

**Does Doodling Enhance Recall?**  
**A Classroom-Based Replication of Andrade (2010)"**

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#### **Introduction**

Doodling, often dismissed as a mindless activity, has recently gained attention for its potential cognitive benefits. Andrade (Andrade, 2010) demonstrated that doodling while listening to a monotonous, irrelevant auditory message helped adults to concentrate and recall more information compared to non-doodlers. This study aims to explore whether the same effects can be observed in children, a group that may respond differently to both the task and the activity of doodling. Additionally, the setting of the study was adjusted to reflect a more naturalistic environment, with the activity conducted in a classroom setting with a normal tone of voice.

We hypothesized that doodling will improve recall of the relevant material while listening to a recorded message, and that this effect will be more pronounced in the doodling group as compared to the control group.

#### **Method**

Participants were 20 students from Shankari School, Chhauni and members of a school club that operated every Saturday. They were aged between 12-14 years. Participants were randomly assigned to the control ( $N = 10$ ; 7 Female; 3 Male) or doodling group ( $N = 10$ ; 5 Female; 5 Male). All participants monitored a telephone message which was originally in English but was translated into Nepali to better suit

the demographic. The audio was received via email after we requested the audio to Andrade.

### **Materials**

A mock telephone message was recorded into a player and was played via a speaker. The message was played at a comfortable listening volume and the speed was similar to how a person would normally talk. The script included 8 names of people attending a party, and names of 3 people and a cat who could not attend. It contained 8 names of places and other irrelevant material. All of the names used were translated into commonly used names in Nepal.

Participants in the doodling condition used pen or pencil to shade shapes printed on a piece of A4-Paper. This was the same paper used in Andrade`s study and was acquired through her via mail. (See Appendix) Control participants wrote the names on a lined paper instead.

A close ended questionnaire from Likert scale 1-5 measured how boring the audio clip was after participants gave their response. (0- not boring at all, 5- extremely boring)

### **Procedure**

Participants were told the activity was a part of their club activity and were tested in a quiet room with at least a meter of space between each participant. The doodling group did the activity first.

They were told that a dull tape would be played and to pretend the speaker is a friend inviting them to a party. They were asked to write the names of party-goers and that the rest was irrelevant content. Participants in the doodling condition were asked to shade in squares and circles while listening to the tape.

Participants listened to the 3 minute long tape. Once it was over, participants were

asked to write the names of the places as well. When asked, no one suspected a memory test was taking place

### Results

Participants in the doodling group shaded an average of 6.2 of the printed shapes on the response sheet (Range: 1-17). One participant *XYZ* only doodled 17 shapes (the highest) but did not write any names. Therefore the two datasets, one with and the other without have been used for analysis. It is possible that doodling had a negative effect leading to less concentration instead.

The doodling group got an average of 4.7 / 8 (5.22 without participant *XYZ*) in names recall. However there were false alarms as well where non-party goers were mentioned so Actual Recall was calculated as follows:

Actual Recall = Total Recall - False Alarms

On average, the Doodling group recalled 4.5 / 8 party-goers (4.1 with *XYZ*) and had a mean of 0.6 false alarms. The control group recalled on average 3.8/8 party-goers and had a mean of 1.6 false alarms.

On average, the Doodling group recalled 0.8/8 names of places and had a mean of 0.4 false alarms. Only one participant had 4 false alarms and the raw recall would have been 1.2/8. The control group recalled, on average 0.6/8 places and had a mean of 0.6 false alarms.

### Table 1

*Mean correct recall, false alarms, and memory scores for names and places by Control and Doodling group (Excluding participant XYZ)*

		Control	Doodling
<b>Names (Monitored Information)</b>	Correct	5.4	5.22
	False		
	Alarms	1.6	0.6
	Memory		
	Score	3.8	4.7
<b>Places (Incidental Information)</b>	Correct	1.2	1.2
	False		
	Alarms	0.6	0.4
	Memory		
	Score	0.6	0.8

**Table 2**

*Mean correct recall, false alarms, and memory scores for names and places by Control and Doodling group (Including participant XYZ)*

		Control	Doodling
<b>Names (Monitored Information)</b>	Correct	5.4	4.7
	False		
	Alarms	1.6	0.6

	Memory		
	Score	3.8	4.1
<b>Places (Incidental</b>			
<b>Information)</b>			
	Correct	1.2	1.2
	False		
	Alarms	0.6	0.4
	Memory		
	Score	0.6	0.8

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There was no significant difference on how boring the audio clip was to each participant and the result was therefore discarded.

### Conclusion

Overall, The Doodling group`s recall was 20.4% higher than the Control group`s recall. However, as demonstrated by participant XYZ, doodling aids concentration as long as it is the secondary task and not the primary one.

### Discussion

The results of this study support Andrade`s (2010) findings that doodling can enhance recall by improving concentration, particularly in the doodling group, which recalled 20.4% more party-goers and places than the control group. However, there were notable individual differences within the doodling group that warrant further discussion.

Interestingly, the Control group had recalled more number of places but due to their false recalls being high had a lower average recall.

One participant (XYZ) in the doodling group shaded the maximum number of shapes (17) but did not write down any names, which led to the inclusion of two separate data sets. One with and one without this participant's data. This anomaly highlights the importance of individual differences in cognitive processes. It suggests that while doodling might aid concentration for most, it may not have the same effect on every individual. This finding aligns with previous research that suggests cognitive strategies and their effectiveness can vary widely between individuals (Engle, 2002). XYZ's lack of recall, despite engaging in the doodling task, could be due to various factors, such as a reduced level of engagement with the content of the tape, an increased focus on the physical act of doodling, or a personal tendency to be less influenced by external tasks during memory recall.

Andrade's understanding was that doodling simply helps to stabilize arousal at an optimal level, keeping people awake or reducing the high levels of autonomic arousal often associated with boredom (London et al., 1972). We found no reason to believe otherwise except for the case of Participant XYZ. Additionally, the social and environmental context in which this study was conducted; classroom setting with peers could have influenced the results. Children in a group setting may experience social pressures or distractions that impact their focus on the task at hand (This could explain why some participants performed better than others: those who were more accustomed to multitasking in social environments might have found it easier to engage in both the doodling activity and the recall task.)

In conclusion, while doodling appears to have a generally positive effect on memory recall, individual differences and developmental factors must be considered. The findings suggest that children may process cognitive tasks differently from adults, and that external factors like social context and individual cognitive abilities play significant roles in how secondary tasks such as doodling affect concentration and memory. From an educational perspective, teachers might consider allowing doodling as a tool for enhancing attention, particularly during passive listening tasks.

### References:

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## Appendix

**The translated boring telephone message:** monitored names are shown in bold, incidental places in italics. If repeated, the names are both bold and italic.

“Hello! तिमी यो Saturday के गर्दै छौ? मेरो घरमा birthday party छ र तिमी पनि आउछौ कि भनेर सोध्न खोजेको। खासमा मेरो birthday हैन, मेरो दिदी **Apekshya** को 21 birthday हो। ऊ यो weekend मा *London* बाट आउँदै अनि surprise दिँदा राम्रो होला भनेर सोचेको। मैले उसको boyfriend **Aakash** लाई पनि invite गरेको छु र उसको school को पुरानो साथी **Suprava** लाई पनि invite गरेको छु तर उसलाई यो बारे केही थाहा छैन। **Suprava** को husband Bikram पनि हामीलाई join गर्ने भनेको छ तर उसले भर्खर थाहा पायो उसको meeting त्यो दिन **Dhulikhel** मा छ र ऊ time मा फर्कन मिल्दैन।

त्यो दिन weather राम्रो भयो भने हामी barbecue पनि गरौं, तर यो हप्ता weather राम्रो होला जस्तो छैन। कति छिट्टै जाडो पनि सुरु आउन लाग्यो! Ra kati chito sajha parcha aile ta! तर पानी पर्यो भने पनि मेरो घरमा indoor space धेरै छ।

ए साँचि, मैले मेरो kitchen redecorate गरे नि। धेरै चाहिँ yellow colour छ, wallpaper र woodwork दुबै yellow छ। Ceiling चाहिँ white नै राख्यो भने राम्रो देखिन्छ होला। मेरो घरमा पहिलेकै निलो पर्दा त छ तर त्यो च्यातिसकेको छ र अहिले म नयाँ किन्न सक्दिन।

अनि तिमीलाई Sakshat याद छ? म ऊसँग flatshare गरिँए नि, हामी Kirtipur को bank मा काम गर्दा। उसले त अहिले Lalitpur मा घर बनाएको छ अनि gardening बाट time off लिएर Apekshya को party मा आउँछु भनेर promise गरेको छ। Aayushma पनि party मा आउन लागेको छ। मैले उसलाई Bhaktapur को pottery class मा last year भेटेको थिएँ। अहिले चाहिँ उसले pottery मा धेरै राम्रो गरेको छ र छिट्टै उसले exhibition पनि राख्छ रे।

तिमीले केही खाने कुरा लिएर आउन सक्छौ? केही मिठो, crispy जस्तै कि peanuts। हाम्रो छिमेकी Nabina ले चाहिँ quiche लिएर आउने भनेको छ, म चाहिँ garlic bread बनाउने छु। Lunch को लागि मैले एकदम राम्रो recipe पाएको छु!

Road को तल बस्ने केटाहरूले आफ्नो घरको homebrew लिएर आउने भनेका छन्। अहिले त्यो घरमा तीन जना बस्छन्—Diwas Amogh Sijan। उनीहरू सँगै एउटै college मा जान्थे जस्तो लाग्छ मलाई। Sijan ले Sanepa मा primary school मा पढाउँछ अनि अरू दुई जना चाहिँ हरेक दिन Kathmandu सम्म जान्छन्। उनीहरू दुईजना चाहिँ त्यहाँको hospital मा काम गर्छन् जस्तो छ। Amogh nurse को training लिँदै थियो, सायद अहिले ऊ qualify भयो होला। Diwas आफ्ना आमा-बुवा भेट्न जाने भएकाले Saturday आउन सक्दैन तर Amogh र Sijan चाहिँ आउँछन्। Amogh पहिले vet कहाँ गएर उनीहरूको बिरालो Ben लिएर आउँछ, त्यसैले अलि ढिलो पनि हुन सक्छ।

ओहो, अनि मैले तिमीलाई हाम्रो Pokhara holiday trip को बारेमा भने? “It was a complete disaster.” हामी camping गर्दै थियौँ अनि एक्कासी पानी पर्यो। धेरै जसो समय हामीले

museums मै बस्यौं पानीबाट बन्नलाई। योभन्दा अझै नराम्रो त Anugya को handbag नै चोरी भयो। यो trip सकेर घर फर्किँदा मलाई धेरै नै आनन्द लाग्यो।

ल, जेसुकै भए पनि, तिमी Saturday चाहिँ आउनै पर्छ है! Stayover गर्ने हो भने चाहिँ अगाडि inform गर है।

BYE!”

The duration of this audio clip was 3 minutes and 25 seconds.

Fig 1: Doodling Sheets (Prior and after doodle)

