Flashbulb Memories of Public and Private Events

Presented by: Zen Juen Lau
Supervisor: Professor Robert Logie
University of Edinburgh

- Extremely vivid memories that are specific, confidently held, and consistent

- Many FBMs self-reported after major world events that are emotional, important and surprising (Brown & Kulik, 1977; e.g. Hirst et al., 2009 on 9/11 attacks)

- Memories of how one learnt about a shocking piece of news

- Researchers suggest that special encoding mechanisms favour FBM formation

Are they *special*?

Not Special

- Memory details are distorted and forgotten (Neisser & Harsch, 1992; Curci et al., 2001)

- Encoding variables like emotional intensity and surprise not required for FBM formation (Curci et al., 2001; Otani et al., 2005)

Special

- Recent studies using an autobiographical implicit association task (aIAT) (Curci et al., 2015)

aIAT Task

(Curci et al., 2015)

True FBM

"I heard the news from my parents"

True statement

"We are in 2019"

False statement

"We are in 1980"

They concluded that FBMs involve automatic processes, ordinary memories involve slower reconstructive processes

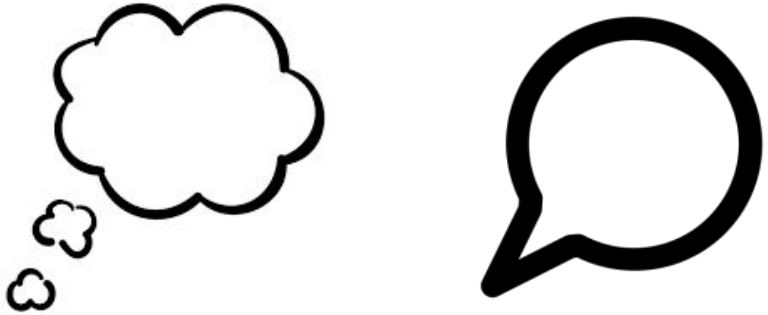
Gaps in the Literature & Our Aims

Gaps		Aims
aIAT study (Curci et al., 2015) with small sample size, not based on power analyses	→	Use Explicit (self-report) and Implicit measures (aIAT) to address special nature of FBMs
Little research on private events of FBMs	→	Compare FBMs of private events vs. public events

Hypotheses

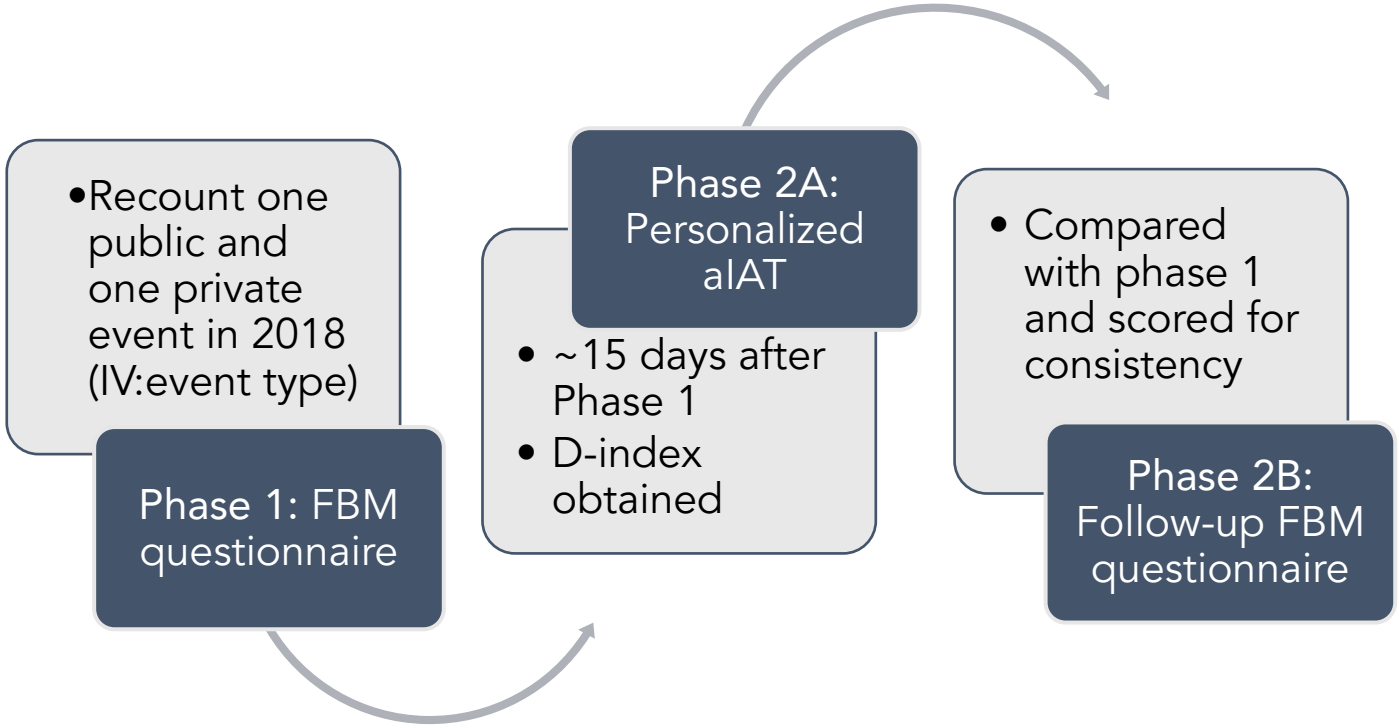
1. Memory strength will be stronger for <u>private events</u> than for public events

2. <u>Rehearsal</u> mediates the relationship between memory strength and event type
   - Would show that FBMs are not special and arise post-encoding unlike its term suggests



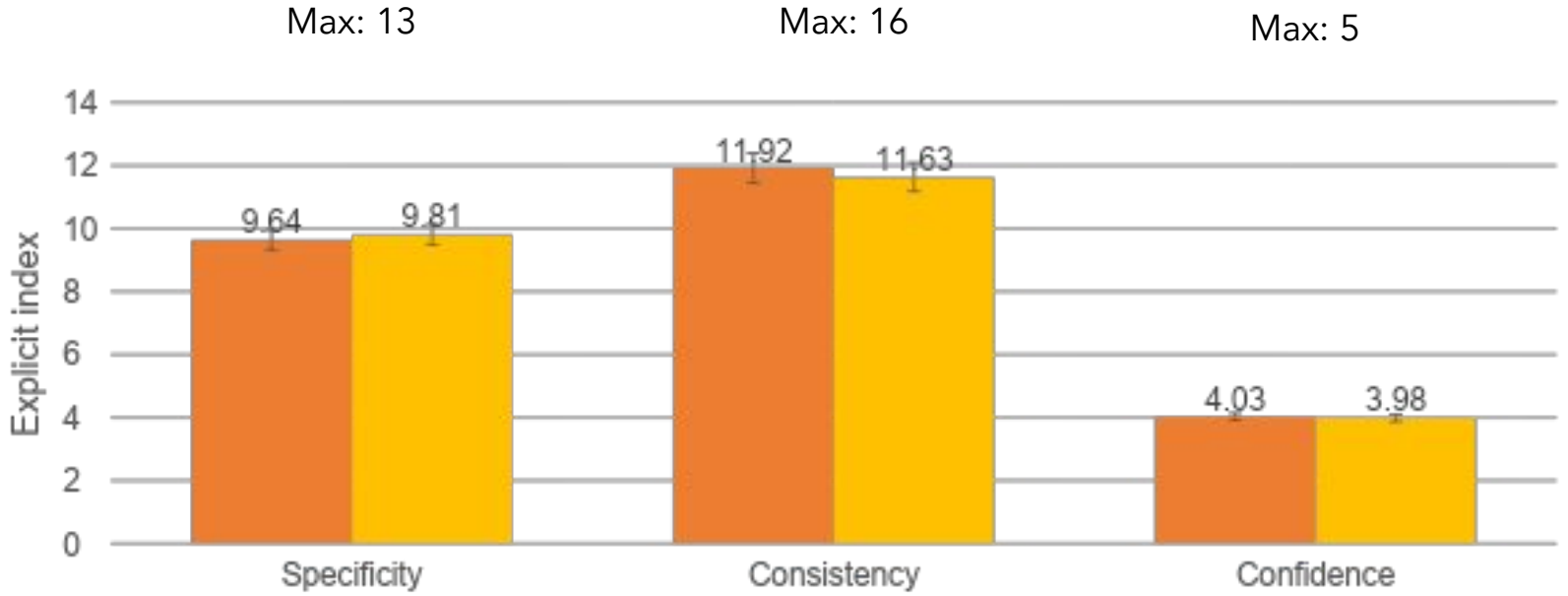
Methods & Procedure

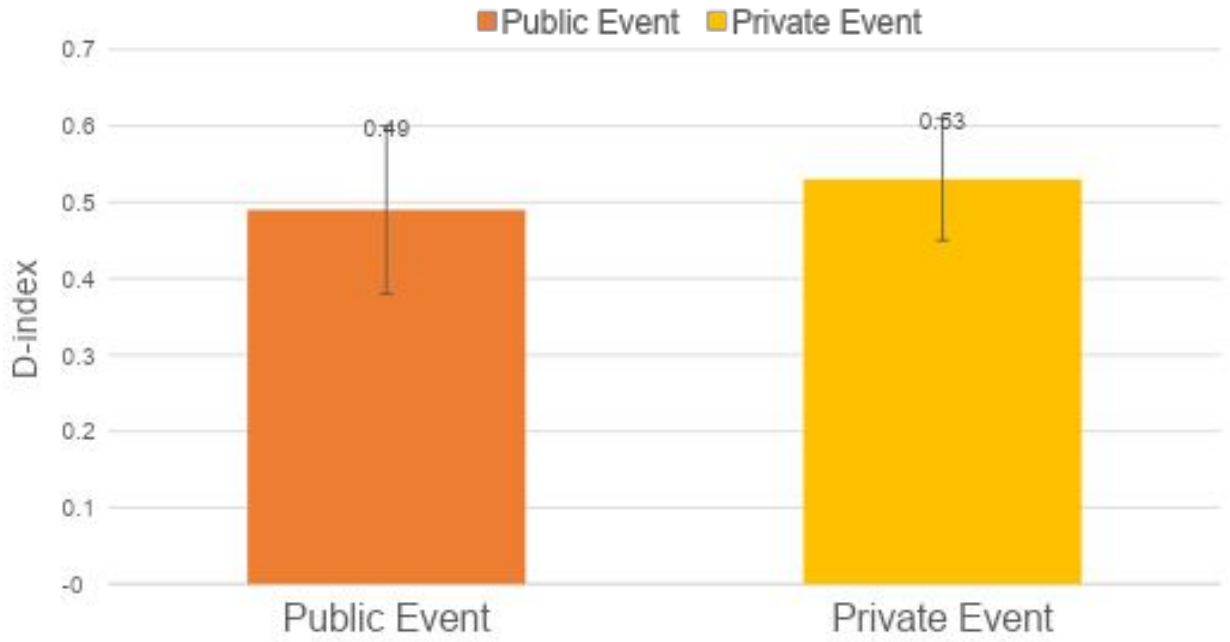
- N = 32 (Within-subjects)
- Proxies for memory strength (DV):
  - Explicit indices: Specificity, Confidence, Consistency
  - *D*-index (IAT effect i.e. strength of automatic associations)
- Encoding variables (Exploratory):
  - Emotional Intensity
  - Importance (for self and for others)
  - Surprise
- Rehearsal frequency
  - Rumination
  - Social Sharing



Results

H1: Is memory strength stronger for private events than for public events?





Memory strength did not differ across event type

Results

H2: Can rehearsal explain the formation of FBMs?

Table 1. Spearman's rank-order correlations between rehearsal and explicit and implicit indices

	Rehearsal (max: 5)	Specificity (max: 13)	Consistency (max: 16)	Confidence (max: 5)	D index
Rehearsal	3.16 (0.84)	-	-	-	-
Explicit Indices					
Specificity	-0.03	9.73 (1.80)	-	-	-
Consistency	-0.06	0.42**	11.77 (2.58)	-	-
Confidence	0.12	0.25*	0.27*	4.00 (0.61)	-
Implicit Indices					-
D index	0.10	0.02	0.04	0.15	0.51 (0.55)

Note. $*p < .05$, $**p < .001$. Means and standard deviations (in parentheses) are reported in the diagonal of the matrix

Rehearsal cannot explain memory strength

On a closer look…

	Rehearsal (max: 5)	Specificity (max: 13)	Consistency (max: 16)	Confidence (max: 5)	D index
Rehearsal	3.16 (0.84)	-	-	-	-
Explicit Indices					
Specificity	-0.03	9.73 (1.80)	-	-	-
Consistency	-0.06	0.42**	11.77 (2.58)	-	-
Confidence	0.12	0.25*	0.27*	4.00 (0.61)	-
Implicit Indices					-
D index	0.10	0.02	0.04	0.15	0.51 (0.55)

Note. *$p < .05$, **$p < .001$. Means and standard deviations (in parentheses) are reported in the diagonal of the matrix

We compared our scores to Curci et al. (2015):

- Similarly high explicit scores – 70th to 80th percentile ranks > our probed accounts are vivid and consistent FBMs!
- Different *D*-scores (ours: 0.51 vs. theirs: 1.13)

What does this mean?

- Curci et al.'s (2015) findings (D > 1.00) were underpowered
- Our mean D-score of 0.51 still reflects good classification accuracy of above 80% (Agosta & Sartori, 2013)
- D-score of 0.51 concurs with more ordinary autobiographical memories (Sartori et al., 2008)
- Our participants spent more time generating vivid details during the task > effortful and controlled process of recollection rather than automatic

Discussion

Our Findings

- Null difference in memory strength across event type > FBMs occur for both public and private events
- Do not support rehearsal account or special encoding mechanism
- FBMs recalled to extraordinary detail but still implicate reconstructive processes like those in ordinary memories

Conclusion

FBMs are not different from ordinary memories!

Future Directions

Need for greater scrutiny over encoding and rehearsal accounts

- Rehearsal measures are sensitive to temporal nature of FBM research
- Future studies need to experimentally manipulate rehearsal across different time points (Svoboda & Levine, 1999)

Future Directions

Shift away theoretical definitions and towards psychology underlying FBMs

- We show that FBMs are quantitatively but not qualitatively different from ordinary memories

- Need to identify specific mechanisms underlying FBMs

Thank you for listening!

Presented by: Zen Juen Lau
Supervisor: Professor Robert Logie
University of Edinburgh

References

Agosta, S., & Sartori, G. (2013). The autobiographical IAT: a review. *Frontiers in Psychology, 4,* 519.

Brown, R., & Kulik, J. (1977). Flashbulb memories. *Cognition, 5*, 73-99.

Brown, R., & Kulik, J. (1977). Flashbulb memories. *Cognition, 5*, 73-99.

Conway, M. A., Anderson, S. J., Larsen, S. F., Donnelly, C. M., McDaniel, M. A., McClelland, A., . . . Logie, R. H. (1994). The formation of flashbulb memories. *Memory & Cognition, 22*(3), 326-343.

Curci, A., Lanciano, T., Maddalena, C., Mastandrea, S., & Sartori, G. (2015). Flashbulb memories of the Pope's resignation: Explicit and implicit measures across differing religious groups. *Memory, 23*(4), 529-544.

Hirst, W., Phelps, E. A., Buckner, R. L., Budson, A. E., Cuc, A., Gabrieli, J. D., . . . Vaidya, C. J. (2009). Long-term memory for the terrorist attack of September 11: Flashbulb memories, event memories, and the factors that influence their retention. *Journal of Experimental Psychology: General, 138*, 161–176.

Neisser, U., & Harsch, N. (1992). Phantom flashbulbs: False recollections of hearing the news about Challenger. In E. Winograd & U. Neisser (Eds.), In *Emory symposia in cognition, 4. Affect and accuracy in recall: Studies of "flashbulb" memories* (pp. 9-31). New York, NY, US: Cambridge University Press.

Otani, H., Kusumi, T., Kato, K., Matsuda, K., Kern, R., Widner, R. J., . . . Ohta, N. (2005). Remembering a nuclear accident in Japan: Did it trigger flashbulb memories? *Memory, 13*(1), 6-20.

Svoboda, E., & Levine, B. (2009). The effects of rehearsal on the functional neuroanatomy of episodic autobiographical and semantic remembering: an fMRI study. *Journal of Neuroscience, 29*(10), 3073-3082.