

Will Termites Walk Along An Ink Indentation?

Purpose: To test whether termites will walk along the impression of a circle drawn on a piece of paper.

Background: Learning about the behaviors of other organisms helps us to understand the things around us. With a better understanding of our environment we are able to live in better harmony with the organisms around us.

Scientists have discovered that termites communicate in nature through pheromones. (2) Pheromones are odors given off that can be used to communicate with other termites in the colony. Scent is the most effective way in which termites can communicate with each other, because they live in the dirt, where sight is of little use to them. (1)

It has been observed that when a circle is drawn with a ballpoint pen on a white piece of paper, termites placed on the paper will continuously follow the line that make up the circle. This observation raises the question, do the termites follow the circle drawn on the paper because of the pen ink, or because of the indentation the writing makes on the paper. Therefore, this lab will test to see if termites will follow the indentation of a line left on a piece of paper. (2)

Hypothesis: *If* termites are placed on a piece of paper that has an indentation drawn on it *then* they will follow (walk on) the indentation.

Independent variable = indentation that is drawn on the paper in ink

Dependent variable = # of termites that follow the line

Materials:

Ballpoint Pen, White Paper, Termites

Procedure:

Experimental Group = termites placed on paper with a drawn circle in pen / **Control Group** = termites placed on indentation

Two circles were sketched onto a white piece of paper. Once circle was drawn with a ballpoint pen; bearing down hard. The second circle was drawn with the pointed end of the pen cap, leaving only the indentation of the circle drawn. This circle was drawn to look exactly like the one the termites followed before the experiment.

After the circles were drawn, the termites were each placed on a circle. Observations were recorded and each of the termites were rotated until they had been placed near all of the circles.

Data/Analysis:

Fig. 1. TERMITE BEHAVIOR IN CONTROL GROUP

TERMITE	termites traced the line drawn	termites did not follow
1.		✓
2.		✓
3.	✓	
4.		✓
5.		✓
6.		✓
7.		✓
8.	✓	
9.		✓

Fig. 2.

TERMITE BEHAVIOR IN EXPERIMENTAL GROUP

Make Sure to Graph your Data when it seems appropriate. Here a Bar graph may have been useful.

Graphs should be titled and correctly labeled.

TERMITE	termites traced the line drawn	termites did not follow
1)	✓	
2)	✓	
3)	✓	
4)	✓	
5)		✓
6)	✓	
7)	✓	
8)	✓	
9)	✓	

Fig. 3 OBSERVED TERMITE BEHAVIOR

Types of Circles Drawn on Paper

Control (circle drawn with ball point pen)

Experimental Group (circle indentation)

Observed Termite Behavior

termites traced the line drawn

termites did not follow or walk along the indentation

As described in Fig.3, our lab group made the following observations: the termites were able to trace the circle made by darker pen ink and the circle drawn with the normal pen ink; the termites had difficulty tracing the circle drawn with the light pen and the drawn circle indentation.

Never use "proven" here

Conclusion:

In conclusion, the data collected does support my hypothesis. The termites did follow the lines made by the pen ink, rather than just the indentation made in the paper. In the experimental trial only 1 out of the 9 termites did not follow the line in ink. In comparison, in the control group only 2 out of 9 followed the indentation. This experiment supports the research that states termites must have some kind of stimulus that allows it to detect the lines drawn. This stimulus could be one that allows the termite to detect the color of the line. Or, it is also possible that the termite has the ability to pick up certain scents. The termite may be able to detect the odor from the ballpoint pen.

Refrain from using "I" and "We"

There were challenges to consider while conducting the lab. Termites are living creatures, therefore it was necessary to take their well being while conducting the lab. Members of the group that were afraid of the bugs had to overcome this fear to participate. Safety issues considered included making sure individuals were not bit by the animals.

This lab relates to animal behavior. It demonstrates how living things react to stimuli in their surroundings. To further test this termite behavior, one might test a various number of things. The circles could have been drawn in different colors, which would test the sight of termites further. One could also draw a number of circles using different writing utensils. This would test to see if the termite responds better to certain inks, scents, or other materials.

References:

Make sure to include error analysis and always suggest experimental improvements

- Author: Dini M. Miller, Subterranean Termite Biology and Behavior, Virginia Tech Publication Number 444-502, Posted February 2002 <http://www.ext.vt.edu/pubs/entomology/444-502/444-502.html>
- The Science Site; www.sciencesite.com; last updated July 7th, 2008