



Validating adapted scales to measure interest in animal science

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Introduction & Purpose

- As more students enter college with little or no prior experience in animal agriculture, creating and maintaining interest—especially through introductory courses—has become a vital topic^{[1],[2]}
- Interest is a cognitive-affective variable that predicts future effort and achievement^[3]
- Instructors can create short-term (**situational; SI**) and long-term (**individual; II**) interest through learning experiences^[3]
- However, no psychometric instruments have been validated to measure interest within animal sciences

The purpose of this research was to adapt existing SI and II scales and validate their use in animal science undergraduates.

Participants

254 undergraduates from two 16-wk undergraduate introductory animal science courses.

Instrumentation

We modified theory-based **SI** and **II** questionnaires—previously validated with undergraduate psychology students—to be animal-science-specific. We based hypothetical models on previous work suggesting that **SI** is described by 3 factors: triggered situational interest (**tsi**), maintained **SI**—feeling (**msf**), and maintained **SI**—value (**msv**); and **II** is unidimensional.^[4]

Methods

- Participants completed the questionnaire at wk. 7 during the course laboratory, rating interest on a scale of 1 (very low) to 70 (very high).
- We tested the reliability and validity of hypothetical models tested using confirmatory factor analysis (CFA) and explored dimensionality with parallel and bifactor analyses.^{[5],[6]}
- All analyses conducted in R, with missing data deleted listwise and significance declared at $p < 0.05$.^[7]
- To account for non-normality, we used maximum likelihood estimation with robust Huber-sandwich estimation of standard errors.^{[8],[9]}

Figure 1. Three-factor higher order model for **SI** in undergraduates.

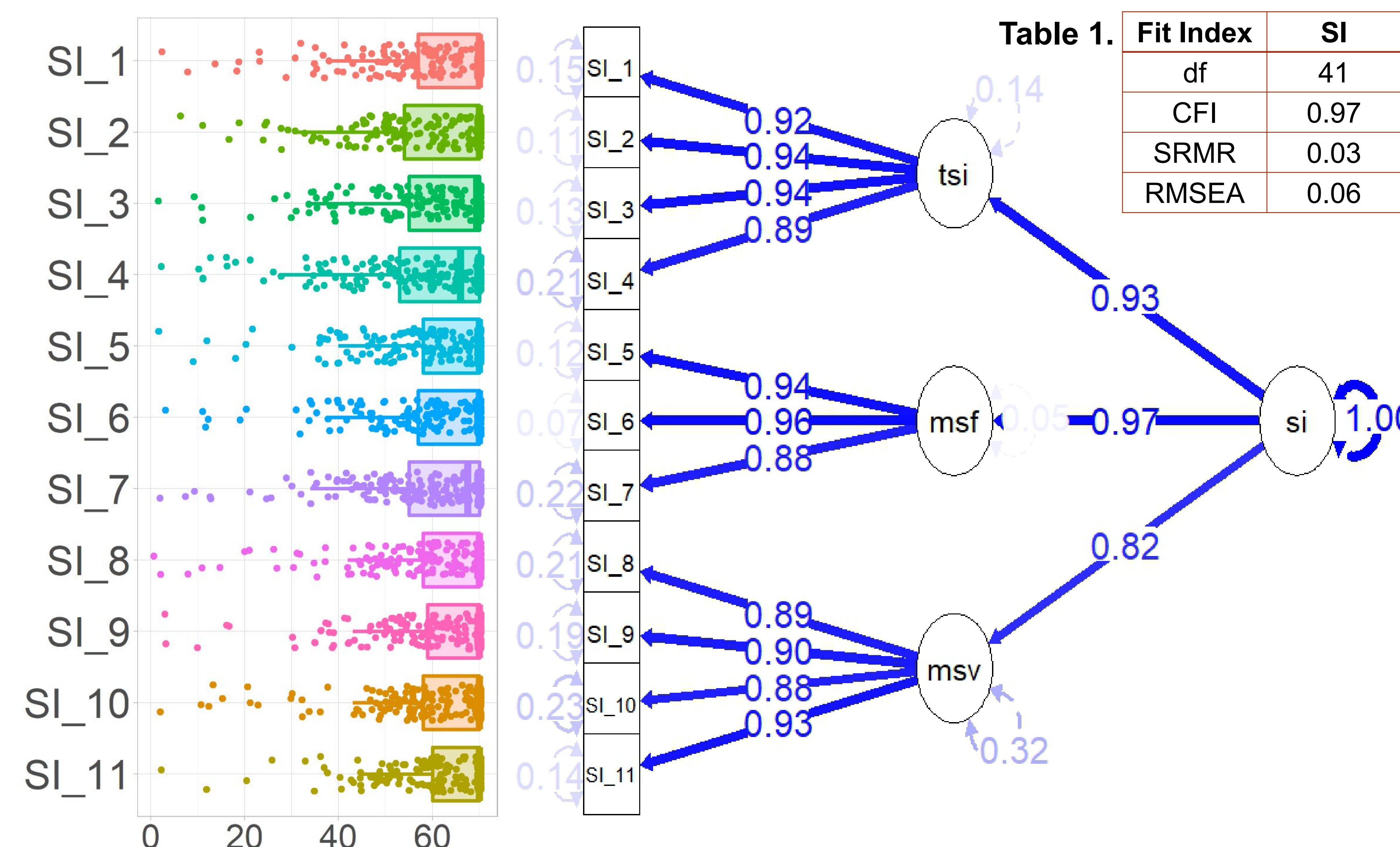
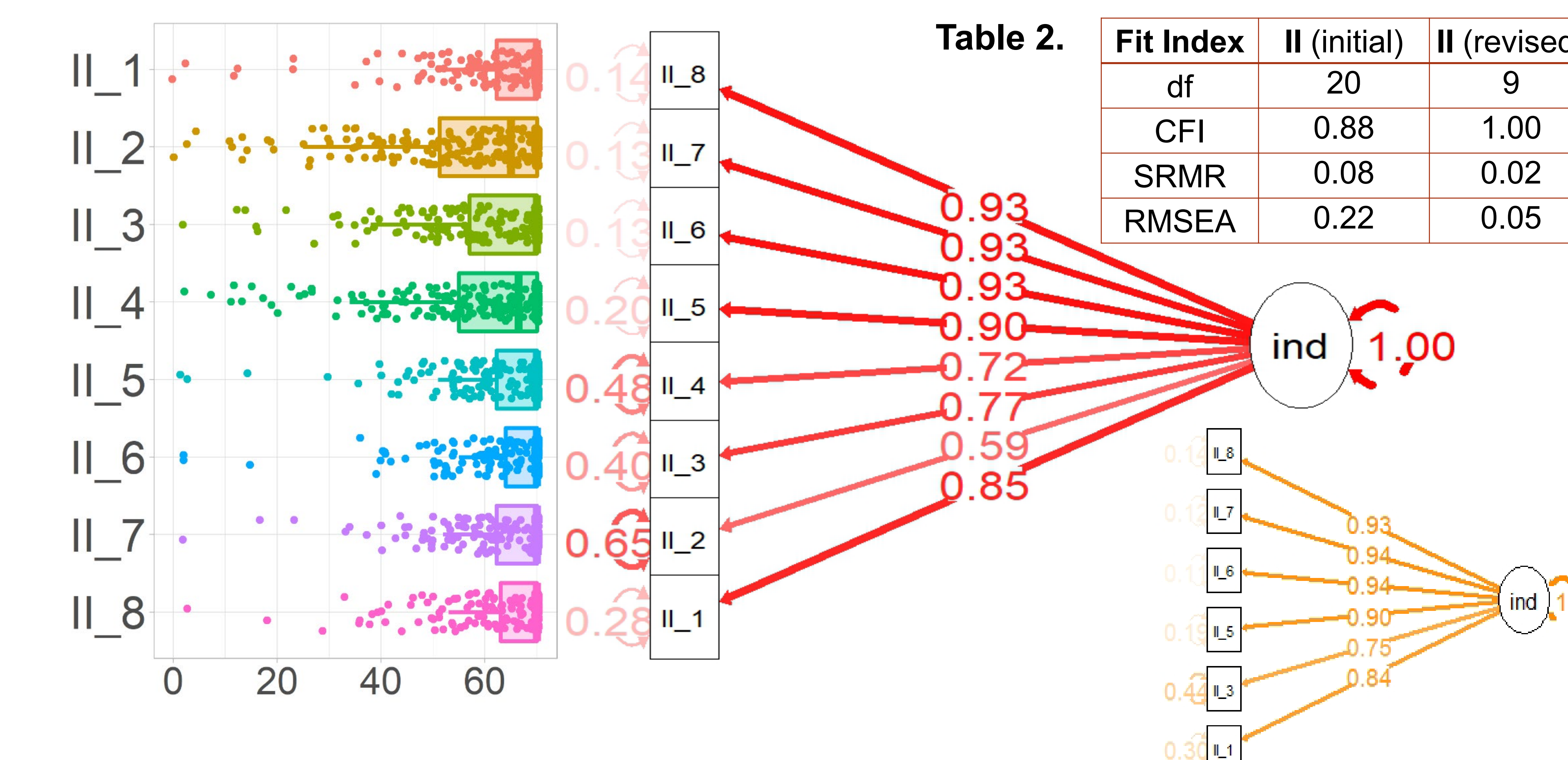


Figure 2. Initial (top) and revised (bottom) unidimensional models for **II**.



Results & Discussion

Our **SI** data fit the theoretical 3-factor higher order model well (Tbl. 1, Fig. 1) and we retained all items on the adapted scale.^{[10],[11]}

The initial **II** model fit the data poorly (Tbl. 2, Fig. 2). Modification indices revealed two problematic items, **II_2**, and **II_4**, which referenced personal relevance and identification in ways that possibly promoted differential item functioning across students.^[5] Both items were significantly and highly correlated with the other items on the scale but had higher error variance and lower factor loadings. Because ancillary parallel analyses suggested a one-factor solution and only two indicators were problematic, we removed items and proceeded with a reduced unidimensional scale. The revised **II** model showed excellent fit.^[11]

Future work involving larger, more diverse samples is needed to explore the measurement invariance of **SI** and **II** across a wider variety of cultural and contextual characteristics.^[12] Additionally, the longitudinal stability and developmental trajectories of **II** warrant investigation.^[13] Research should further empirically examine the theoretical interplay between **SI** and **II** development.^[4] There is a critical need for research relating **SI** and **II** to educational experiences, especially in animal sciences.^[14] Finally, valid scales and experimental procedures for additional motivational variables are needed to characterize heterogeneous motivational profiles in greater detail.^[15]

Conclusions & Supplement

Our research validated quantitative scales to measure situational and individual interest in animal sciences undergraduates.

Questions? Please contact merickson3@wisc.edu
Appendix SI and II Questionnaires: bit.ly/InterestQs

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