# MIX{WILD} Stage 1 Options Cheatsheet

#### Stage 1 Options:

Options

✓ **...** 

These settings are all **OPTIONAL**. In most cases, you **DON'T** need to make any change in these settings. However, in some cases, the program does not converge to a solution. Trying to change these parameters (i.e., Quadrature Points or Ridge) could help.

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[Stage 1 Configuration]	MixWILD-2.0-Beta11	- 🗆 X						
7 Select ID	Model Configuration Stage 1 Configuration Stage 1 Results View Model View Data Help	- ~						
ID is the key variable to define the two levels of your data.	Selected Model Configuration         Stage 1 Regressors							
8 Select Stage 1 Outcome	Stage 1 model: Intercept Only         State 1 outcome: Continuous         Mean       BS Variance         Uevel.1							
9 Select Stage 1 Regressors	ID Variable:							
OStage 1 Options (optional) Click "Options" for modifying more details in the stage 1 and 2 model. As mentioned, the default settings work in most cases. However, you may optimize some parameters and deal with	Stage 1 Outcome:							
the convergence problems when/if necessary.	Mean BS Variance WS Variance							
Soptions 🗆 🗙	Configure Stage 1 Regressors							
Mean Intercept:  Maximum Iterations:  200	Options							
WS Variance Intercept:     Image: U.1 - Imag	Specify the relationship between the mean and WS variance.							
Quadrature Points:     11 -       Resample Stage 2:        ✓	No Association							
Adaptive Quadrature:  No. of Samples:  500	Linear Association     Save Model     Clear Stage 1     Run Stage 1							
Run in 32-bit mode (Experimental: for older Windows-based machines)	Ouadratic Association							
MIX {WILD}         Cancel         Reset         Submit	→ Make sure that you click "Submit" so the change(s) can be saved.							
* Please see more details in User's Guide Chapter 2.								
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User Guide: https://reach-lab.github.io/MixWildGUI/MixWild User Guide.pdf

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[10 - <i>Options</i> ]					<b>10d</b> Maximum Iterations
<ul> <li>10a Intercept options         You may uncheck these boxes to remove the fixed intercept(s) in Mean and BS/WS Variance submodels. In most cases, these intercepts should remain checked.     </li> <li>10b Convergence Criteria         It refers to convergence requirement     </li> </ul>	🛓 Options		_	□ × ,	<ul> <li>It uses an iterative ML algorithm to fit the data, and it indicates the number of iterations and prevents the model from running indefinitely.</li> </ul>
	Mean Intercept: BS Variance Intercept:	× ×	Maximum Iterations: Ridge:	200 ÷ 0.1 ÷	<ul> <li>Ridge option         The value is usually set to a small fractional value, and it improves convergence for computationally challenging data. The range is between 0 and 1 with 0.1 as default.     </li> </ul>
for the maximum correction. The function is to set the accuracy level of the model. The range of the spinner is between 0 and 1 with 0.00001 as default.	WS Variance Intercept: Convergence Criteria:	0.00001	Standardize All Regressors? Discard Subjects with no Variance	e?	<ul> <li>10f Standardize option</li> <li>Selection of this option will transform all regressors to be variables with 0 mean and variance of 1.</li> </ul>
<b>10c Quadrature point option</b> Estimation of the Stage 1 model <b>4</b>	Quadrature Points: Adaptive Quadrature:	11 ×	Resample Stage 2: No. of Samples:	500	<b>10g Discard subject option</b> Uncheck the "Discard Subjects" optio to use all data for analysis. Or check this option to remove subjects with n variance on the outcome variable
effect distribution. By default, MixWILD performs adaptive quadrature with 11 points to do this integration. The more points one uses, typically the more accurate is the solution, but also the more time it takes to estimate the model parameters. The usage of "Adaptive Quadrature" is to personalize quadrature to each subject.	Run in 32-	bit mode (Experimer	ntal: for older Windows-based machin	es)	<ul> <li>10h Resample options         <ul> <li>This is a Stage 2 model option.</li> <li>Resampling of the subject-level</li> <li>random effects are conducted for all</li> <li>Stage 2 models to account for the fac</li> </ul> </li> </ul>
	<b>MIX {WILD}</b> * Please see more details in	User's Guide Chap	Cancel Reset	Submit	<ul> <li>that random effects are estimated quantities.</li> <li><b>10i</b> Submit</li> <li>Click submit to save the settings and go back to the Stage 1 Configuration.</li> </ul>
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Website: <a href="https://reach-lab.github.io/MixWildGUI/">https://reach-lab.github.io/MixWildGUI/</a> User Guide: https://reach-lab.github.io/MixWildGUI/MixWild User Guide.pdf

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## **Quadrature Point**

Usually, 11 points is sufficient, but if model convergence is not achieved, then increasing the points can sometimes help. So, for example, one might try 15, 21, or 25 points rather than the default of 11.

#### **Maximum Iterations**

For example, beyond some number of iterations there are no practical gains. You can increase the number of iterations allowed to see if they will converge if the estimation doesn't converge within the default number. By default, the number of maximum iterations is 200.

#### Ridge

The ridge increases the values of the diagonal elements of the 2nd derivative matrix by a factor of 1 multiplied by the ridge value. The reason that this is helpful is that this matrix must be inverted at each iteration of the solution, and inversion of this matrix becomes computationally difficult to the extent that the off-diagonal elements of this matrix get large, relative to the diagonal elements. Thus, in cases of non-convergence, one might try increasing the ridge value to 0.15, 0.20, or even 0.25. This will slow down the estimation, but in some cases can aid in model convergence.







[10 - Options]

Quick Summary of the Optimal Options

(Please try to change these key parameters one by one in the model)

	Default	Optimization	
Quadrature Point	11	15 - 25	ſ
Maximum Iterations	200	300 - 500	
Ridge	0.1	0.15 – 0.25 🥆	
Discard Subjects with no Variance	Uncheck	Check	

#### **Discard Subjects with no Variance**

For such subjects with no variation on the outcome, the estimate of their random scale goes to negative infinity and can cause the program to fail to converge. In this case, the selection of the option can facilitate model convergence. Please note selecting this option will remove these subjects from the stage 1 analysis.

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