

Divided we stand:

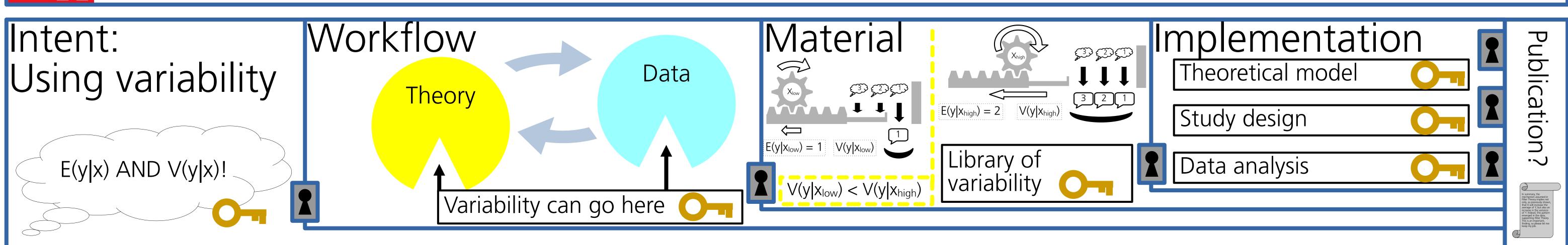


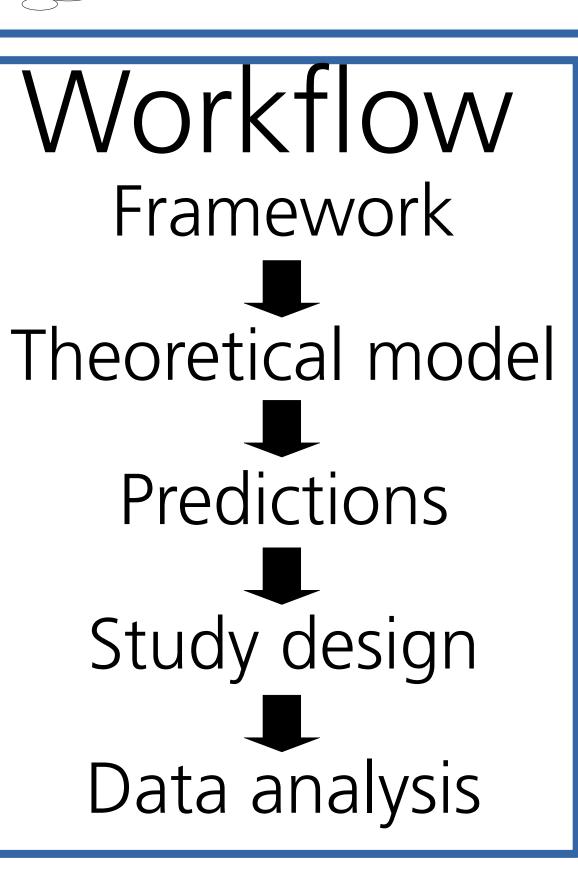
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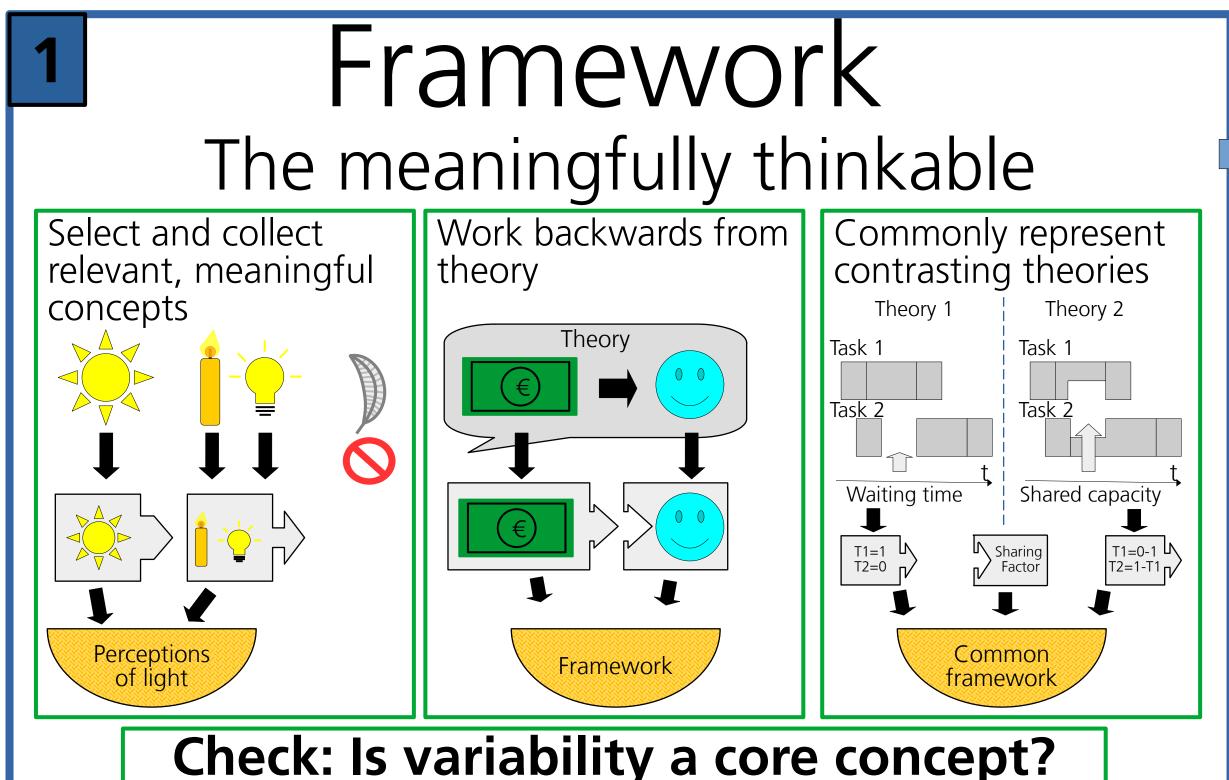
A tutorial on using variability in theory and data analysis

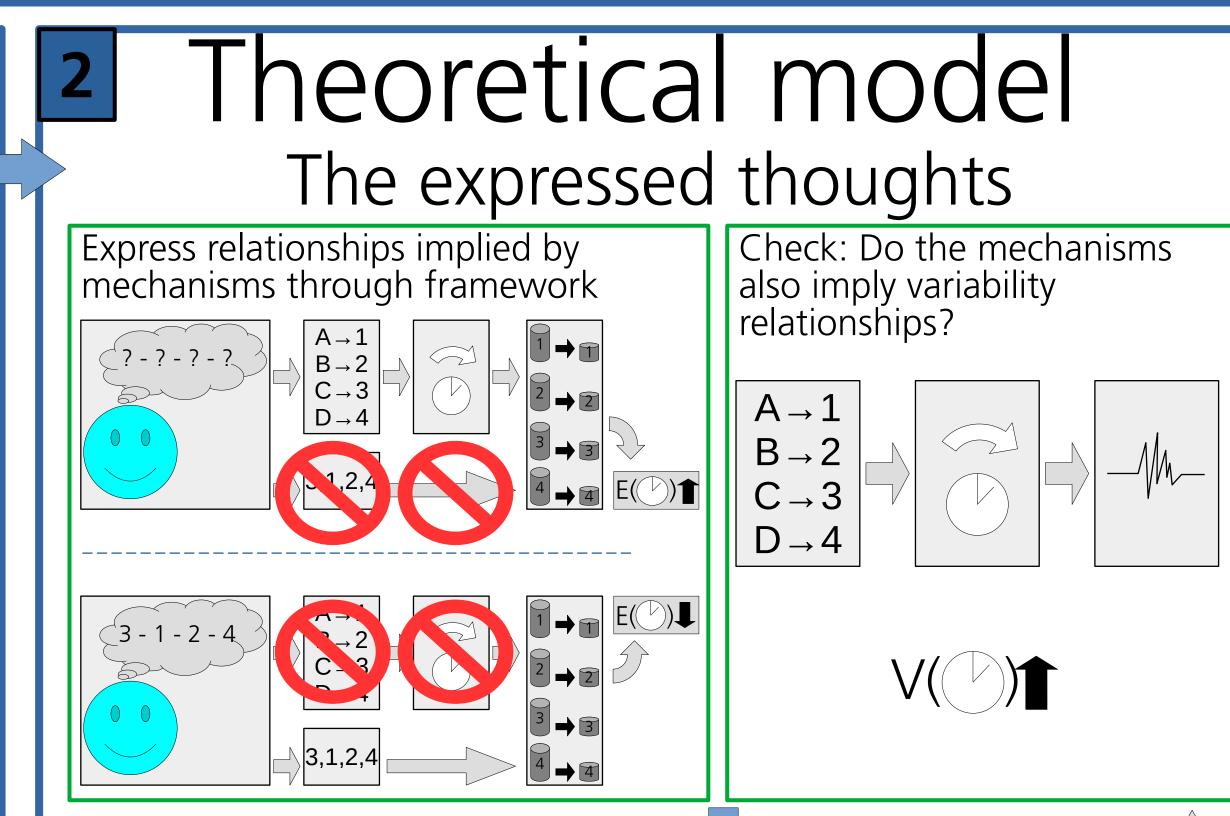


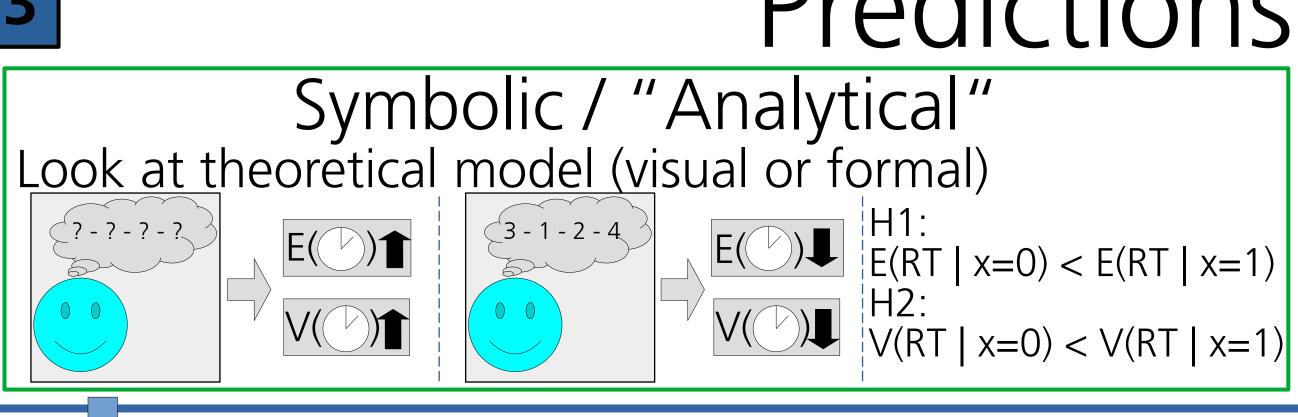
Christoph Naefgen, Daniel Gotthardt, Anne Reinarz FernUniversität in Hagen, Universität Hamburg, Durham University

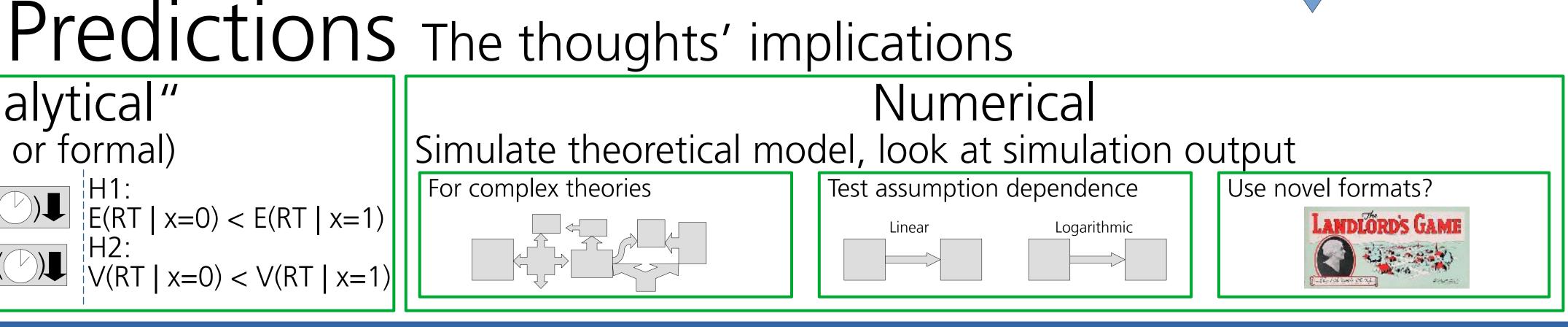




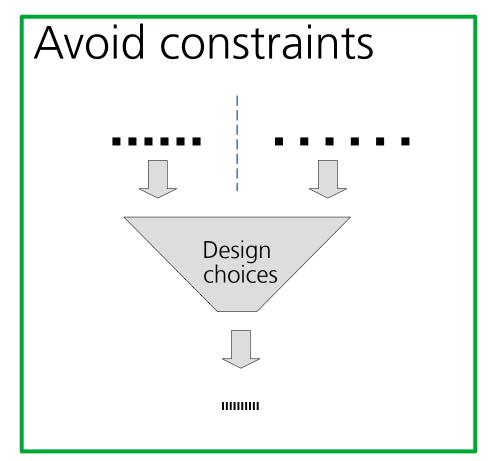


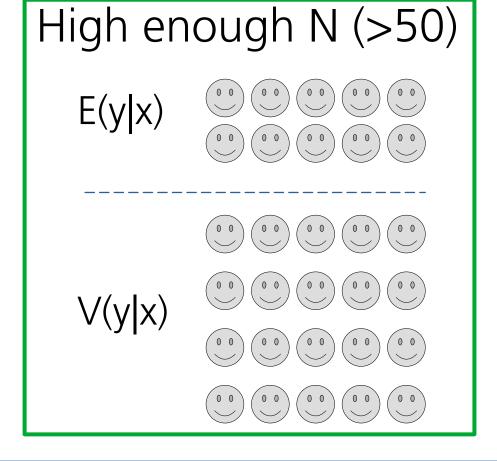


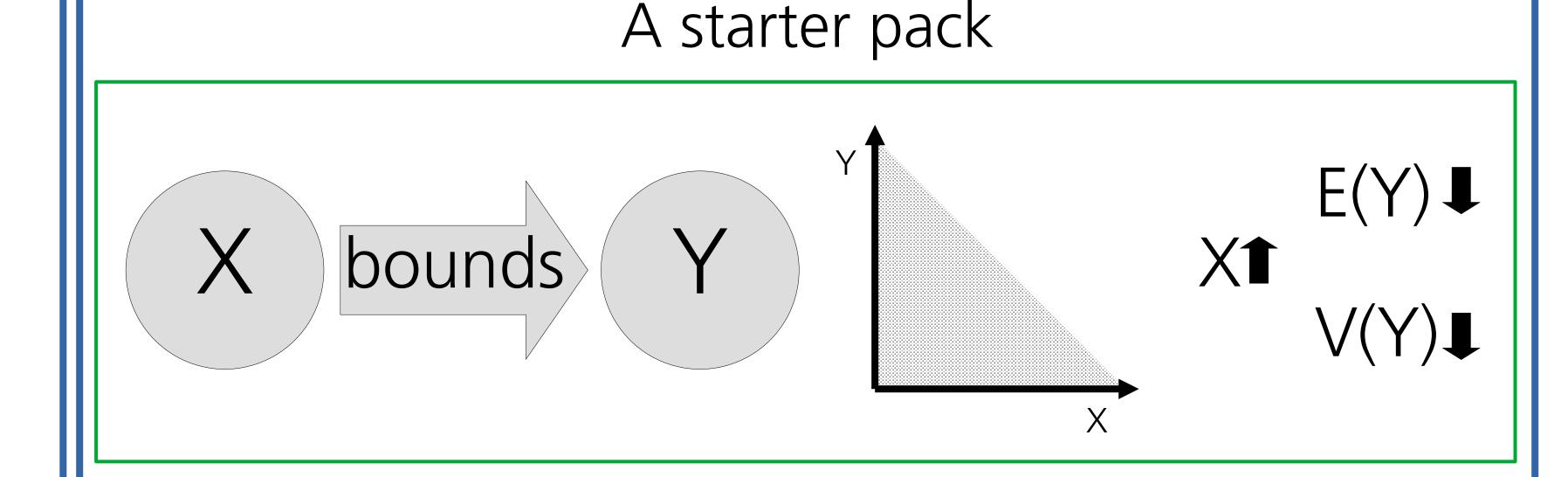












Proto-Mechanisms and variability

Data analysis Numbers!

Variance function regression High power

Vulnerable against outliers, asymmetric variances

For: Well-behaved data

Quantile regression

Deals well with outliers,

Hungry for sample size

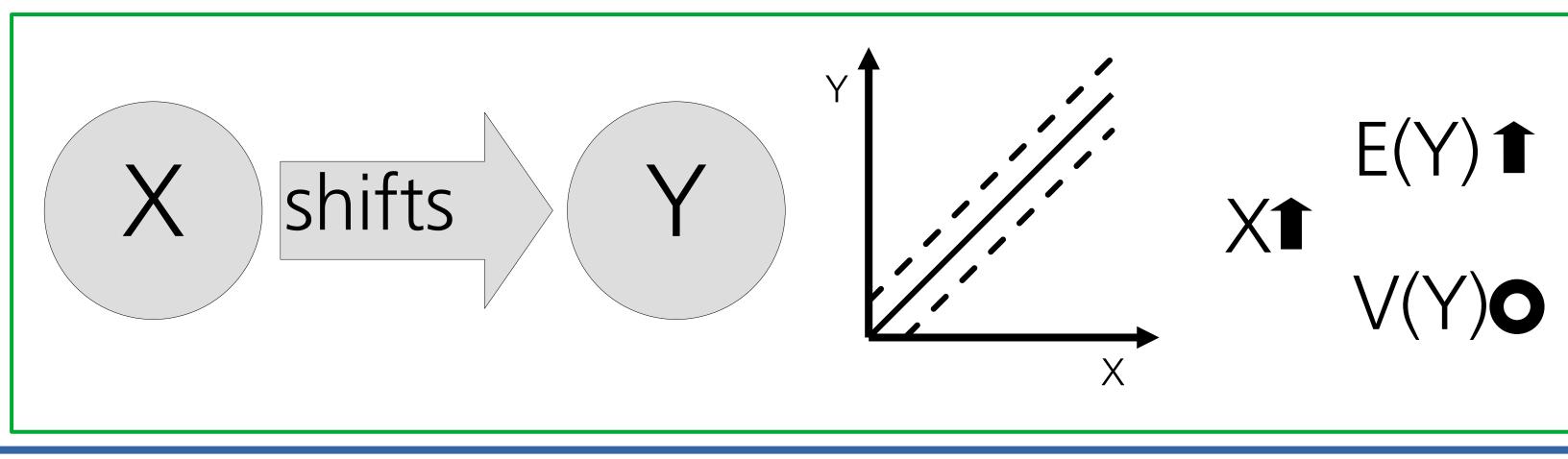
For: Rowdy but plentiful data

The tutorial itself

- A fictional researcher's path to variability
- R code examples for VFR and QR
- •Expanding online material: →mechanism-variability mappings
- →examples of common use cases

→https://var-psy.github.io

"weirder" distributions



Literature

Modeling and workflow: Guest, O., & Martin, A. E. (2021). How Computational Modeling Can Force Theory Building in Psychological Science. Perspectives on Psychological Science, 16(4), 789–802. doi:10.1177/1745691620970585

Lundberg, I., Johnson, R., & Stewart, B. M. (2021). What Is Your Estimand? Defining the Target Quantity Connects Statistical Evidence to Theory. American Sociological Review, 86(3), 532-565. doi:10.1177/00031224211004187

/ariance function regression:

attracts

Western, B., & Bloome, D. (2009). Variance Function Regressions for Studying Inequality. Sociological Methodology, 39(1), 263–326. doi:10.1111/j.1467-9531.2009.01222.x

<u>Quantile regression:</u> Koenker, R. (Ed.). (2005b). Quantile Regression in R: A Vignette. In Quantile Regression (pp. 295–316). Cambridge University Press. doi:10.1017/CBO9780511754098.011, updated version: https://cran.r-project.org/web/packages/quantreg/vignettes/rq.pdf