

University of Groningen

## Some notes on Bayesian time series analysis in psychology

Krone, Tanja

**IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.**

*Document Version*

Publisher's PDF, also known as Version of record

*Publication date:*

2016

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Krone, T. (2016). *Some notes on Bayesian time series analysis in psychology*. [Thesis fully internal (DIV), University of Groningen]. Rijksuniversiteit Groningen.

### Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

### Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

**Some Notes on  
Bayesian Time Series Analysis  
in Psychology**

**Tanja Krone**

©2016 Some Notes on Bayesian Time Series Analysis in Psychology  
Tanja Krone, University of Groningen

ISBN: 978-90-367-8990-5

ISBN electronic version: 978-90-367-8988-2

Printed by: Ipskamp

This work is funded by the Netherlands Organization for Scientific Research (NWO),  
grant number 406-11-018.



rijksuniversiteit  
 groningen

# Some Notes on Bayesian Time Series Analysis in Psychology

## Proefschrift

ter verkrijging van de graad van doctor aan de  
Rijksuniversiteit Groningen  
op gezag van de  
rector magnificus prof. dr. E. Sterken,  
en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op  
donderdag 22 september 2016 om 16.15 uur

door

**Tanja Krone**

geboren op 11 augustus 1985  
te Almere

**Promotor**

Prof. dr. M.E. Timmerman

**Copromotor**

Dr. C.J. Albers

**Beoordelingscommissie**

Prof. dr. D. Borsboom

Prof. dr. R.R. Meijer

Prof. dr. M.C. Wichers

# Contents

|   |                                                                                                |     |
|---|------------------------------------------------------------------------------------------------|-----|
| 1 | Introduction                                                                                   | 7   |
| 2 | A comparative simulation study of AR(1) estimators in short time series                        | 13  |
| 3 | Comparison of Estimation Procedures for Multilevel AR(1) Models                                | 33  |
| 4 | Bayesian Dynamic Modeling to assess differential treatment effects on panic attack frequencies | 51  |
| 5 | A multivariate model for emotion dynamics                                                      | 67  |
| 6 | Studying the dynamics of affect through vector-autoregressive Bayesian dynamic models          | 83  |
| 7 | Conclusion                                                                                     | 99  |
|   | Appendix A R code                                                                              | 108 |
|   | Appendix B Stan code                                                                           | 109 |
|   | Summary                                                                                        | 111 |
|   | Samenvatting                                                                                   | 115 |
|   | Curriculum Vitae                                                                               | 130 |
|   | Dankwoord                                                                                      | 131 |

