$F(1,39) = 9.95, p = .003^*$	$F(1,38) = 2.57, p = .12$
Proactive Pleasantness	$F(1,39) = 2.42, p = .13$	$F(1,38) = 6.14, p = .02^*$
Proactive Read	$F(1,39) = 2.40, p = .13$	$F(1,38) = 7.97, p = .008^*$
Experiment 2 – The Remember Know Task		
Yes/No Instructions	$F(1,39) = 4.30e^{-30}, p = 1$	$F(1,38) = .31, p = .58$
RK Instructions	$F(1,39) = .03, p = .86$	$F(1,38) = .09, p = .76$
Experiment 3 – Word Pairs		
	$F(1,39) = 1.84, p = .18$	$F(1,38) = .74, p = .39$
Experiment 4 – Faces		
	$F(1,39) = .06, p = .81$	$F(1,38) = .35, p = .56$
Experiment 5 – Fractals		
	$F(1,39) = 2.61, p = .11$	$F(1,38) = 1.48, p = .23$
Experiment 6 - Photographs		
	$F(1,39) = 2.09, p = .16$	$F(1,38) = .10, p = .75$

Table 2

ANOVA results revealing the effect of list length on the false alarm rate for all experiments using both the within subjects and between subjects (first list only) analysis. Results that are statistically significant are marked with an asterisk(). Grey shading is used to indicate the results about which the conclusions drawn changed depending on the analysis.*

	Within Subjects Analysis	Between Subjects Analysis
Experiment 1 – Attention		
Retroactive Pleasantness	$F(1, 39) = 3.95, p = .054$	$F(1,38) = 13.51, p = .0007^*$
Retroactive Read	$F(1,39) = .60, p = .44$	$F(1,38) = 1.90, p = .18$
Proactive Pleasantness	$F(1,39) = 6.72, p = .01^*$	$F(1,38) = 11.73, p = .001^*$
Proactive Read	$F(1,39) = 3.65, p = .06$	$F(1,38) = 12.67, p = .001^*$
Experiment 2 – The Remember Know Task		
Yes/No Instructions	$F(1,39) = .15, p = .70$	$F(1,38) = .31, p = .58$
RK Instructions	$F(1,39) = 1.24, p = .27$	$F(1,38) = 1.02, p = .32$
Experiment 3 – Word Pairs		
	$F(1,39) = .74, p = .40$	$F(1,38) = 2.37, p = .13$
Experiment 4 – Faces		
	$F(1,39) = 12.16, p = .001^*$	$F(1,38) = 4.56, p = .04^*$
Experiment 5 – Fractals		
	$F(1,39) = 10.86, p = .002^*$	$F(1,38) = 4.84, p = .03^*$
Experiment 6 – Photographs		
	$F(1,39) = .01, p = .91$	$F(1,38) = .03, p = .86$

Table 3

ANOVA results revealing the effect of list length on the mean of the median response latencies for all experiments using both the within subjects and between subjects (first list only) analysis. Results that are statistically significant are marked with an asterisk().*

	Within Subjects Analysis	Between Subjects Analysis
Experiment 1 – Attention		
Retroactive Pleasantness	Correct - $F(1, 39) = .35, p = .56$	Correct - $F(1,38) = 1.39, p = .25$
	Incorrect - $F(1,37) = .05, p = .82$	Incorrect - $F(1,36) = .22, p = .64$
Retroactive Read	Correct - $F(1,39) = .62, p = .44$	Correct - $F(1,38) = .02, p = .88$
	Incorrect - $F(1,38) = .23, p = .64$	Incorrect - $F(1,38) = .03, p = .86$
Proactive Pleasantness	Correct - $F(1,39) = 3.76, p = .06$	Correct - $F(1,38) = 1.62, p = .21$
	Incorrect - $F(1,37) = 1.56, p = .22$	Incorrect - $F(1,36) = 1.95, p = .17$
Proactive Read	Correct - $F(1,39) = 3.52, p = .07$	Correct - $F(1,38) = 2.41, p = .13$
	Incorrect - $F(1,37) = .90, p = .35$	Incorrect - $F(1,36) = 3.45, p = .07$
Experiment 2 – The Remember Know Task		
Yes/No Instructions	Correct - $F(1,39) = .14, p = .71$	Correct - $F(1,39) = .08, p = .79$
	Incorrect - $F(1,36) = .37, p = .55$	Incorrect - $F(1,36) = 1.17, p = .29$
RK Instructions	Correct - $F(1,39) = 4.71, p = .04^*$	Correct - $F(1,39) = .19, p = .66$
	Incorrect - $F(1,35) = 1.97, p = .17$	Incorrect - $F(1,36) = 1.39, p = .25$
Experiment 3 – Word Pairs		
	Correct - $F(1,39) = .68, p = .42$	Correct - $F(1,38) = 3.10, p = .09$
	Incorrect - $F(1,26) = .37, p = .55$	Incorrect - $F(1,30) = 1.96, p = .17$
Experiment 4 – Faces		
	Correct - $F(1,39) = 2.45, p = .13$	Correct - $F(1,38) = .37, p = .54$
	Incorrect - $F(1,38) = .05, p = .83$	Incorrect - $F(1,38) = .07, p = .79$
Experiment 5 – Fractals		
	Correct - $F(1,39) = 17.85, p = .0001^*$	Correct - $F(1,38) = 7.31, p = .01^*$
	Incorrect - $F(1,39) = 24.29, p = .00002^*$	Incorrect - $F(1,38) = 5.06, p = .03^*$
Experiment 6 – Photographs		
	Correct - $F(1,39) = 2.20, p = .15$	Correct - $F(1,38) = .39, p = .54$
	Incorrect - $F(1,35) = 2.56, p = .12$	Incorrect - $F(1,35) = .23, p = .64$