Risk communication among children: The effect of a gamified design

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Outline

- ✓Risk communication
- ✓Gamification
- ✓Hypotheses and Experimental Design
- ✓Results & Discussion

Risk communication

✓Medical decision-making

- Patient-centered medicine

- Involvement of the children

✓Efficient ways to communicate medical risks:

- Frequentist format [Cosmides and Tooby,1996; Gigerenzer, 1991; Zhu & Gigerenzer, 2006]

- Visual display: bar graphs, pie charts, icon arrays [Cosmides and Tooby,1996; Galesic and Garcia-Retamero, 2009; Multmeier , 2012]

Research Question

Can gamification improve risk communication among adolescents?

Gamification

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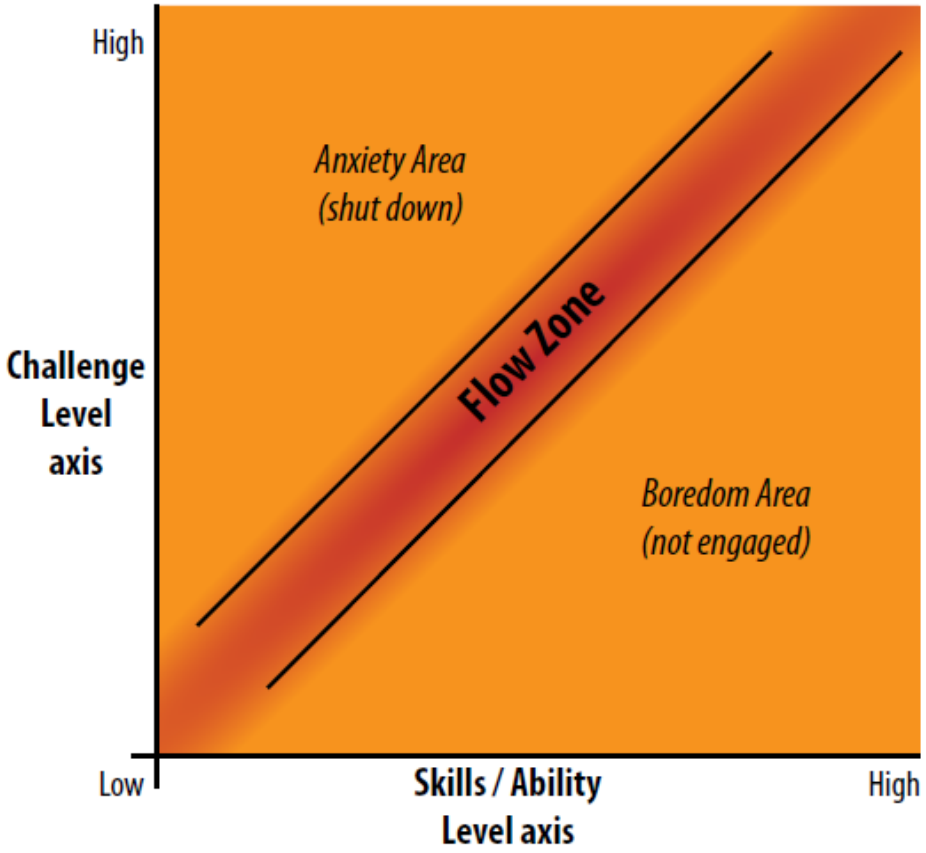
2. Flow

Flow



[Csikszentmihalyi, 1997; Zichermann and Cunningham, 2011].

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4. Narrative

-appeal to emotions

-clear and short descriptions

-relevant to the topic

-focus on what makes the task challenging

-create a sense of anticipation

Hypotheses and Experimental Design

Hypothesis

Gamification will produce a positive effect:

- A larger number of correct responses in cognitively demanding tasks.

The effect can vary for low risk literacy and high risk literacy adolescents.

Experimental design & Data collection

Traditional web survey

N=109

Gamified web survey

N=104

- School in Moscow, Russia. Completion in computer classes (April-May 2016)
- Children 11-15 years of age. Mean age=13.8 (SD=1.1).
- 58% of the respondents are girls and 42% are boys.

Gamification

- The narrative: respondent was selected as a doctor in a humanitarian mission on an island
- 4 missions
- Rewards: saving lives

Tasks

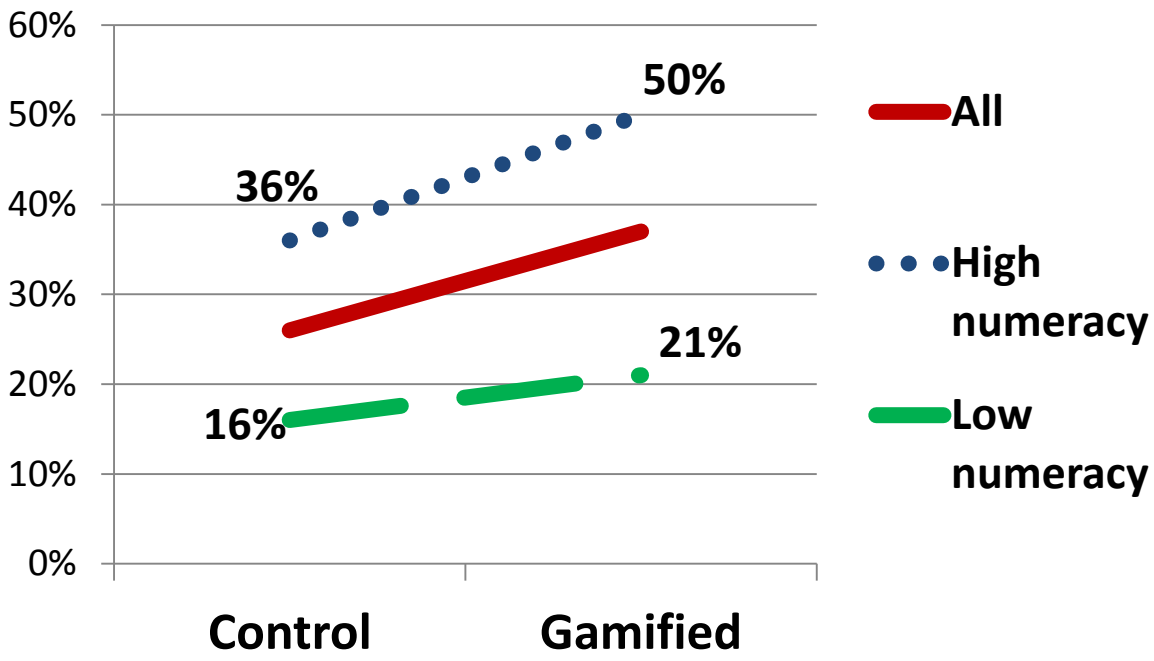
1) Understanding information about medical drugs and screenings.

2) Calculations of risks while taking and not taking the drugs.

[adapted from Schwartz, Woloshin, and Welch, 2005; Galesic and Garcia-Retamero, 2013; Garcia-Retamero, Galesic, and Gigerenzer, 2010]

Results

Tasks on understanding of information



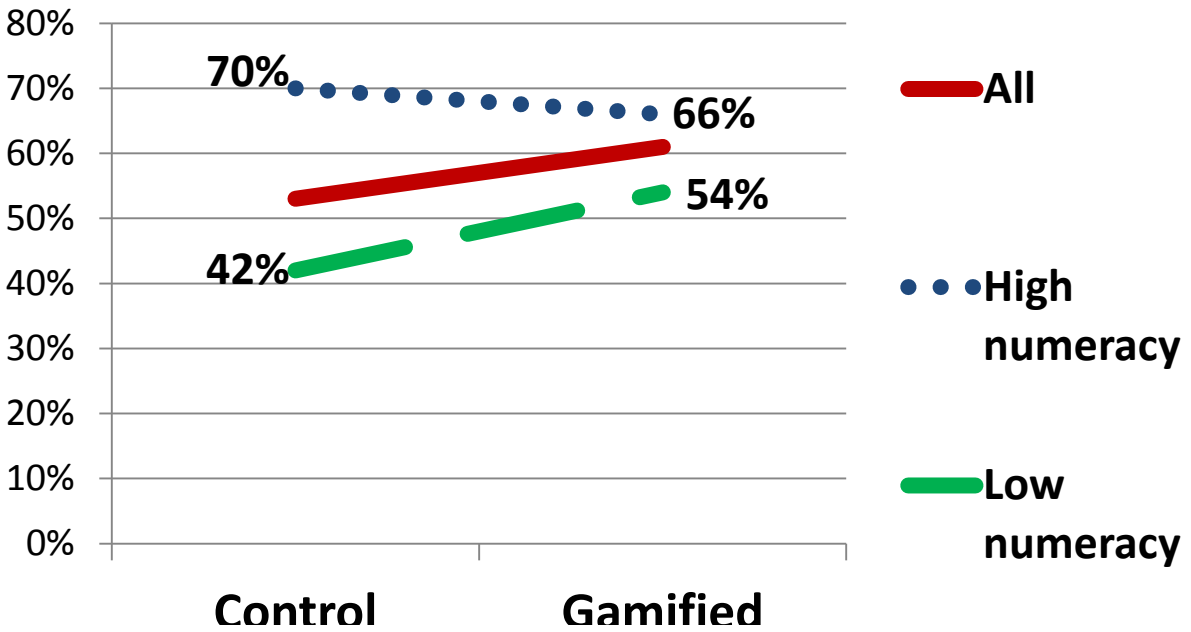
ANOVA:

✓A large effect of risk literacy: $F(1, 211)=16.4$, $p<0.001$, $\eta^2=0.07$

✓A small effect of gamified condition: $F(1, 211)=2.9$, $p=0.088$, $\eta^2=0.01$

✓A medium effect of the interaction between risk literacy and the gamification: $F(1, 211)=14.7$, $p<0.001$, $\eta^2=0.07$.

Risk calculations



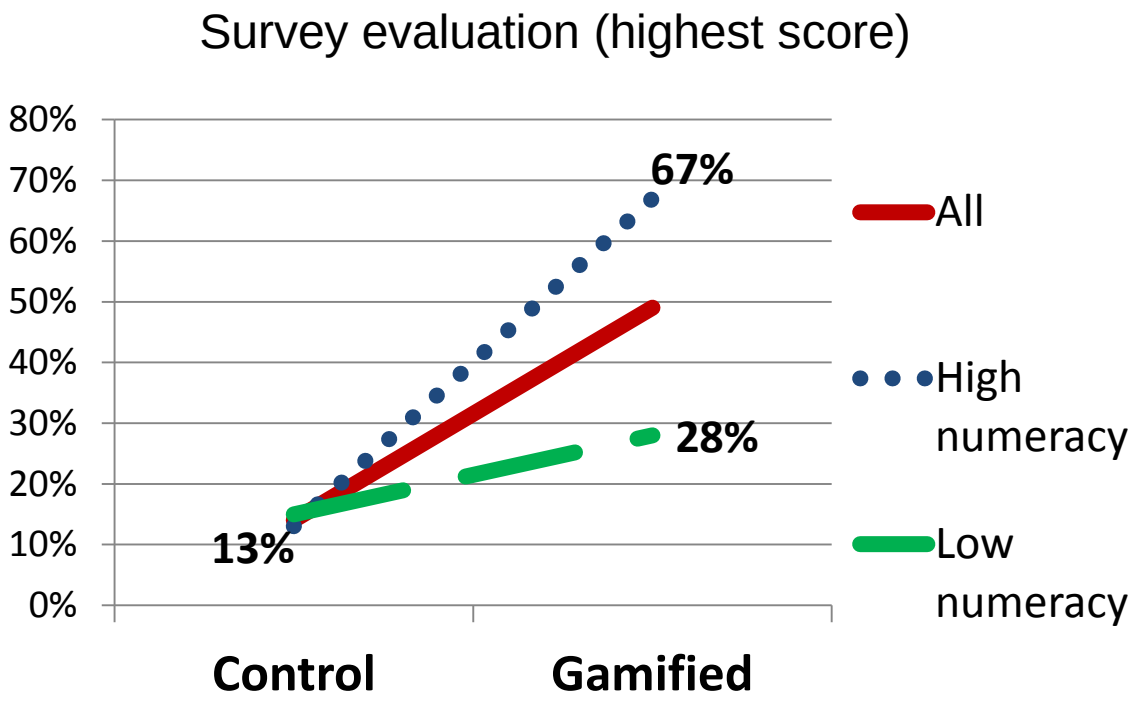
✓A medium risk literacy effect, $F(1,211)=14.5$, $p<0.001$, $\eta^2=0.06$.

✓A small interaction effect between risk literacy and gamification $F(1,211)=4.8$, $p<0.05$, $\eta^2=0.02$.

Tasks on understanding and calculations

- ✓No effect in easier tasks

Evaluation of a gamification



How easy it was to complete the tasks: in most of the tasks gamification was helpful for the respondents (d = 0.20-0.37).

Main Findings

(1) Gamification can be helpful in risk communication among adolescents.

(2) Gamification increased the understanding of information about risks and risk calculations in more cognitively demanding tasks.

(3) Gamification did not increase the accuracy in easier tasks.

(4) The effect sizes are small.

Thank you for your attention!

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