New Tools for Modeling and Visualizing Moderation and Moderated Mediation in JMP Pro

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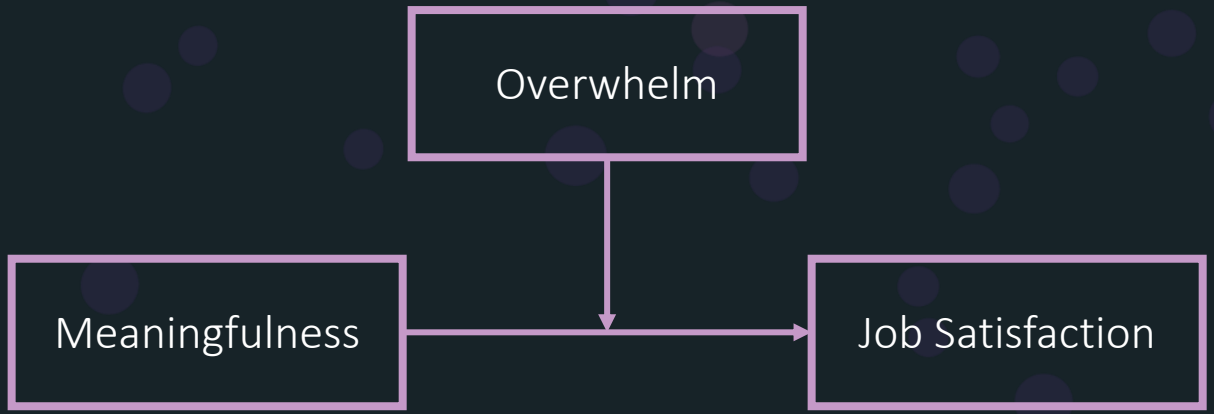
Improving Job Satisfaction

"Do you know the impact of your work? When we don't have our 'why' at the front of our mind, it can be hard to feel motivated and excited about what we are doing... When we get busy or overwhelmed, the 'why' just seems to slip away." – scienceofpeople.com



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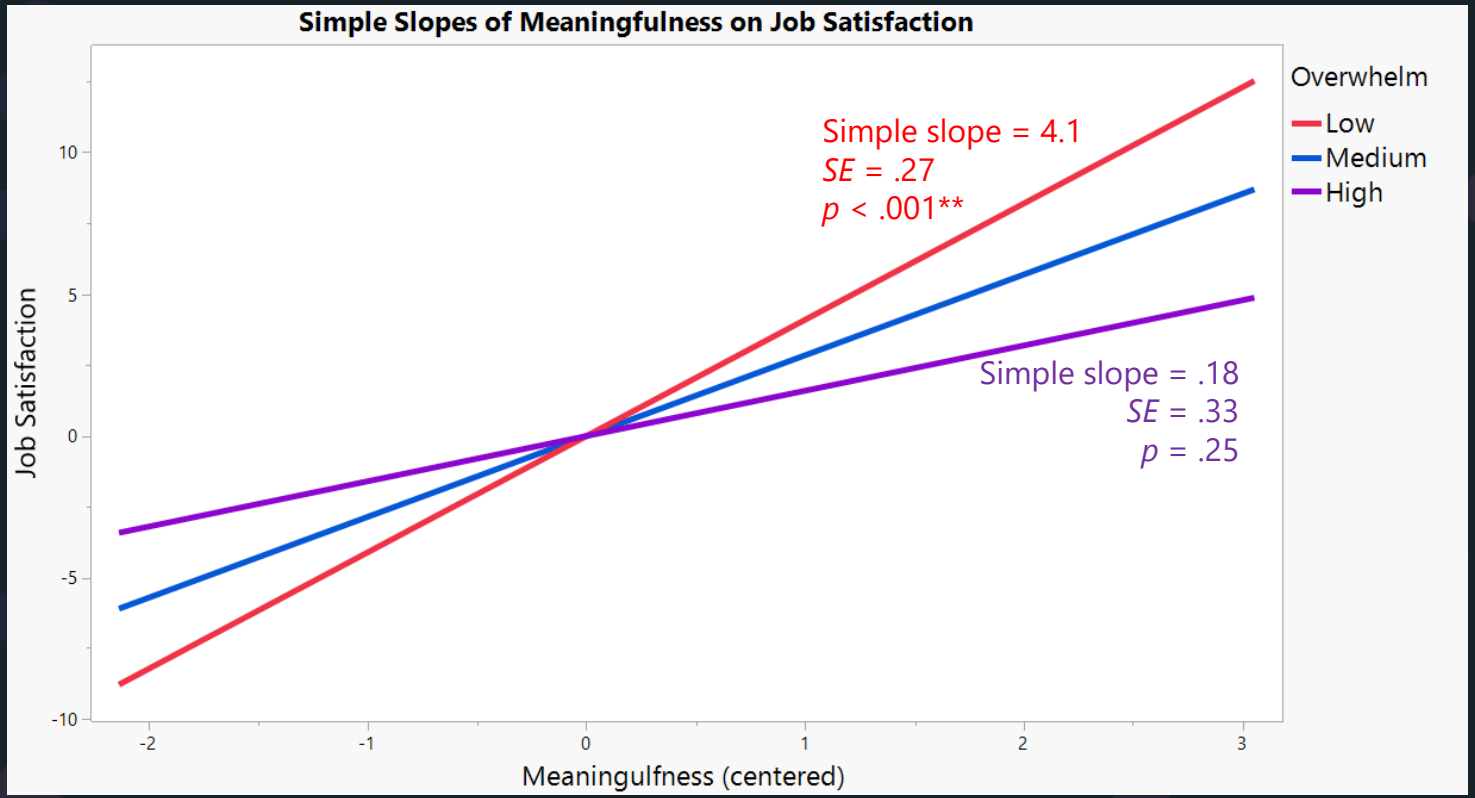
Simple Slopes



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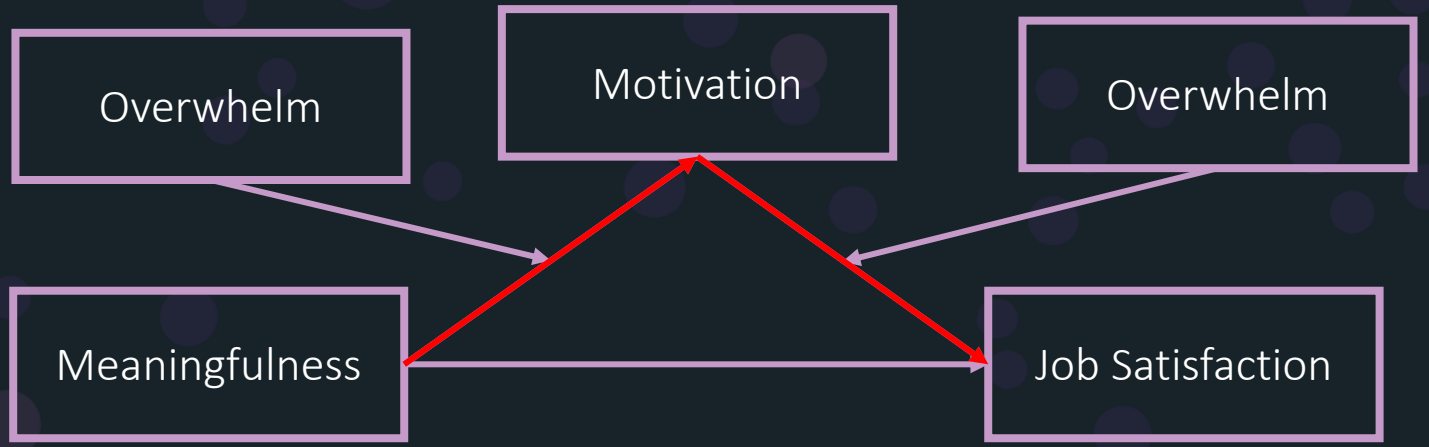

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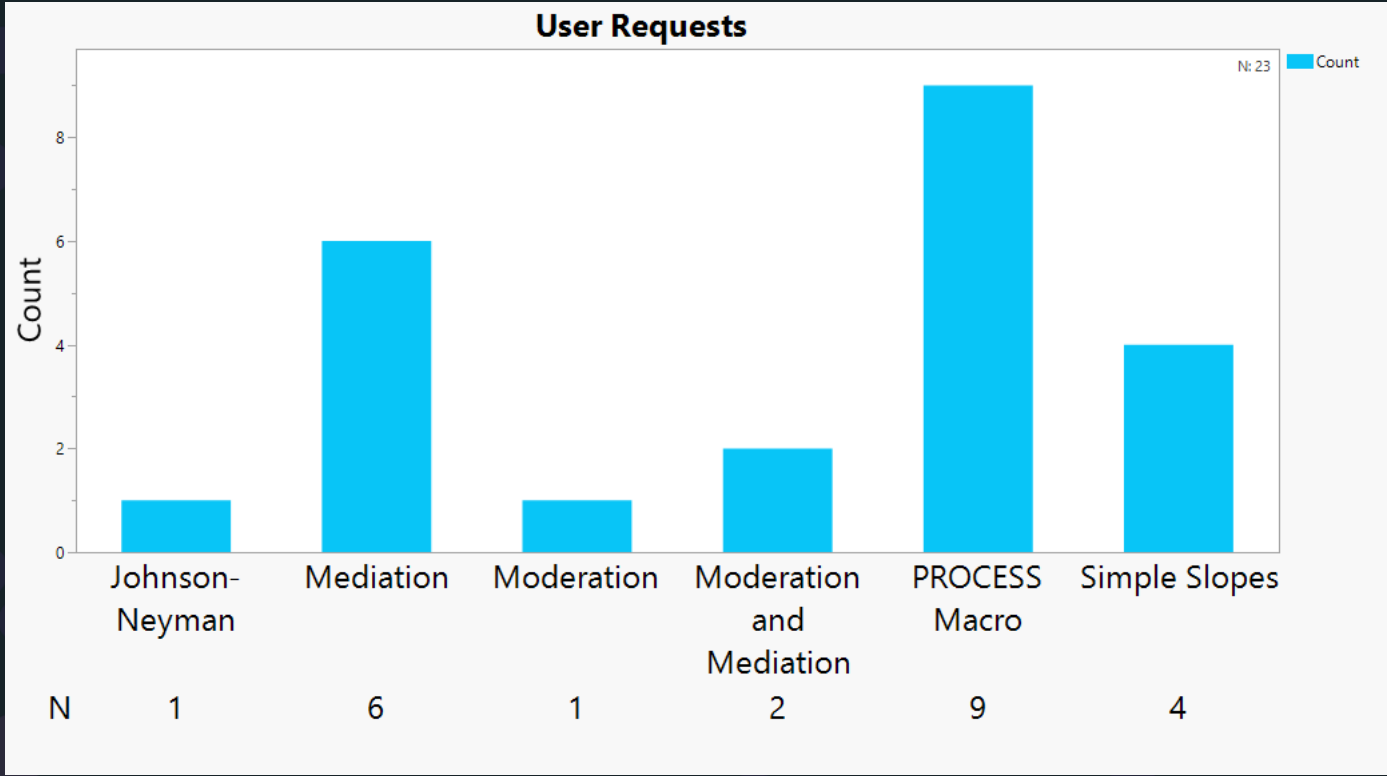
JMP Users: 23 Requests



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Existing Tools

PROCESS Macro *(R, SAS, SPSS)*

	Mediation	Moderation	Moderated Mediation
Easy model fitting:	✓	✓	✓
Numeric output:	✓	✓	✓
Visualizations:	⊘	⊘	⊘

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The Importance of Automatic Visualizations

- Formulas behind simple slopes plots:
  - $(\hat{a}_1 + \hat{a}_3 Z)\hat{b}_1$
  - $(\hat{a}_1 + \hat{a}_3 Z)^2 s^2_{\hat{b}_1} + \left(\hat{b}_1^2 + s^2_{\hat{b}_1}\right)\left(s^2_{\hat{a}_1} + 2s_{\hat{a}_1,\hat{a}_3} Z + s^2_{\hat{b}_3} Z^2\right)$

- Formulas behind the Johnson-Neyman plot:
  - $\left(-\hat{a}_3^2\hat{b}_1^2 + \hat{b}_1^2 s^2_{\hat{a}_3} Z^2 + \hat{a}_3^2 s^2_{\hat{b}_1} Z^2 + s^2_{\hat{a}_3} s^2_{\hat{b}_1} Z^2\right)$
  - $2\left(-\hat{b}_1^2\hat{a}_1\hat{a}_3 + \hat{b}_1^2 s_{\hat{a}_1,\hat{a}_3} Z^2 + \hat{a}_1\hat{a}_3 s^2_{\hat{b}_1} + s_{\hat{a}_1,\hat{a}_2} s^2_{\hat{b}_1} Z^2\right)$
  - $\left(-\hat{a}_1^2\hat{b}_1^2 + \hat{b}_1^2 s^2_{\hat{a}_1} Z^2 + \hat{a}_1^2 s^2_{\hat{b}_1} Z^2 + s^2_{\hat{a}_1} s^2_{\hat{b}_1} Z^2\right)$

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Features of the Moderation and Mediation Add-In

	Moderation	Moderated Mediation (First- and Second-Stage)	*Without Add-In*
Easy model fitting:	✓	✓	*Data pre-processing; specify correct model*
Numeric output:	✓	✓	*Make sense of large output; hand calculations*
Visualizations:	✓	✓	*Complex formulas; create plots from scratch*

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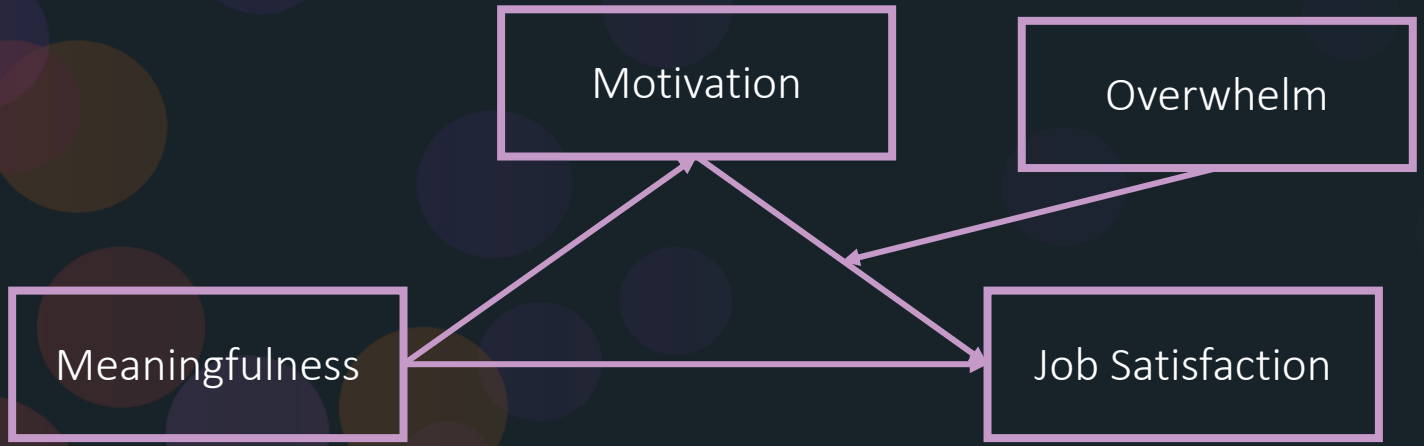
Demo



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Thank you!

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https://community.jmp.com/t5/JMPer-Cable/Who-what-why-and-how-Tools-for-modeling-and-visualizing/ba-p/527173

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