What Factors Influence the Practice Testing Effect for Complex Category Learning?

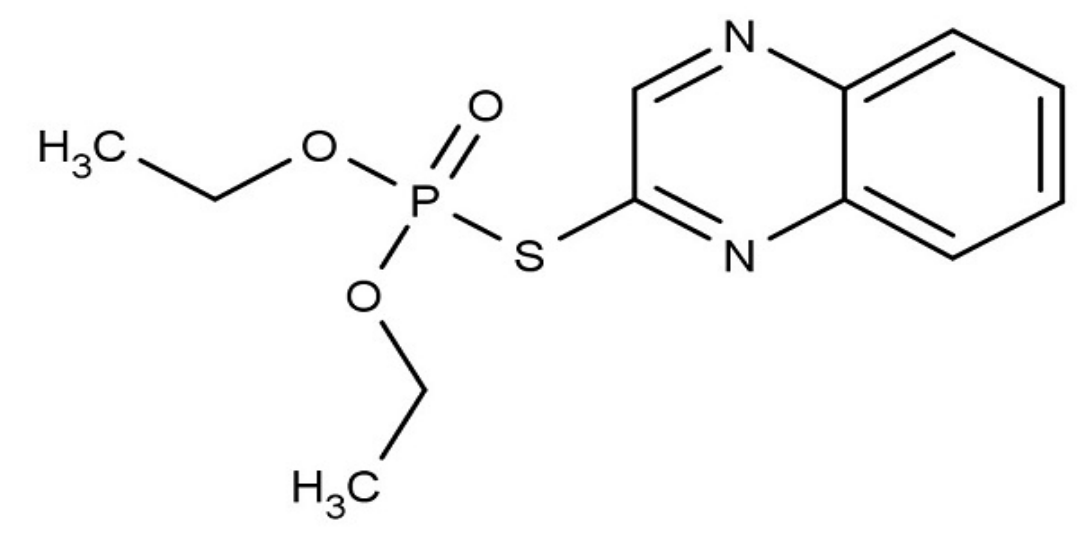Esmeralda D. Herrera, Addison L. Babineau, Kennadi C. Cook, & Sarah K. Tauber

Introduction

➢ Retrieval practice is a learning strategy that has been found to improve both memory and learning in episodic memory tasks (e.g., Rowland, 2014).

  ➢ In one case, retrieval practice was also found to benefit learning of a complex natural category (Jacoby et al., 2013)

  ➢ However, in another, retrieval practice did not impact category learning (Babineau et al., 2022)

➢ Two factors that may impact the effect of retrieval practice are:

  ➢ Learning Context: Self-regulated learning (as in Babineau et al, 2022) or experimenter-controlled learning (as in Jacoby et al., 2013).

  ➢ To-be Learned Categories: Learning to classifying a few categories (as in Babineau et al, 2022) or learning to classify many categories (as in Jacoby et al., 2013).

➢ **Our Goal:**

  ➢ Investigate how retrieval practice (between-subjects), the learning context (between-subjects), and the number of to-be-learned categories (within-subjects) impact category learning.

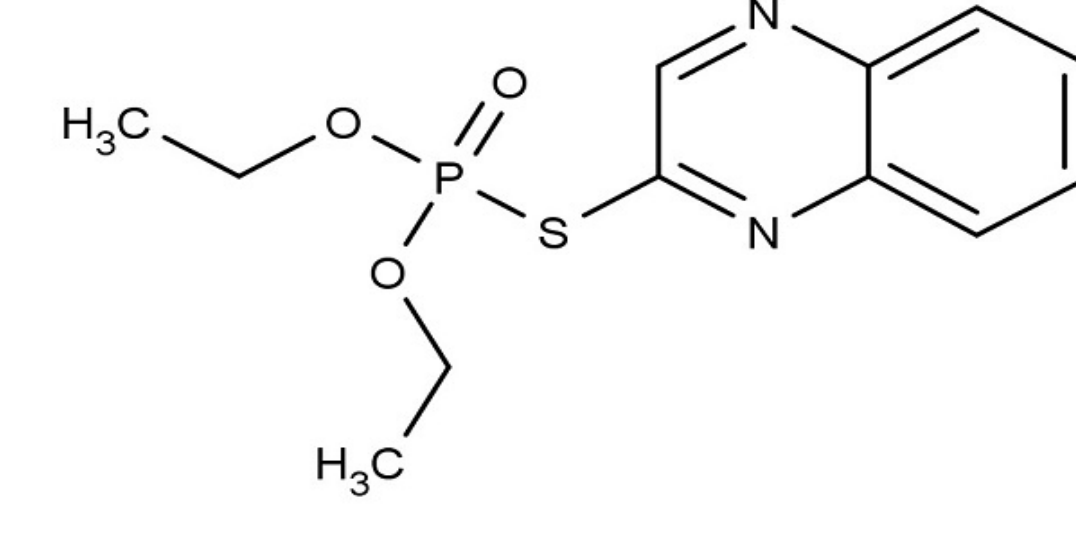 ➢ 396 TCU participants (n = 99 participants per group)

Procedure

Study Phase

Experimenter-Controlled Study

Organophosphate

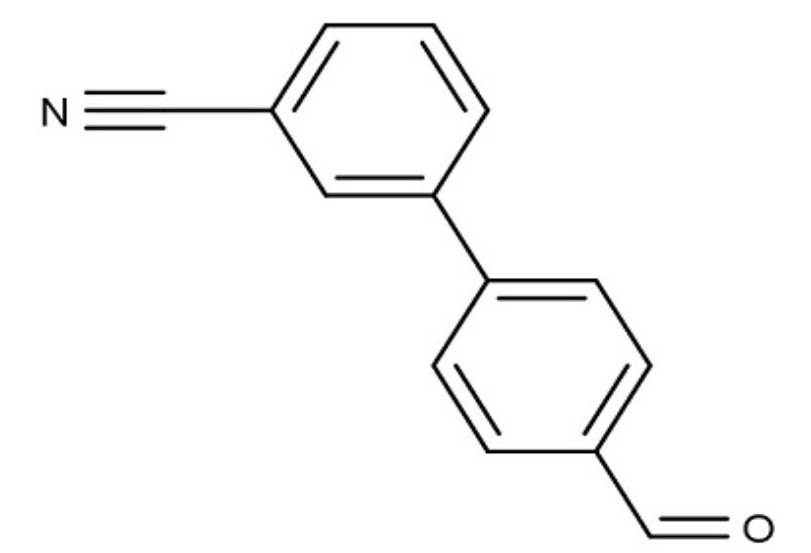**Self-Regulated Study**

Organophosphate

What type of compound would you like to study next?

A compound from a different chemical category | A compound from the same chemical category that you just studied

Experimenter-Controlled Test

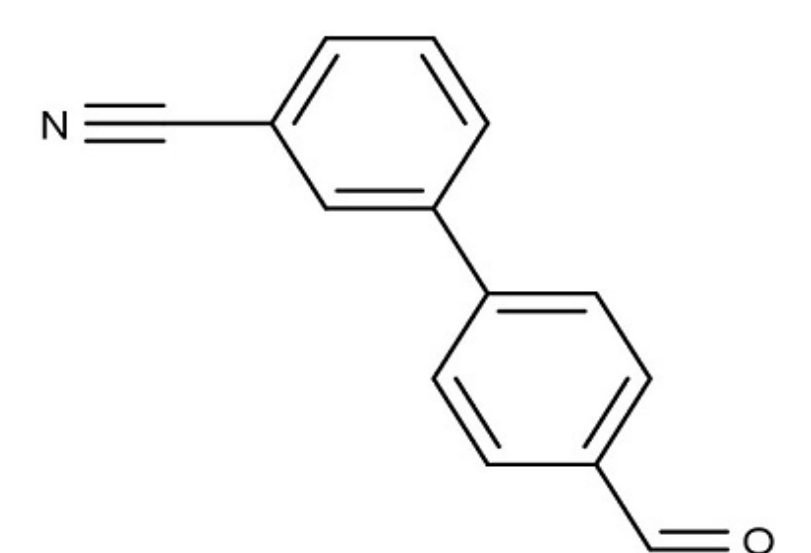What type of compound is this?

Epoxide | Nitrile | Organochloride
Organophosphate | Pyrethroid | Sulfone

What type of compound is this?
Correct, this is a Nitrile

Epoxide | Nitrile | Organochloride
Organophosphate | Pyrethroid | Sulfone

Self-Regulated Test

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Epoxide | Nitrile | Organochloride
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What type of compound is this?
Correct, this is a Nitrile

Epoxide | Nitrile | Organochloride
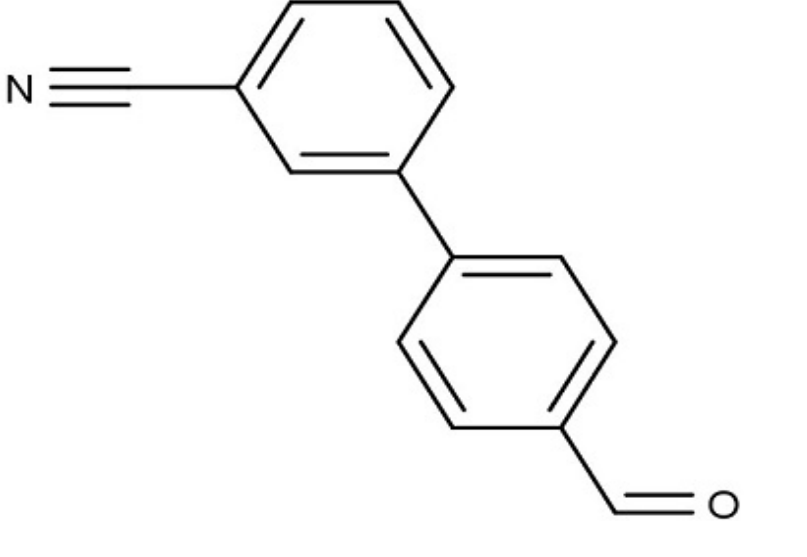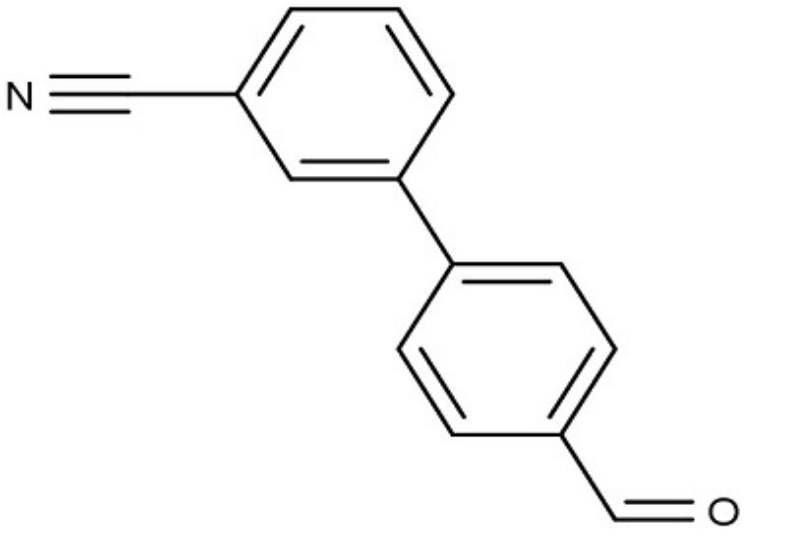Organophosphate | Pyrethroid | Sulfone

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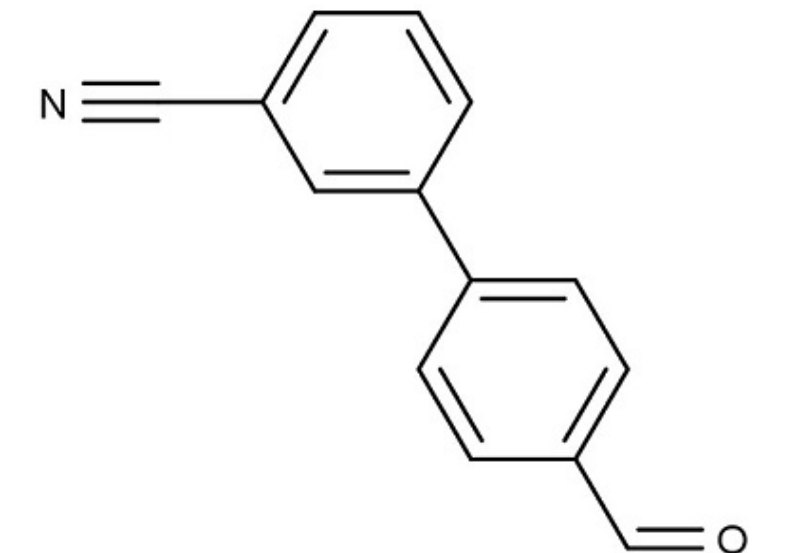
Test Phase

Novel exemplar classification test
Studied exemplar classification test

To-be-Learned Categories

6 Categories	3 Categories

What type of compound is this?

Epoxide | Nitrile | Organochloride
Organophosphate | Pyrethroid | Sulfone

What type of compound is this?

Carbamate | Carbohydrates | Lactam

Results

Performance on the Novel Exemplar Test	Performance on the Studied Exemplar Test

6 Categories

☐ Study Trials ■ Practice Test Trials

3 Categories

☐ Study Trials ■ Practice Test Trials

Discussion

➢ The number of to-be-learned categories impacted the practice testing effect. Practice testing improved learning to a great degree when learning 6 categories as compared to learning 3 categories.

➢ Surprisingly, test performance was not influenced by whether learning was self-regulated or experimenter-controlled.

➢ Future research should explore different implementations of practice testing to improve learning with fewer categories.