

Three Ways to Be More Creative: Relax, Exercise and Watch TV

Effects of an acute exercise, television & relaxation protocol on creativity in primary school children

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BACKGROUND

- Creativity is defined as the process of generating original ideas in response to given open-ended problems (Fink & Benedek, 2014).
- It is mainly attributed to *internal factors* such as genes, brain, personality, cognitive skills, and intrinsic motivation; it is seldom ascribed to *external factors* such as education, technology, and extrinsic motivation (Selvi, 2007) or linked to physical activity and physical fitness.

PURPOSE OF THE STUDY

- The purpose of this study was to extend previous experimental work suggesting that exercise, television and relaxation based interventions may influence creativity processes in adults (Frith & Loprinzi, 2018), by investigating the independent influences of exercise, television or relaxation stimuli on verbal creative performances in the school environment.

METHODS

- 32 children aged 9 to 12 years (9.50 ± 0.98 years; 18 boys, 14 girls)
- Three 10 to 15-min experimental conditions: running, television, or an imaginary journey (see Figure 1)
- Four creativity assessments during each visit (Alternative Use Task [AUT]; Realistic Presented Problem [RPP]; Realistic Problem Generation [RPG]; Remote Associates Task [RAT]) (Guilford, 1967; Runko & Okuda, 1988) (see Table 1)
- Creativity task performance was scored across four dependent parameters, which included fluency (i.e., total number of ideas), flexibility (i.e., total number of categories), originality (i.e., responses thought of by <5% of the sample), and elaboration (i.e., degree of supplementary detail included per idea)
- Repeated Measures ANOVAs

RESULTS

- *elaboration* (AUT, RPG) highest for the television condition
- *flexibility* (AUT, RPG) highest for the relaxation condition
- *fluency* (RPG) highest for the relaxation condition
- *originality* (RPG) highest for the relaxation condition
- RAT scores higher in the running condition

DISCUSSION

- Our results suggest that relaxation and exercise can improve creative performance with divergent and convergent thinking. This work contributes to understanding the function of an acute intervention on creativity and offers a new way to investigate the relationship between activity, exercise, relaxation and the improvement of academic achievement.

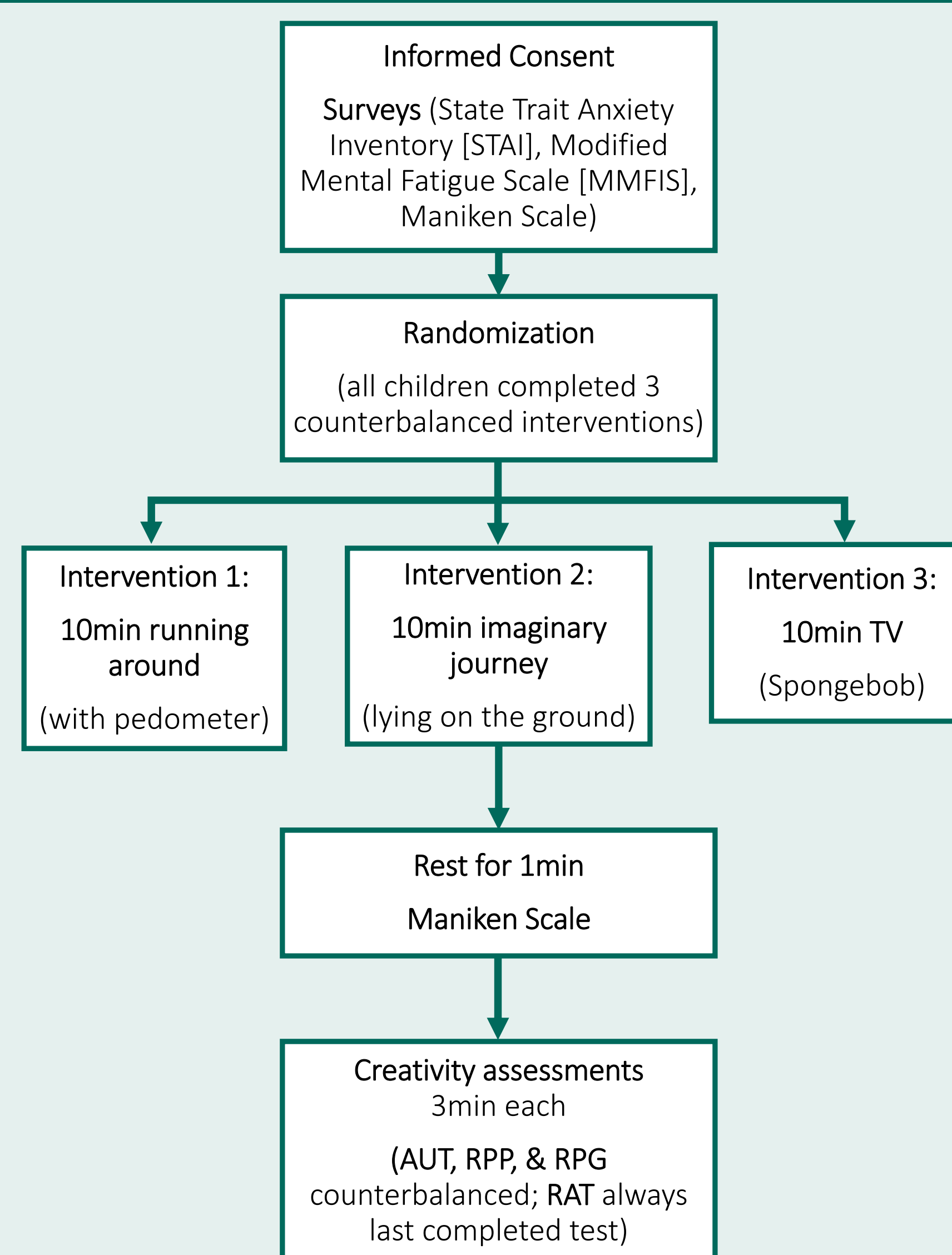


Figure 1. Study flow

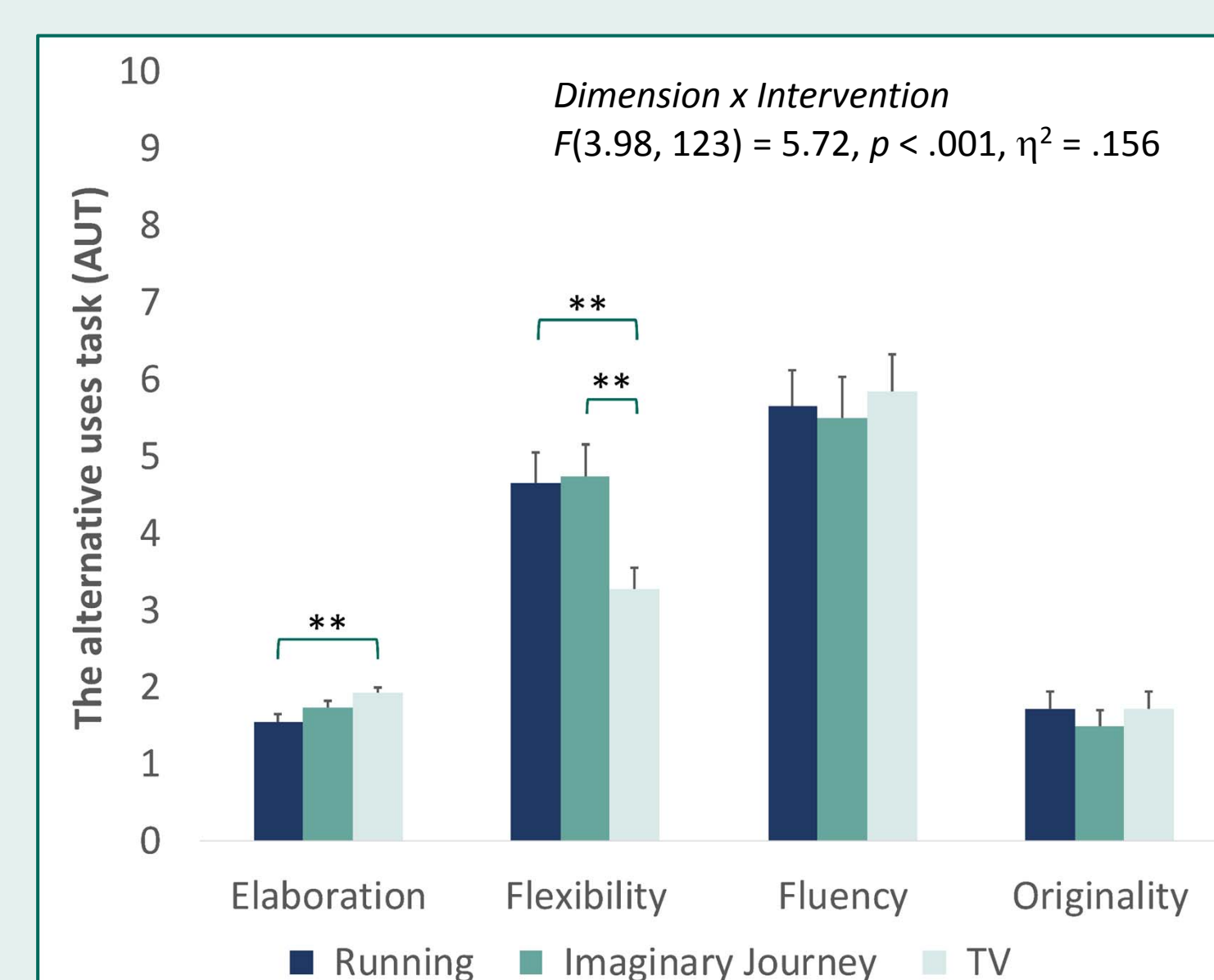


Figure 2. AUT across the experimental conditions

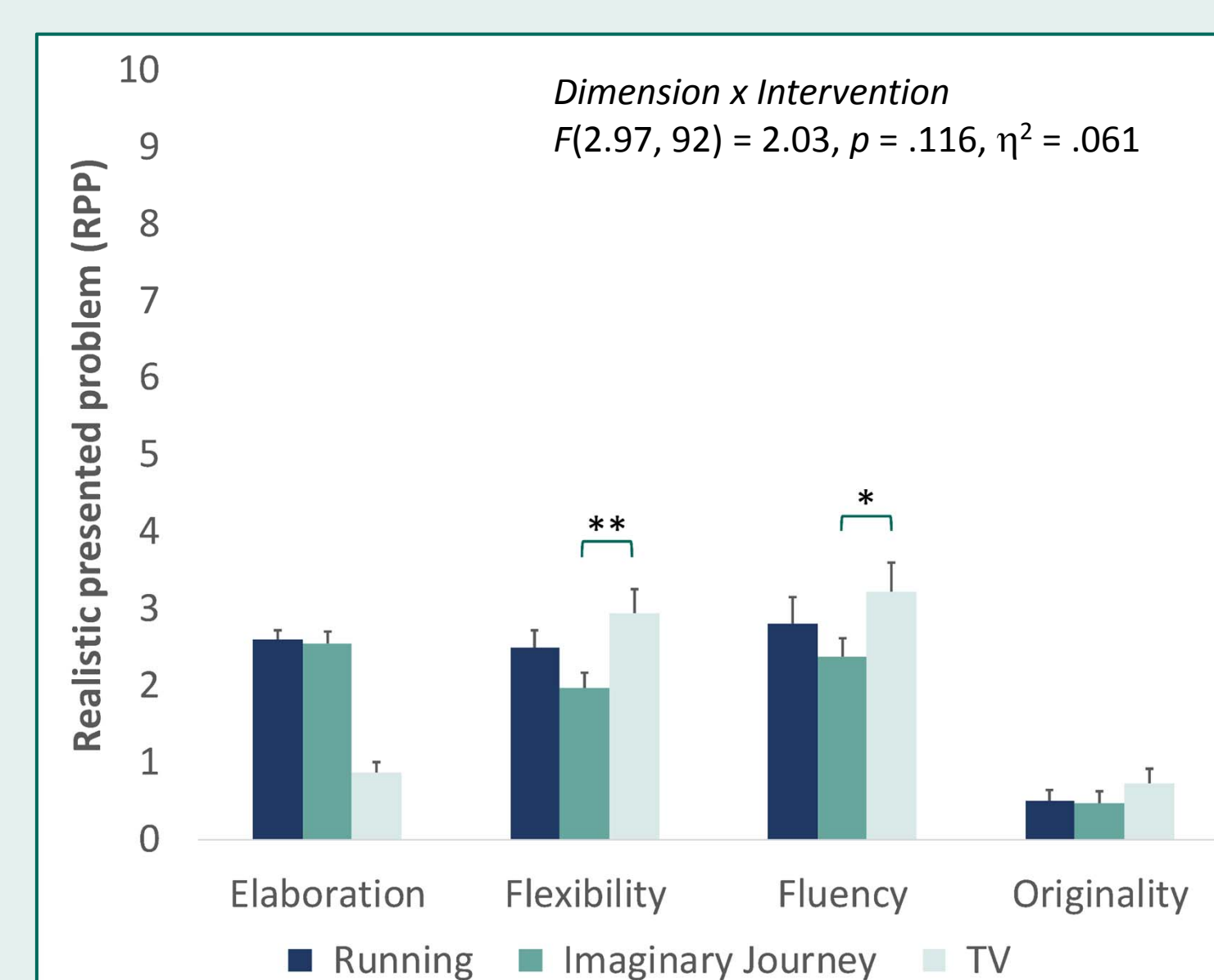


Figure 3. RPG across the experimental conditions

Table 2. RAT across the experimental conditions

	Running	Imaginary Journey	TV	p, η^2
RAT Total	8.25 ± 3.09	7.06 ± 3.02	6.41 ± 3.10 [#]	** , $\eta^2 = .201$
Errors	1.22 ± 1.50	1.16 ± 1.35	1.44 ± 1.19	ns, $\eta^2 = .017$

Table 1. Assessments - Instructions

The alternative uses task (AUT)

"You will be asked to generate unusual and original uses of given conventional everyday objects. Here we are most concerned with the originality facet of creativity. The example word given is "brick." The normal use of a brick would be for construction and would not be acceptable in this case. An unusual and original use for a brick might be weapon or a doorstop. You will have three minutes to complete this task, so please think creatively and quickly. Now please generate as many unusual and original uses for the household item....toothbrush, bucket, or pen (depending on randomization)."

Realistic presented problem (RPP)

"Next, we will describe a problem, which could occur at school or home. Your task is to first read about the problem and then try to write down as many solutions as you can in three minutes. Please try to be creative and provide only original responses. Creative responses are unusual and worthwhile. An original idea is one that is thought of by no one else."
Example: Your favorite TV show was on last night. You were so entertained by it that you forgot to do your homework. You are about to walk in-to your first class when you realize you are supposed to turn in an assignment today. What are you going to do? Tell the teacher you forgot. Leave to finish the assignment, and turn it in late, ask a friend to help you? There are many answers to this problem, all of them legitimate ... now please turn the page, take your time, have fun, and remember to try to think of as many original ideas as possible.

Realistic problem generation (RPG)

"I am going to provide you with a prompt related to your experiences here at your school. Your task is to try to write down as many solutions to issues you determine are relevant in three minutes. Please try to be creative and provide only original responses. Creative responses are unusual and worthwhile. An original idea is one that is thought of by no one else."
Example: "List different issues regarding the health and wellness at your school that are important to you. These could include improvements you'd hope to see go into effect regarding health events, student health services, professional knowledge and awareness, your personal health, or whatever. Try to be specific and think of as many improvements as you can in three minutes. There are no wrong answers."

The remote associates task (RAT)

The RAT consisted of 10 three-word letter strings of equal difficulty level. Children were told that they will "see two stimulus words and that they should attempt to generate a third word, which, when combined with each of the three stimulus words, will result in word pairs that make up a common compound word or phrase."

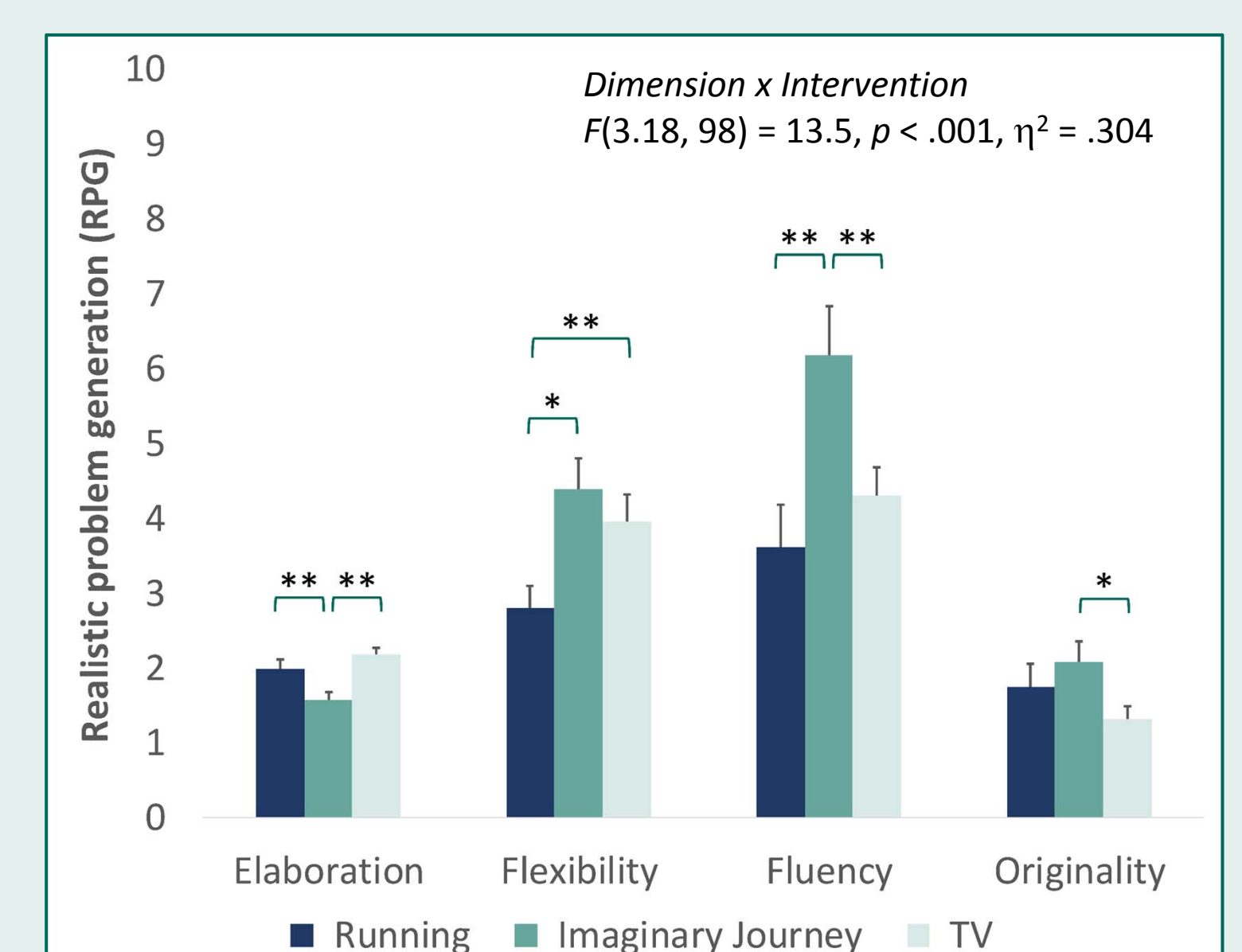
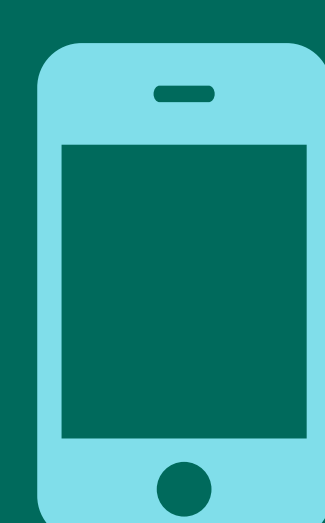
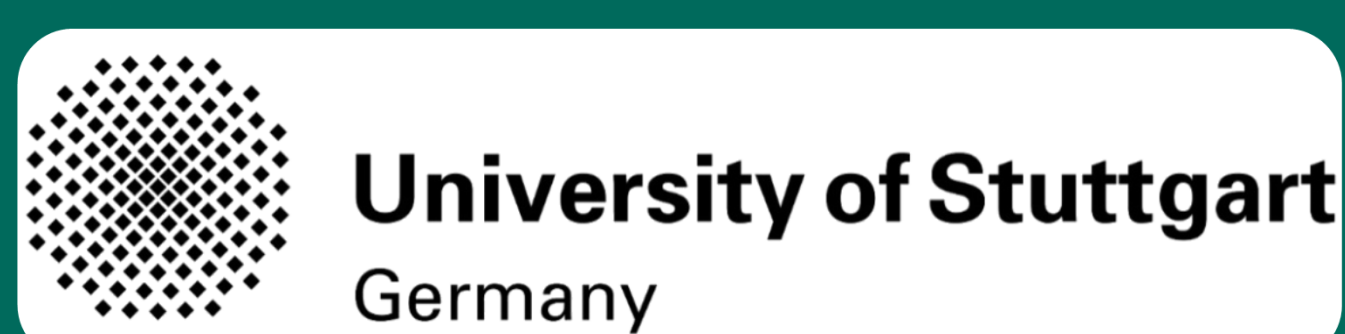
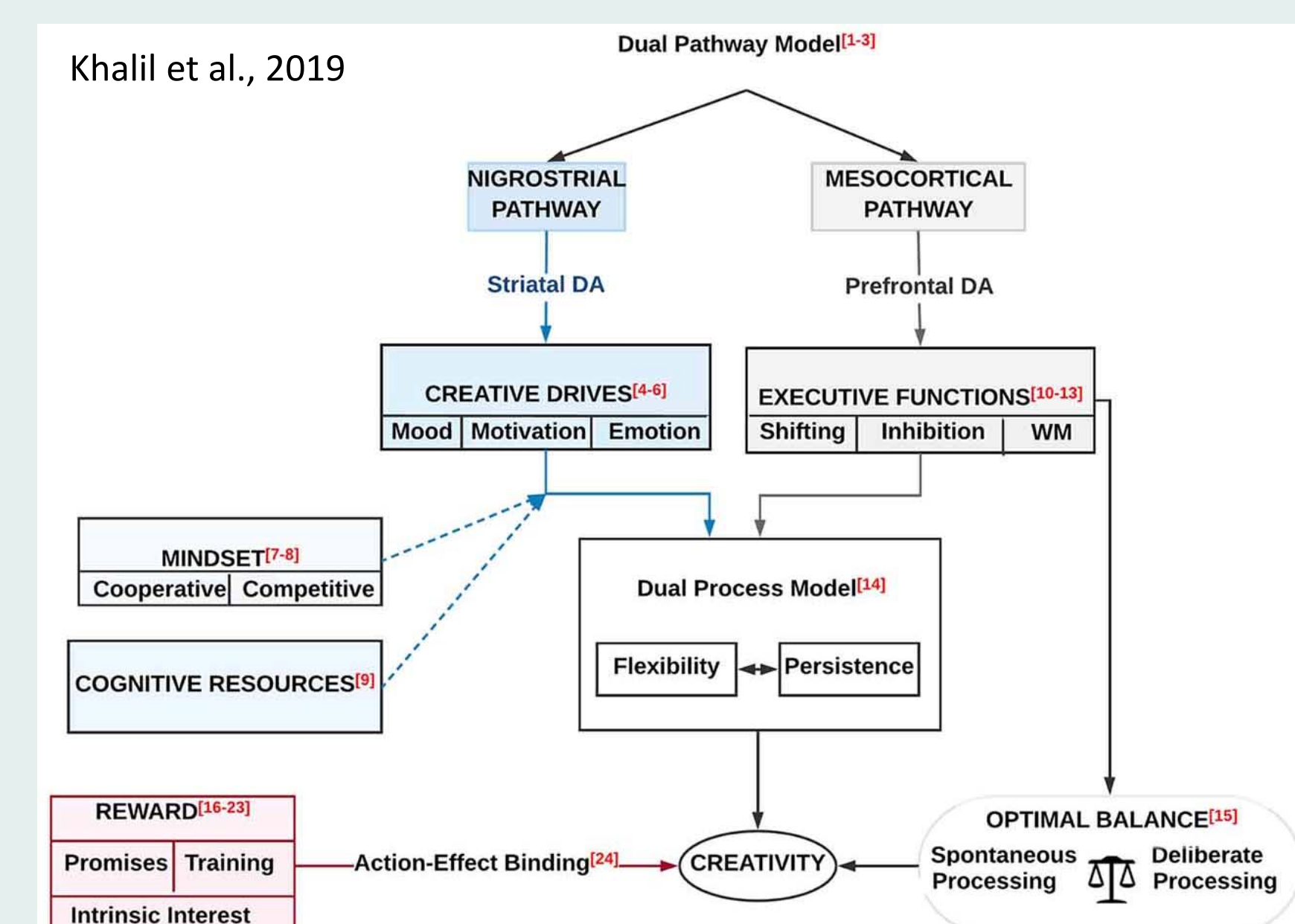


Figure 4. RPP across the experimental conditions



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