Rapid Instructed Task Learning, KRITL

Paper draft 1, Method:

1.1 Participants

Thirty students attending at the University of Washington participated in this study in exchange for their academic credits. The demographic information of the samples was collected via paper survey and specified in the table 1. In order to assess the participants’ linguistic characteristics, the language experience and proficiency questionnaire (A-LEAPQ) was conducted. Additionally, operation span test was used to measure the working memory ability of the participants.

1.2 Procedure

All experiments were performed in an experimental room located in the Guthrie Hall of the University of Washington within one hour each. The room was equipped with four personal computers on each desk, placed back to back and separated by plastic walls to prevent participants from observing other screens. At the beginning of each experiment, the experimenter randomly assigned one of the computers for each participant and distributed headphones to cancel out the noises produced by the running computers. As soon as they are arranged, participants agreed upon the informed consents form and completed the demographic survey. The experiment consists of two computer-run tasks, RITL and Ospan, and the language experience and proficiency questionnaire (A-LEAPQ). After the experimenter collected the consent form and demographic survey, the participants proceeded to one of the computer-run tasks, following the instructions displayed on the screen. The order of RITL and Ospan was randomized but arranged to be equal frequencies across participants in order to investigate the order effects of the tasks. Total XXXX participants completed the RITL first and there was XXXXX order effect discovered. Once the participants started the first task, they proceeded through the task following displayed instructions in individual pace. Participants moved on to the next task as soon as they complete the first task without having a break between. During the experiment, one experimenter always remained in the room for administration purpose such as collecting completed surveys and controlling computers between tasks. After participants completed both RITL and Ospan tasks, they answered the language experience and proficiency questionnaire (A-LEAPQ).

1.3 Materials

Modified version of the previous Rapid Instructed Task Learning (RITL) experiment by Stocco et al (2014) was used for this experiment. RITL is a paradigm developed in the field of cognitive psychology to investigate the ability of incorporating and reconfiguring rules of a novel task and perform with precision. A trial of this RITL experiment can be divided into two phases: encoding phase and execution phase(See the image1). In encoding phase, participants were instructed to memorize a rule of a trial, consisting of a list of two to four simple arithmetic operators. The operators are listed in table2. The patterns of operators were previously generated by an algorism eliminating repetitions; this is a crucially important treatment for RITL paradigm to maintain the novelty of all tasks. The time-out for encoding phase was set at 20sec, and the experiment automatically proceeded to the next encoding phase when it recognizes a time-out. In execution phase, participants are instructed to apply the displayed numbers, X and Y, (1~9) to the current encoded rules and manually typed in the answer using the number keys on keyboard. Operators such as ADD and SUBTRACT are classified as binary operators because it requires subjects handling both values of X and Y. For example, the proper application to an operator ADD, is to compound both values of x and Y; whereas operators such as double and half are concerned only to the value of X. Each list of operators contains minimum and maximum of only one binary operator because only two numbers, X and Y, were given for the execution. These rules can be characterized into nine conditions based on the place of this binary operator in the order. The summary of the conditions is shown in table3. There were eight operational blocks, each contains two trials from each conditions. Beside these blocks, eight practice trials with 2~4 operators were conducted before the sequence of actual trials begins. After each block, participants received a feedback in numerical form, which tells them the percentage of correct responses in the previous block.