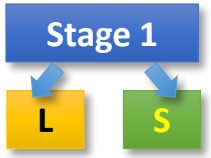
MIX{WILD} Stage 1 MELS Cheatsheet



Mixed-effects Location Scale modeling:

A mixed-effects location scale (MELS) model is an extended multilevel model that includes a random subject intercept and a random subject scale effect. A random subject intercept reflects a subject's mean (or location), and a random subject scale reflects a subject's variability (or scale), respectively.

[*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.

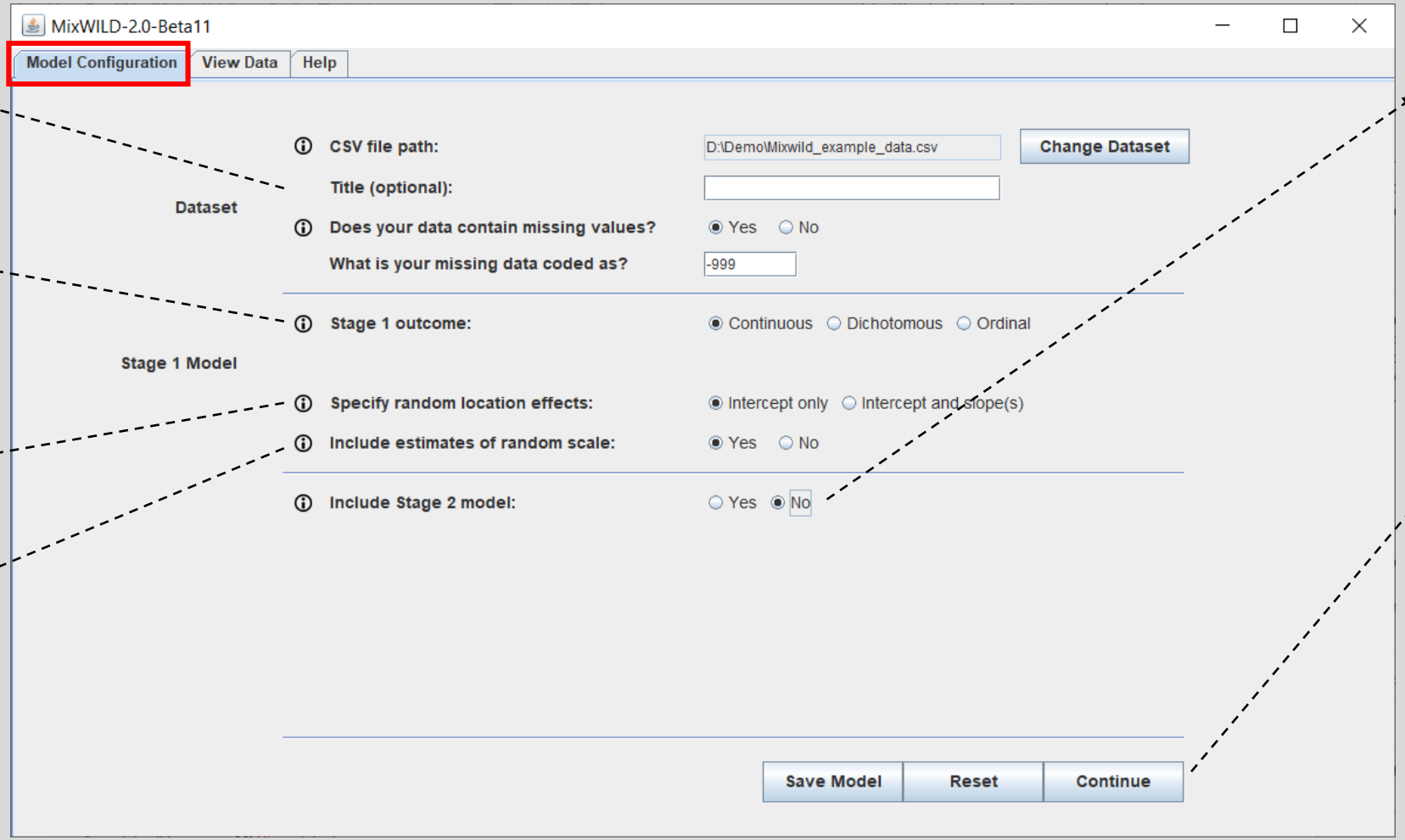
3 Specify random location

Select "Intercept only" and the model includes a random subject intercept.

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 only"** in random location effects and **"Yes"** in random scale estimate, the stage 1 model will become a **MELS** 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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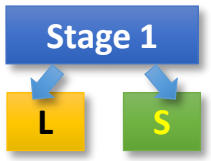

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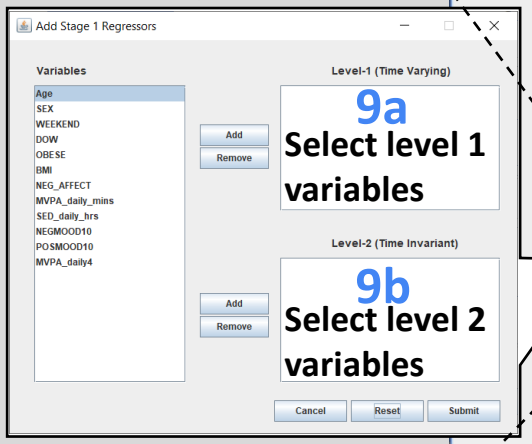
[Stage 1 Configuration]

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

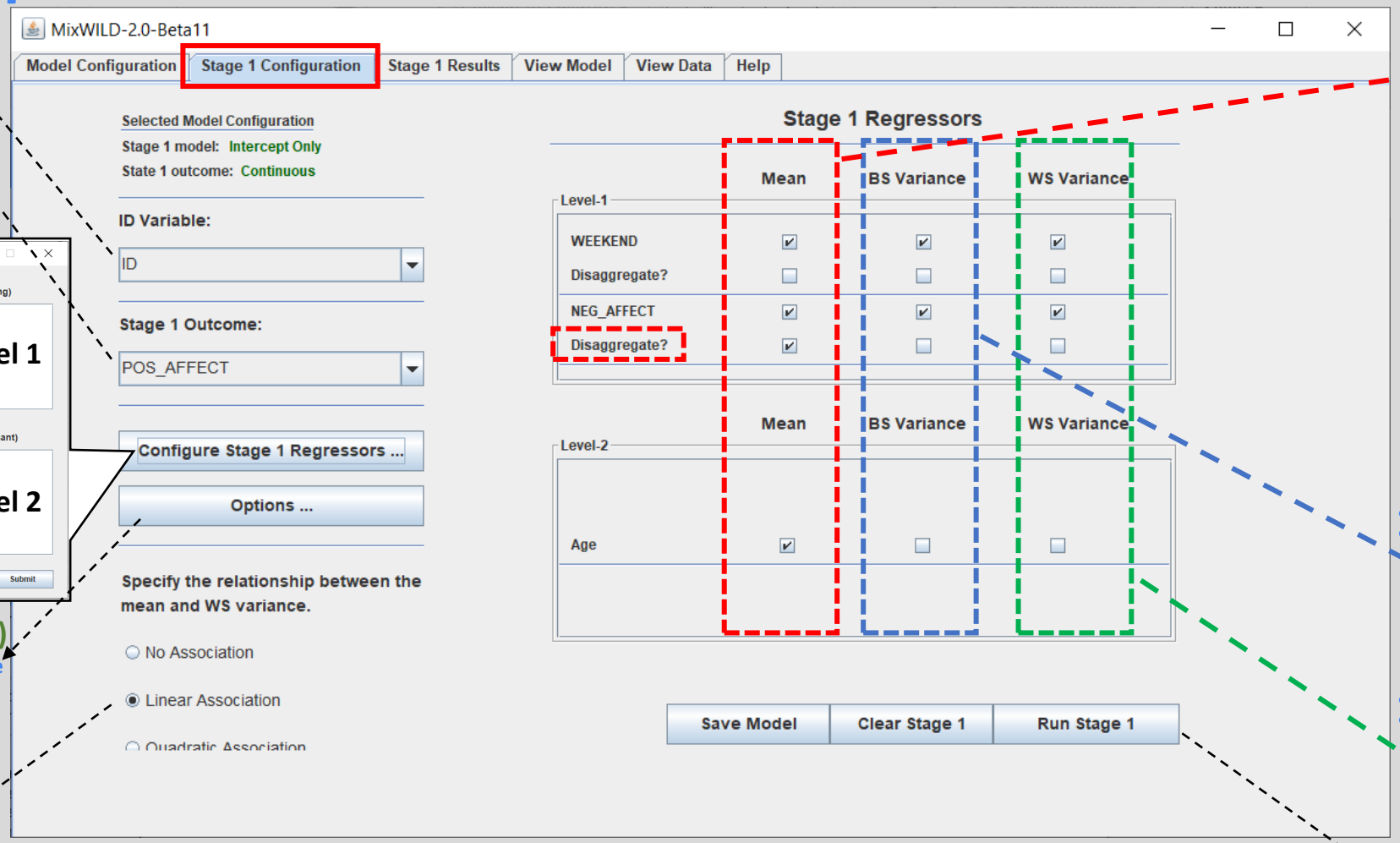


10 Stage 1 Options (optional)

Please check the details in the [Stage 1 Options] cheatsheet.

11 Specify the relationship

Specify the association between mean and within-subject (WS) variance of the outcome variable aka the association of the random intercept and random scale effects.



* 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
- Negative affect (BS)
- Negative affect (WS)
- 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.
Negative affect is disaggregated in the Mean model in this example.

13 Specify BS Model

Select the regressors to predict the between-subject variance of the outcome variable.
- Weekend
- Negative affect

14 Specify WS Model

Select the regressors to predict the within-subject variance of the outcome variable.
- Weekend
- Negative affect

15 Run Stage 1 model

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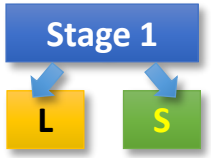

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[*Stage 1 Analysis Results*]

Overiew (Example 1 in Users' Guide Chapter 2)
In this analysis, the outcome variable is positive affect (PA), and the Level-1 regressor, negative affect (NA), has been decomposed in terms of its between-subject (BS) version (the subject mean of this variable across all occasions, with suffix _BS) and the within-subject (WS) version (the subject's occasion specific deviation of the variable relative to the subject mean, with suffix _WS). In addition, we control for the covariates such as weekend (Level 1) and baseline age (Level 2) in the Mean, BS and WS Variance submodels.

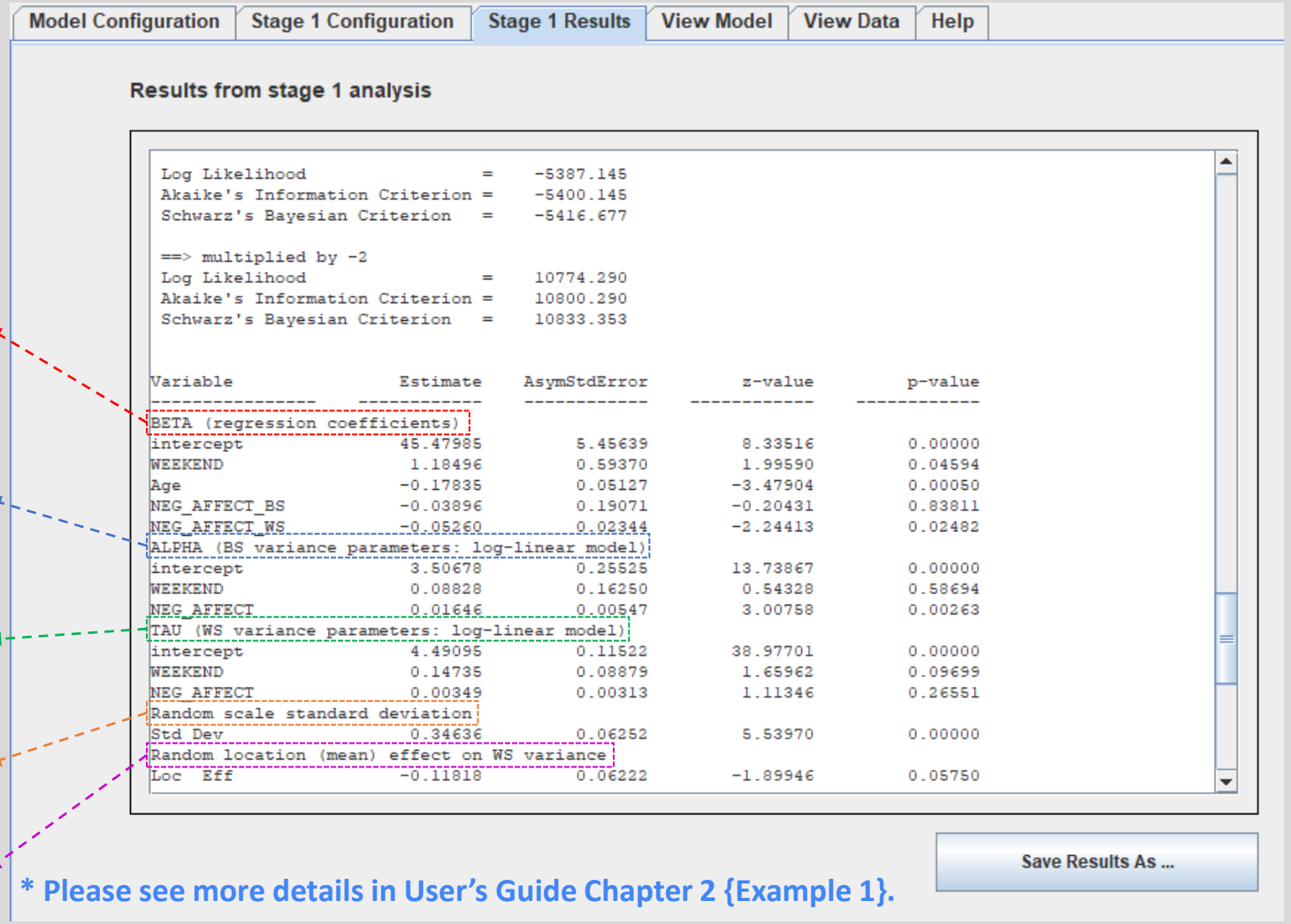
Mean (Beta) Model
This analysis shows that a person's PA is significantly related to the age (*beta=-0.178*), and the time-varying variable weekend has a positive association with PA (*beta=1.184*). In addition, a person's positive mood is significantly and inversely related to one's WS effect of NA (*beta=-0.052*), which means a subject has lower PA if the subject has a higher daily NA deviated from one's own mean of NA.

BS (Alpha) Model
The intercept estimate shows subject's mean of PA is different from person to person (*alpha=3.507*). subjects' PA means are more varied with increased levels of NA (*alpha=0.016*).

WS (Tau) Model
The within-subject variance in PA varies from day to day within a subject (*tau=4.491*). The within-subject variance in PA does increase somewhat for subjects on the weekend days (*tau=0.147*), though this is not significant at the .05 level.

Random Scale
A significant random scale standard deviation (Std Dev) suggests that subjects differ from each other in their degree of WS variance in PA (*scale sd=0.346*).

Association between Mean and WS Variance
WS variance and mean are marginally and negatively related (*estimate=-0.118*) indicating that subjects with higher PA intercepts exhibit more consistency in their mood reports.



*** Please see more details in User's Guide Chapter 2 {Example 1}.**

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