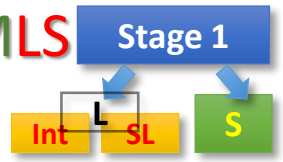
MIX{WILD} Stage 1 MEMLS Cheatsheet



Mixed-effects Multiple Location Scale modeling:
Mixed-effects multiple location scale model (MEMLS) augments the MELS model by including multiple subject-level random location effects in the Mean model (i.e., both random intercept and slope(s)). The model still allows for the WS variance submodel, as well as random scale effect.

[*Model Configuration*]

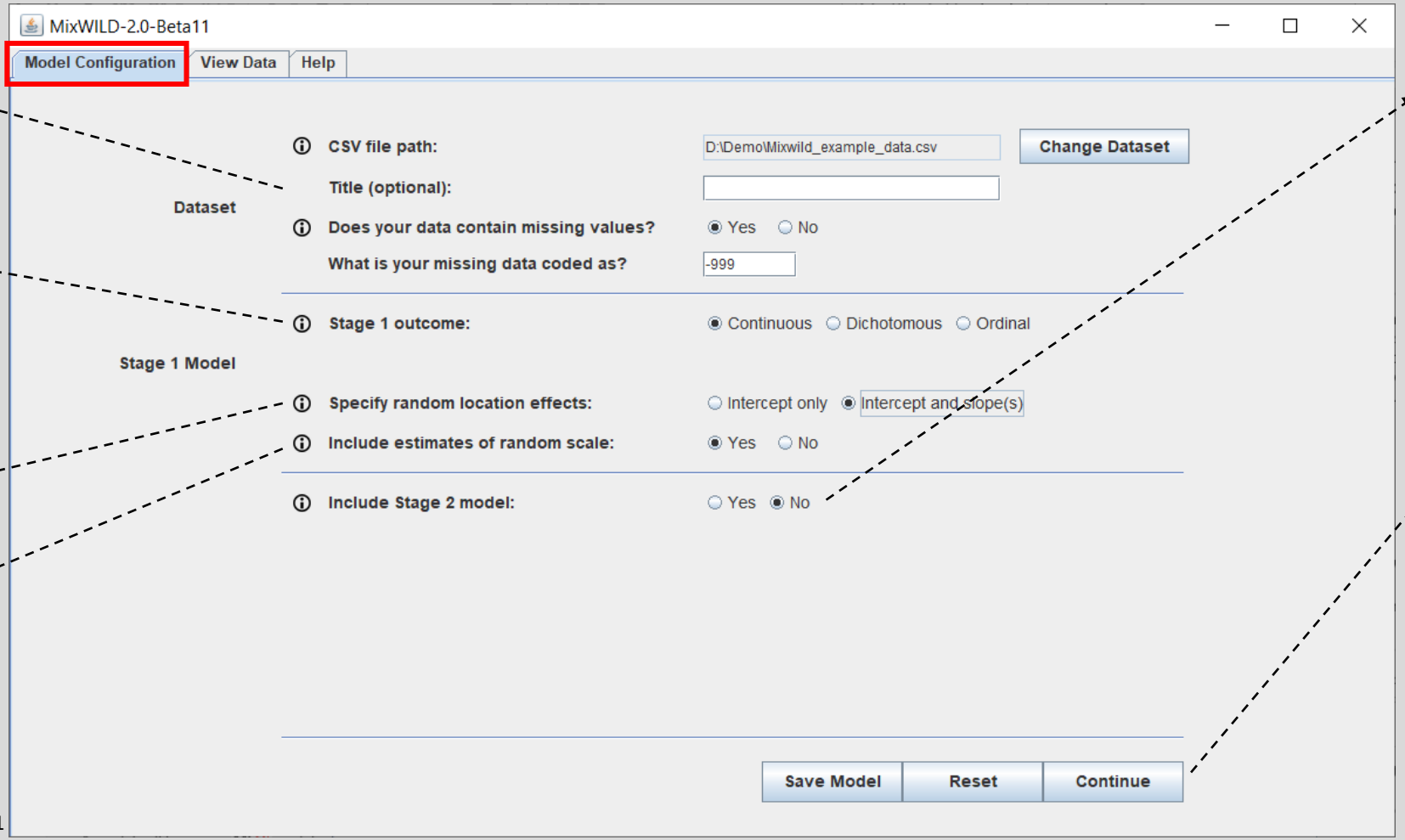
1 Data import
- Import data
- Create title (optional)
- Set up missing value

2 Select stage 1 outcome
Select **Continuous**, **Dichotomous**, or **Ordinal** for Stage 1 outcome. Choose between **Probit** or **Logistic** model if your Stage 1 outcome is dichotomous/ordinal.

3 Specify random location
Select **"Intercept and slope(s)"** and the model includes a random subject intercept and random slope(s).

4 Select random scale
Select **"Yes"** if the model includes random subject scale (allowing subjects to have individual within-subject variance effects)

By selecting **"Intercept and slope(s)"** in random location effects and **"Yes"** in random scale estimate, the stage 1 model will become a **MEMLS** model.



5 Select stage 2 model
Select **"Yes"** when you have a stage 2 model.
Select **"No"** when you just need a stage 1 model.

In this example, it is **"stage 1 only"**. Please select **"No"**.
If you need a stage 2 model, please check [Data Import] cheatsheet.

6 Click Continue to enter Stage 1 Configuration
Click "Continue" to proceed to additional model specifications.

Or click Reset (optional)
Click "Reset" to clear the specifications and start over.

Or Save model (optional)
Click it to keep all the model configuration above and save it as a .MW file.

*** Please see more details in User's Guide Chapter 2.**

Website: https://reach-lab.github.io/MixWildGUI/
User Guide: https://reach-lab.github.io/MixWildGUI/MixWild_User_Guide.pdf

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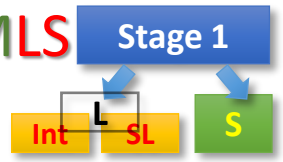

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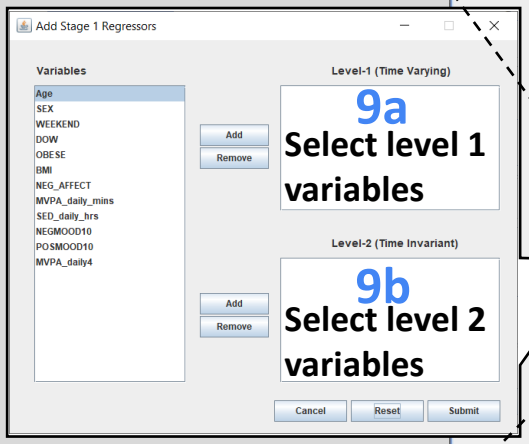
[Stage 1 Configuration]

7 Select ID
ID is the key variable to define the two levels of your data.

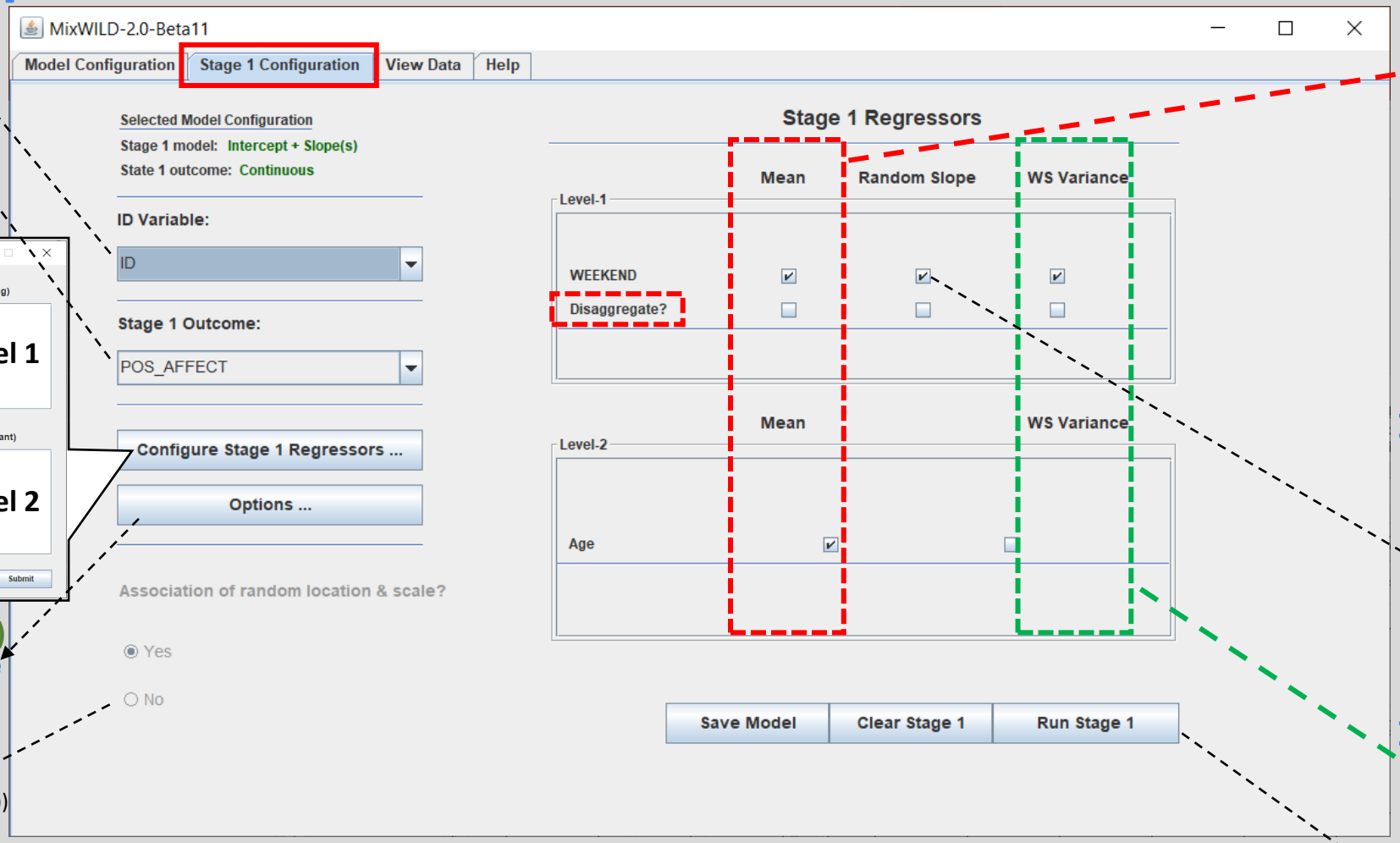
8 Select Stage 1 Outcome

9 Select Stage 1 Regressors



10 Stage 1 Options (optional)
Please check the details in the [Stage 1 Options] cheatsheet.

11 Specify the relationship
Specify the association between random location (intercept + slope(s)) and within-subject (WS) variance of the outcome variable (random scale effect).



* Please see more details in User's Guide Chapter 2.

12 Specify Mean Model
Select the regressors in **[Mean Model]** to predict the mean value of the outcome variable.
In the example, the regressors are as follows:
- Weekend
- Age

* Disaggregate
Select "Disaggregate" for each of the time-varying variable(s) for which decomposition of the within-subject and between-subject effects in predicting stage 1 outcome is desired.

13 Specify Random Slope
Select the checkbox and allows for extra random slope effects in the **[Mean model]**.
* Note "Random Slope" is only available for time-varying variables because time-invariant observations have no within-subject variance.
- Weekend

14 Specify WS Model
Select the regressors to predict the within-subject variance of the outcome variable.
- Weekend

15 Run Stage 1 model

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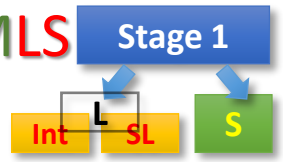

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[*Stage 1 Analysis Results*]

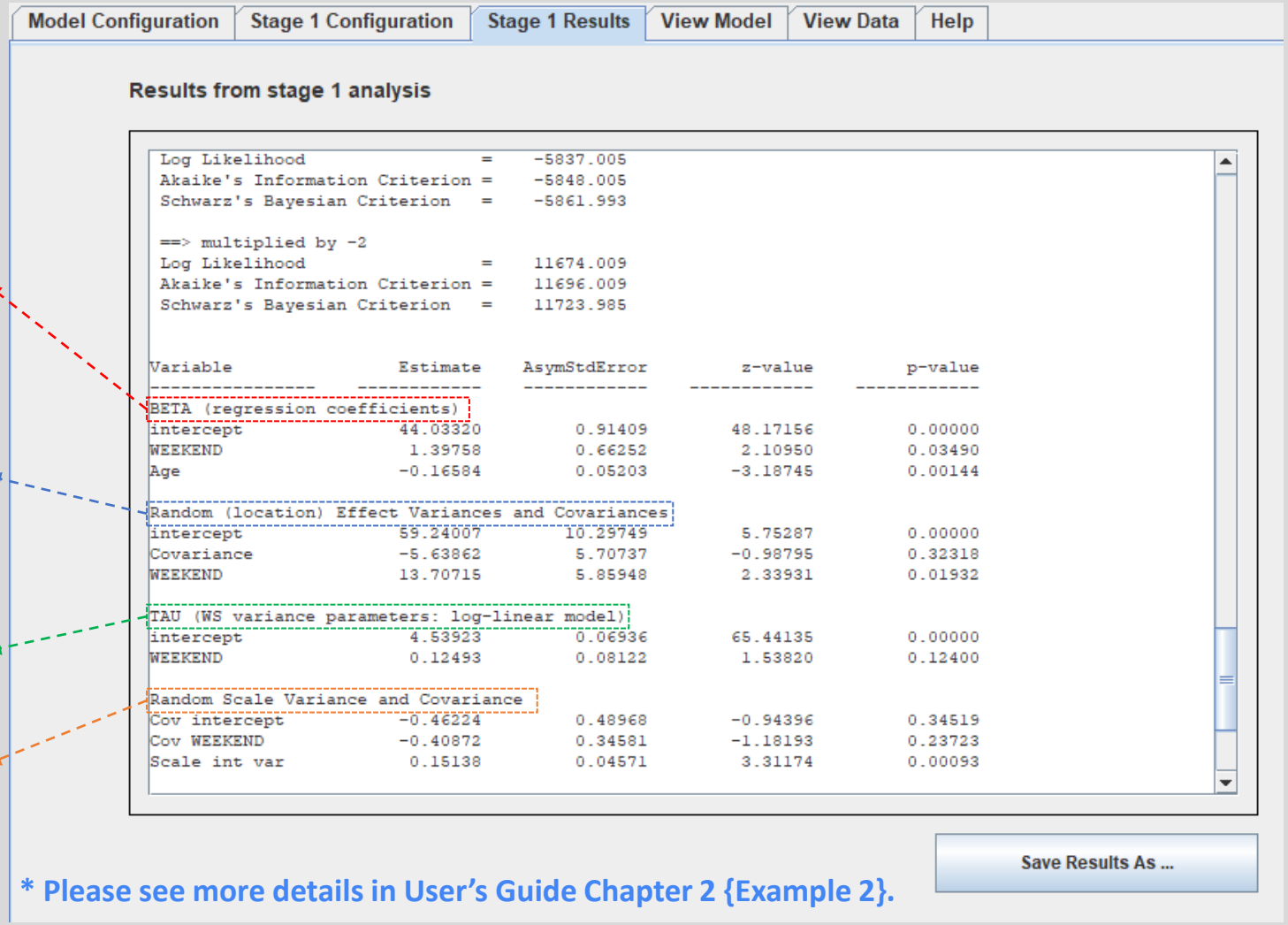
Overiew (Example 2 in Users' Guide Chapter 2)
In this analysis, the outcome variable is positive affect (PA), and we examine whether the variable weekend vs weekday (time-varying variable) can influence participants' daily positive affect (time-varying variable) in the Mean and WS Variance submodels, after controlling for age (time-invariant variable).

Mean (Beta) Model
This analysis shows that the time-varying variable weekend has a positive association with PA (*beta=1.398*), which suggests subjects' PA was higher on weekend days compared to weekdays. In addition, a person's PA is significantly related to their baseline age (*beta=-0.166*), with increasing baseline age associated with lower positive mood.

Random Location Effect Variances and Covariances
Subjects differed significantly between each other based on mean levels (random intercept) of PA (*estimate=59.240*) and differed in their association (random slope as indicated by the weekend regressor) between weekend and PA (*estimate=13.707*).

WS (Tau) Model
Within-subject variance in PA varies from day to day within a subject (*tau=4.539*). The within-subject variance in PA is not associated with the weekend days (weekend effect on the WS variance).

Random Scale Variance and Covariance
While there is no association between WS variance and random intercept or slope, there is considerable scale variability in PA across subjects (Scale int var); a significant random scale estimate suggests that subjects differ from each other in their degree of WS variance (*estimate=0.151*).



*** Please see more details in User's Guide Chapter 2 {Example 2}.**

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