SGC_3A: The Insight Hypothesis

Contents

In Study 3A we explore a hypothesis that emerged from analysis of Study 2, namely that presenting a learning with a situation that induces a state of impasse will increase the probability they have a moment of insight. In the context of Study 2, an impasse state was (unintentionally) induced when the combination of question + data set yielded no available answer in the incorrect (cartesian) interpretation of the graph. In Study 3A, we test this hypothesis by comparing performance between a (treatment) group receiving impasse-inducing questions followed by normal questions, and a non-impasse control.

Hypotheses

H1. Learners posed with impasse-inducing questions will be more likely to correct interpret the graph.

```
#FOR PUBLIC WEB VERSION
# ---
# **To try the study yourself: **
# visit TODO INSERT LINK
# *Enter "github" as your session code, and number of the condition you wish to test*
# session code= GITHUB
# condition code for CONTROL = 111
# condition code for IMPASSE = 121
# <br> <br>
```

METHODS

Design

We employed a mixed design with 1 between-subjects factor with 2 levels (Scaffold: control, impasse) and 15 items (within-subjects factor).

Independent Variables: B-S (Scaffold: control,impasse) W-S (Item x 15)

Dependent Variables 1. Response Accuracy : Is the response triangular-correct? 0 (false), 1 (true) 2. Response Latency : Time from stimulus onset to clicking 'Submit' button: time in (s)

Sample

Data was collected by convenience sample of a university subject pool. Initial data (Fall 2017, Spring 2018) were collected in-person, with large groups of students simultaneously completing the study (independently) in a computer lab. In Fall 2021 we collected additional data to replicate results in a remote format (students completing the study asynchronously on their own computers).

Materials

Stimuli consisted of a series of 15 graph comprehension questions, each testing a different combination of time interval relations, to be read from a Triangular-Model graph. In both conditions, the questions were identical. Participants in the IMPASSE condition saw a graph with a slightly different dataset, such that the some of the questions posed an IMPASSE state: no data point intersects the orthogonal projection from the x-axis required if reading the graph in accordance with the cartesian coordinate system.
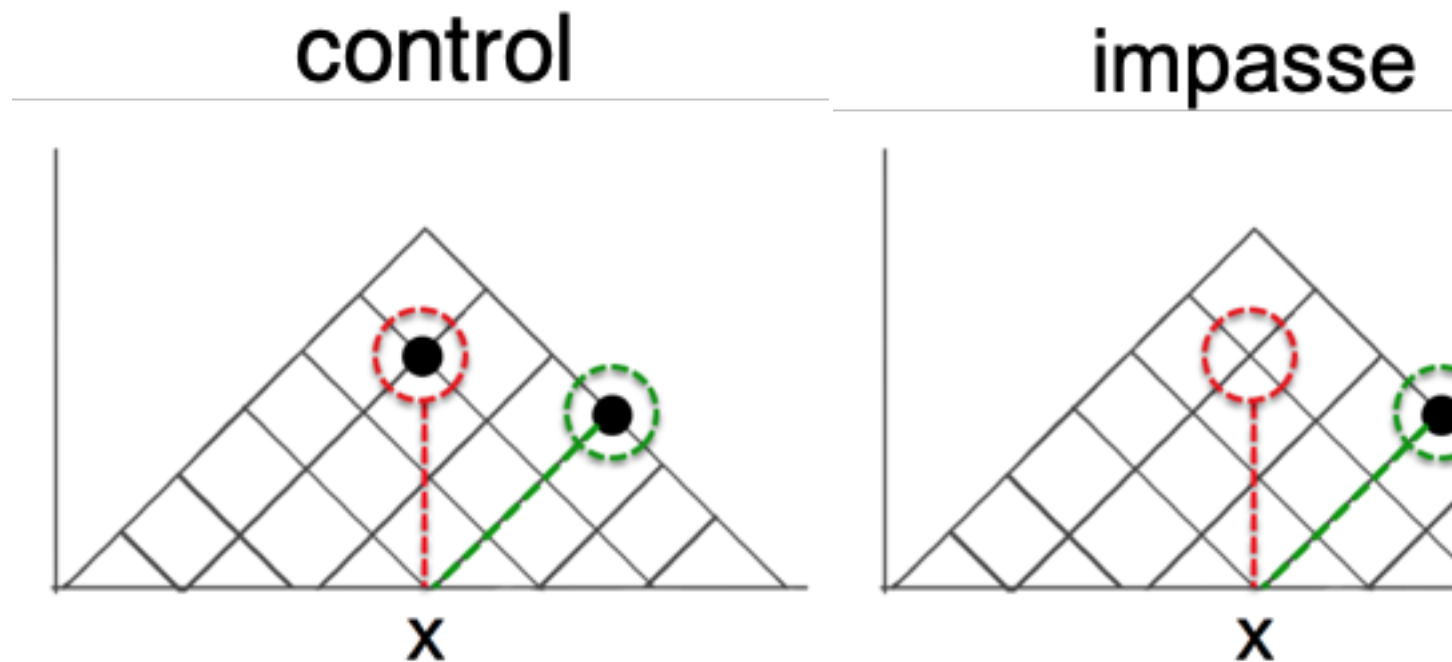
Procedure

Participants completed the study via a web-browser. Upon starting, they submitted informed consent, before reading task instructions. Participants were introduced to a scenario in which they were to play the role of a project manager, scheduling shifts for a group of employees. The schedule of the employees would be presented in a graph, and they would be answering question about the schedule. Then participants completed a test block of 15 items. In the IMPASSE condition, the first five questions included an IMPASSE problem state. The remaining 10 questions were not structured as impasse. Following the test block, particpants answered a free-response question about their strategy for reading the graph, followed by a demographic questionnaire and debrief.

Participants