

# Relationship between subjective health complaints and perceived school-related stress on classroom-level

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## 1 Background

Subjective health complaints including somatic symptoms like headache, backache, and psychological symptoms such as nervousness and irritability, are common among adolescents (5,2). According to previous studies school-related stress may contribute to the development of such health complaints (1). However, school-related stress is not simply an individual phenomenon, but is also a characteristic of the wider context of the school or classroom (4,1).

## 2 Objective

The aim of our study was to examine the relationship of perceived school-related stress on classroom-level with students' individual subjective health complaints, applying a multilevel perspective.

## 3 Methods

### Sample

- Representative sample of 5450 Hungarian 11- to 17-year-old students.
- 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup>, 11<sup>th</sup> graders from 264 school classes.
- As part of the 2005/2006 'Health Behaviour in School-aged Children' (HBSC) survey.

### Instruments

**Subjective health complaints** (HBSC Symptom Checklist ;3)  
 9-item scale on reported symptoms: headache; abdominal pain; backache; depressed mood; irritability; nervousness; sleeping difficulties; dizziness; fatigue. „In the last 6 months: how often have you had the following?“ Symptoms are rated on a five-point frequency scale from “about every day”; “to “rarely or never” (3).

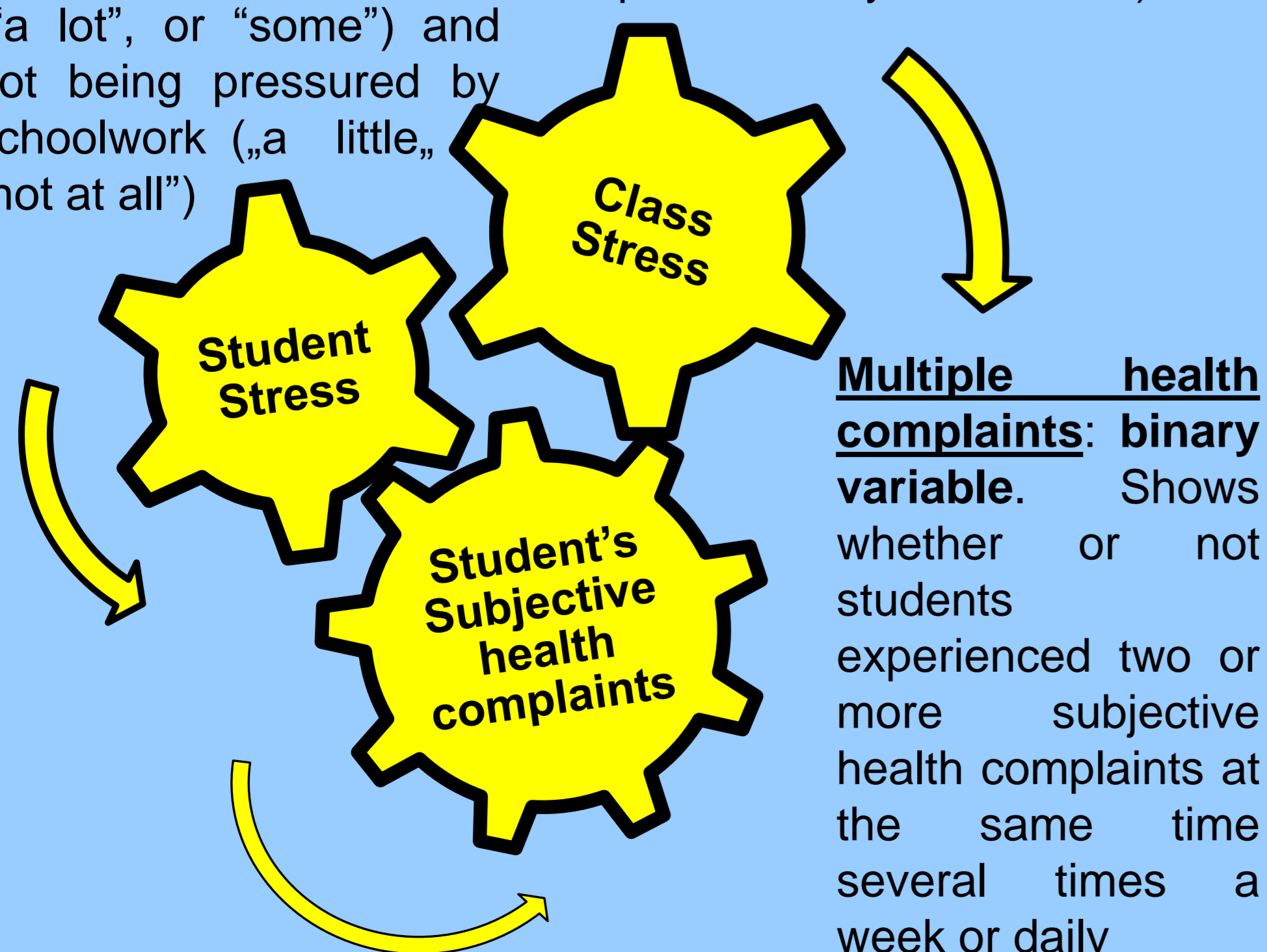
**Perceived school-related stress** (school-related workload; 3)

Students were asked how pressured they feel by the schoolwork they have to do. 4 response options ranged from “a lot” to “not at all”.

### Variables

**Individual-level: binary variable.** Students were categorized in two groups: being pressured (“a lot”, or “some”) and not being pressured by schoolwork („a little,, “not at all”)

**Class-level: aggregated variable** (rate of students in the class who answered being pressured by schoolwork)



### Control variables

Gender; class and school type (as a combined variable); socio-economic status (measured through the Family Affluence Scale, 6); academic achievement (measured by one item relating to the student's perception of how the teacher evaluates their academic performance. Response categories: very good, good, average, below average, 3).

### Statistical analysis

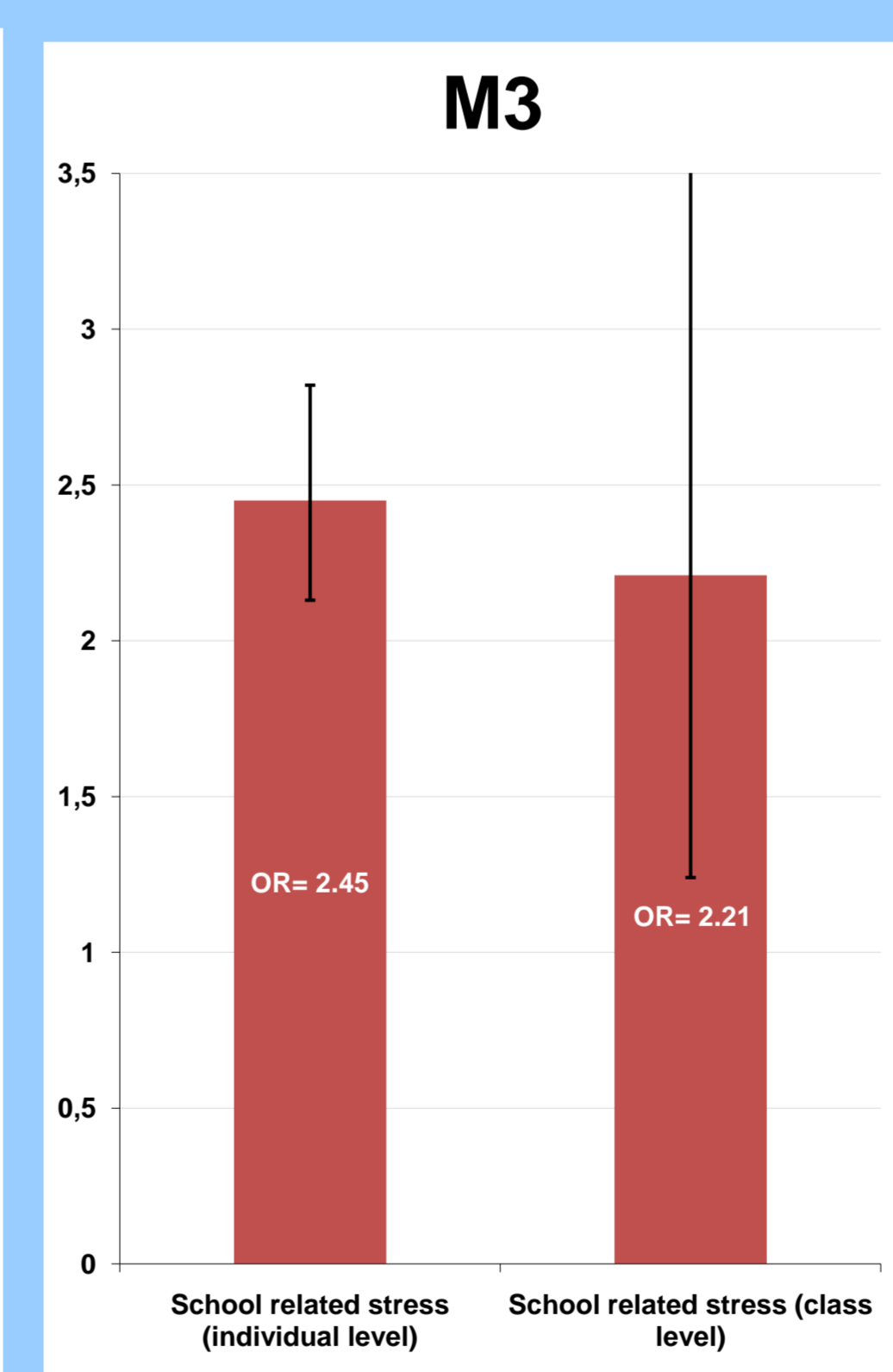
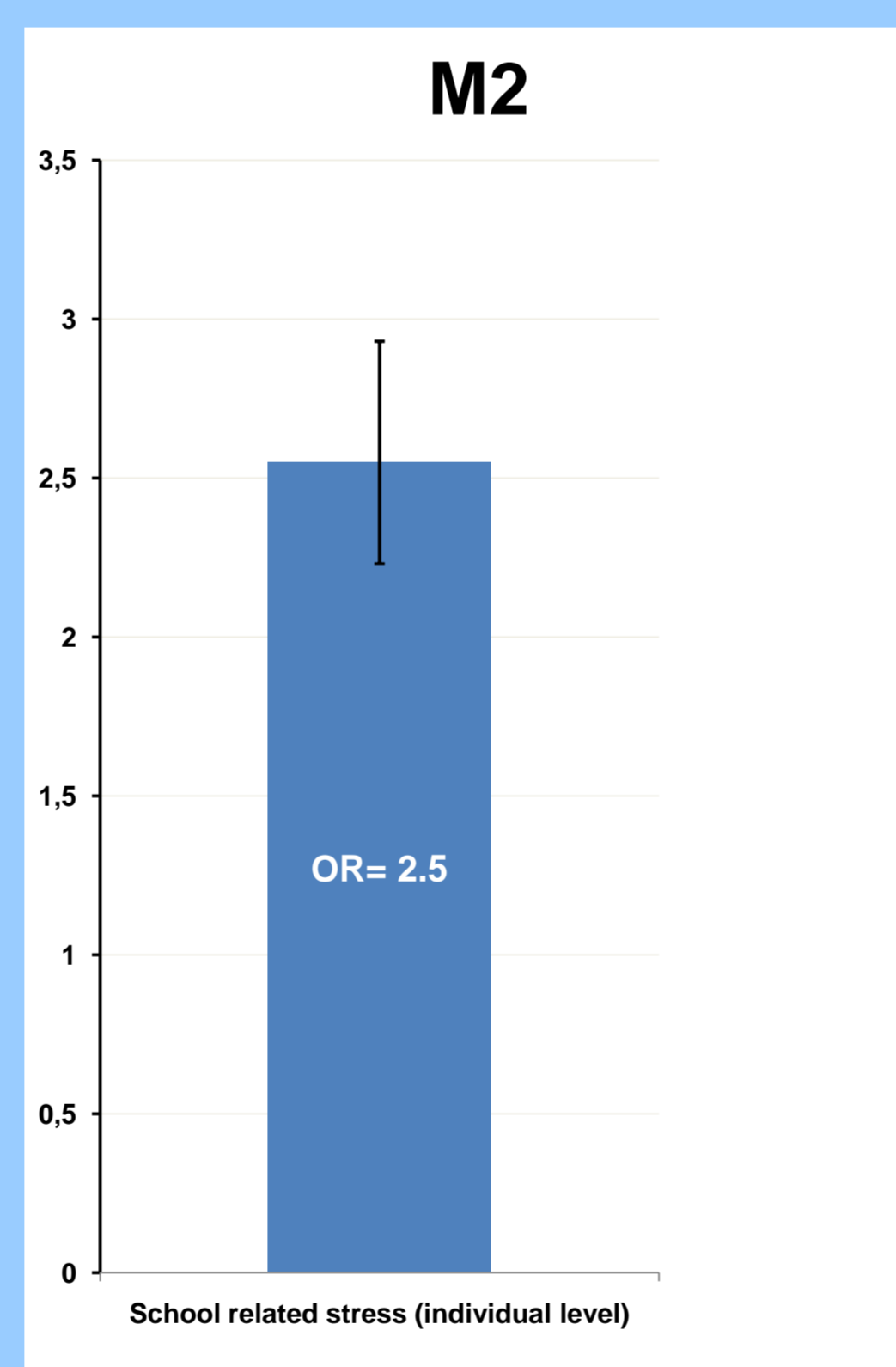
Multilevel logistic regression analysis using MIWin 1.10.0007.

## 4 Results

Three random intercept models have been examined. The null-model as a reference model contains only a constant and no predictors. The second model (M2) contained the student level predictors, that is the individual level school stress and the control variables. In the third model (M3) the class level stress variable was also included.

Null-model: random intercept variance has achieved statistical significance at 0.05 level, which suggests that there are differences in individual subjective health complaints between classes. Intraclass correlation coefficient is 0.05.

Null-model	
Intercept OR (95% CI)	0.77 (0.71-0.83)
Class level intercept variance (s.e.)	0.17 (0.03)
Intraclass correlation	0.05



Class-level variance (S.e.)	0.8 (0.03)
Residual Intraclass correlation	0.02
Explained variance (R <sup>2</sup> )	0.11

Class-level variance (S.e.)	0.07 (0.03)
Residual Intraclass correlation	0.02
Explained variance (R <sup>2</sup> )	0.12

**Model 2:** students feeling pressured by schoolwork had 2.5 times higher odds of experiencing two or more frequent symptoms. By adding individual level predictors to the model, the ratio of class level unexplained variance drops to 2%.

**Model 3:** class level school pressure being added to Model 2, those students, who felt pressured by schoolwork, had 2.4 times higher chance to have experienced two or more frequent symptoms, controlling for demographic variables, school performance and school level pressure. Besides, unrelated to individual level stress, students in classes where all students felt pressured have 2.2 times higher chance to have symptoms than in classes, where none of the students reported being pressured. The ratio of class-level unexplained variance remains around 2%, after adding class-level perceived stress to the model.

## 5 Conclusion

• These results indicate that besides individual stress experience, perception of stress in the near environment may also contribute to the development of subjective health complaints of individuals.

• Findings suggest that stress is a multilevel phenomenon, where individual appraisal processes and also psychosocial school environmental factors may affect health (4).

• We should keep in mind that besides schoolwork pressure effect, other stressors (e.g. rejection by classmates, ostracism, conflicted family atmosphere) and factors (e.g. hormone changes and growth and its accompanying physical and psychical effects) may also be related to the occurrence of frequent symptoms at this age.

## 6 References

- 1, Torsheim, T., Aaroe, L. E., & Wold, B. (2003) School-related stress, social support, and distress: prospective analysis of reciprocal and multilevel relationship. *Scandinavian Journal of Psychology*, 44,153-159.
- 2, Torsheim, T., & Wold, B. (2001) School-related stress, school support and somatic complaints: a general population study. *Journal of Adolescent Research*, 16 (3), 293-303.
- 3, Currie, C., Samdal, O., Boyce, W., Smith, B. (eds.). *Health Behaviour in School-Aged Children: a World Health Organization Cross-National Study. Research Protocol for the 2001/02 Survey*, University of Edinburgh
- 4, Torsheim, T., & Wold, B. (2001) School-related stress, support, and subjective health complaints among early adolescents: a multilevel approach. *Journal of Adolescence*, 24, 701-713
- 5, Natvig, G. K., Albrektsan, G., Anderssen, N., & Qvarnstrom, U. (1999) School-related Stress and Psychosomatic Symptoms Among School Adolescents, *Journal of School Health*, 69 (9), 362- 368.
- 6, Currie, CE., Elton, R. A., Todd, J., & Platt, S. (1997) Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children Survey. *Health Education Research*, 12, 385-397.

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