



Big Five Meta-Traits Differentially Predict Affect

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SIPPS Summer 2021 Data Blitz

Big Five Meta-Traits Differentially Predict Affect

Conscientiousness

Agreeableness

Neuroticism

Openness

Extraversion

Costa & McCrae (2017)

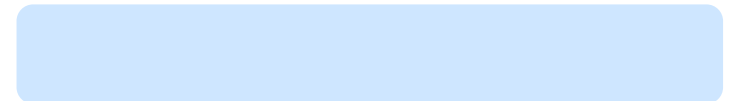
Big Five Meta-Traits Differentially Predict Affect

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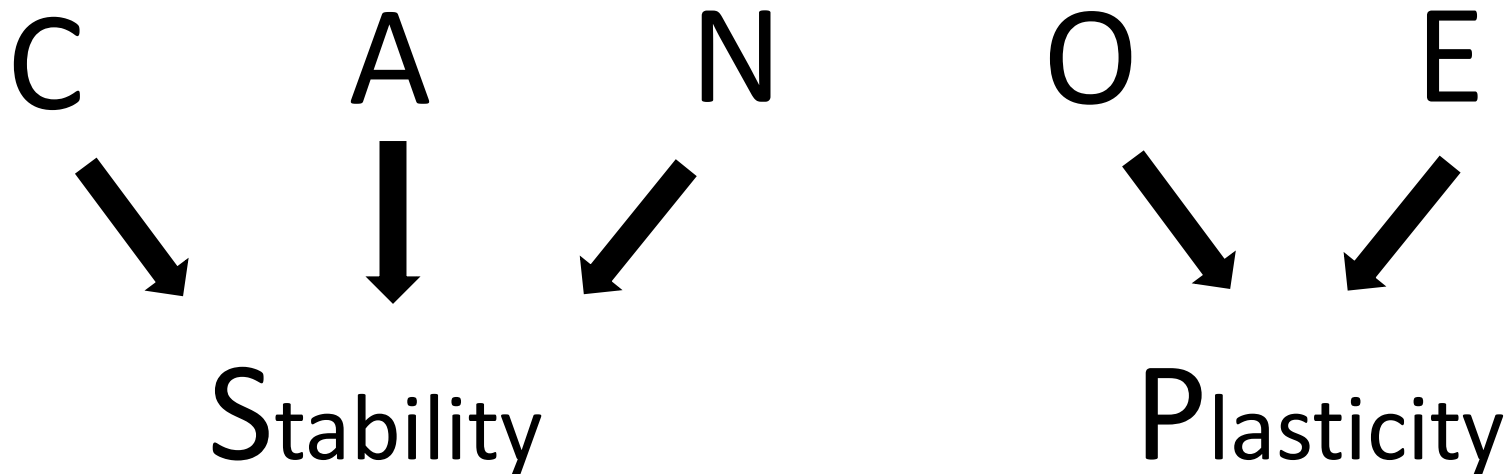
Costa & McCrae (2017)

Big Five **Meta-Traits** Differentially Predict Affect

C A N O E



Big Five **Meta-Traits** Differentially Predict Affect



Meta-Traits: The shared variance of Big Five traits

Digman (1997)

Big Five **Meta-Traits** Differentially Predict Affect

Stability = Restraint

Plasticity = Engagement

Hirsh, J. B., DeYoung, C. G., & Peterson, J. B. (2009). Meta-Traits of the Big Five Differentially Predict Engagement and Restraint of Behavior. *Journal of Personality*, 77(4), 1085-102.

Meta-Traits: The shared variance of Big Five traits

Hirsh et al., (2009)

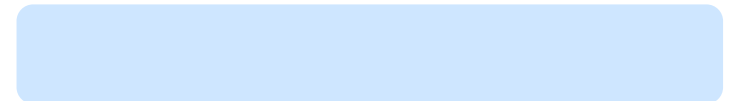
Big Five Meta-Traits Differentially Predict Affect

Stability

Plasticity



Meta-Traits: The shared variance of Big Five traits



Big Five Meta-Traits Differentially Predict Affect

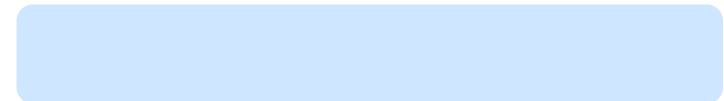
Stability (restrain)



Plasticity (engage)



Meta-Traits: The shared variance of Big Five traits



Big Five Meta-Traits Differentially Predict Affect

Research Question: Can the Meta-Traits of the Big Five Predict Engagement and Restraint of Emotions?

Meta-Traits: The shared variance of Big Five traits

Participants and Procedures

Common Cold Project

> Pittsburgh Cold Study 3, 2007-11

N = 214 (90 women), aged 18-55

$M_{\text{age}} = 30.1$, $SD_{\text{age}} = 10.9$

Meta-Traits: The shared variance of Big Five traits

Participants and Procedures

Positive and Negative Affect Schedule - X

- Measures frequency of experienced emotion over the previous week
- 60-items, e.g. “guilty”, “joyful”, “calm”, “angry with self”
- Likert Scale: 1 (very slightly or not at all) to 5 (extremely)

Meta-Traits: The shared variance of Big Five traits

Watson & Clark (1994)

Participants and Procedures

International Personality Item Pool Big Five

- Measures Big Five by consulting agreement of various statements
- 50-items, e.g. “Like order”; “Love a good fight”
- Likert Scale: 1 (strongly disagree) to 5 (strongly agree)
- $\alpha_{trait} = .82 - .88$

Meta-Traits: The shared variance of Big Five traits

Goldberg (1992)

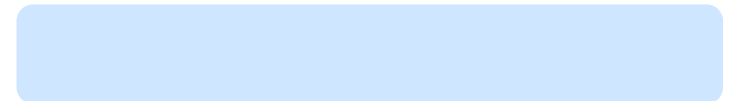
Hypotheses

1

2

3

Meta-Traits: The shared variance of Big Five traits



Hypotheses

1**2****3**

If we factored the Big Five, the Meta-trait pattern would replicate

Principal Axis (Common) Factor Analysis with Oblimin Rotation

Meta-Traits: The shared variance of Big Five traits

Hirsh et al., (2009)

Hypotheses

1

2

3

Factor Analysis Output

Descriptive Statistics, Reliabilities, and Factor Loadings for the Big Five Domains

	<i>M</i>	<i>SD</i>	Mean α	Factor 1	Factor 2
Conscientiousness	3.60	.67	.83	.34	.17
Agreeableness	3.92	.62	.84	.71	.04
Emotional Stability	3.49	.76	.88	.01	.67
Openness	3.88	.60	.82	.64	-.11
Extraversion	3.32	.74	.87	.52	.09

Meta-Traits: The shared variance of Big Five traits

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Hypotheses

1

2

3



If Stability has restraining effects on emotions, then those higher in Stability will experience emotions less frequently.

Stability would *negatively* correlate to emotions.

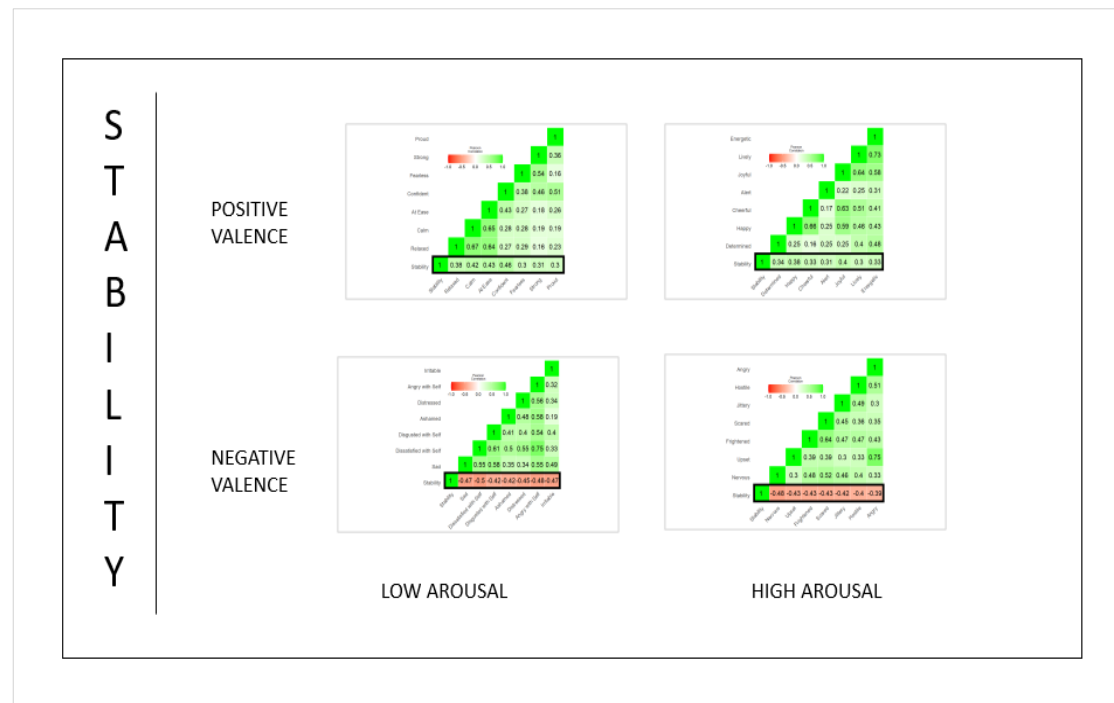
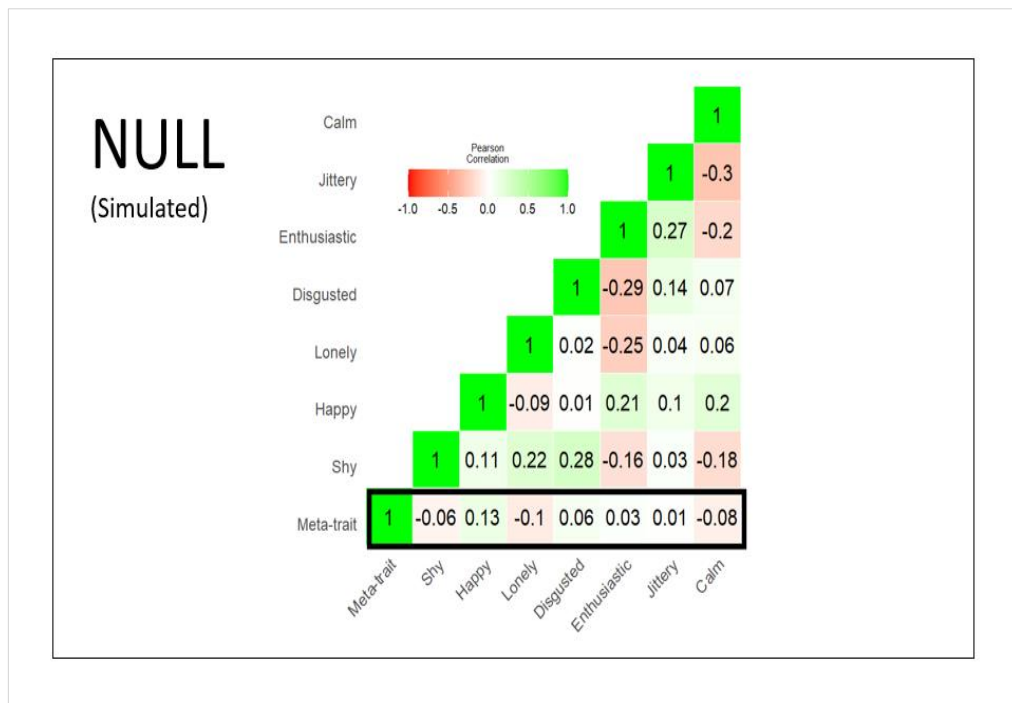
Meta-Traits: The shared variance of Big Five traits

Hypotheses

1

2

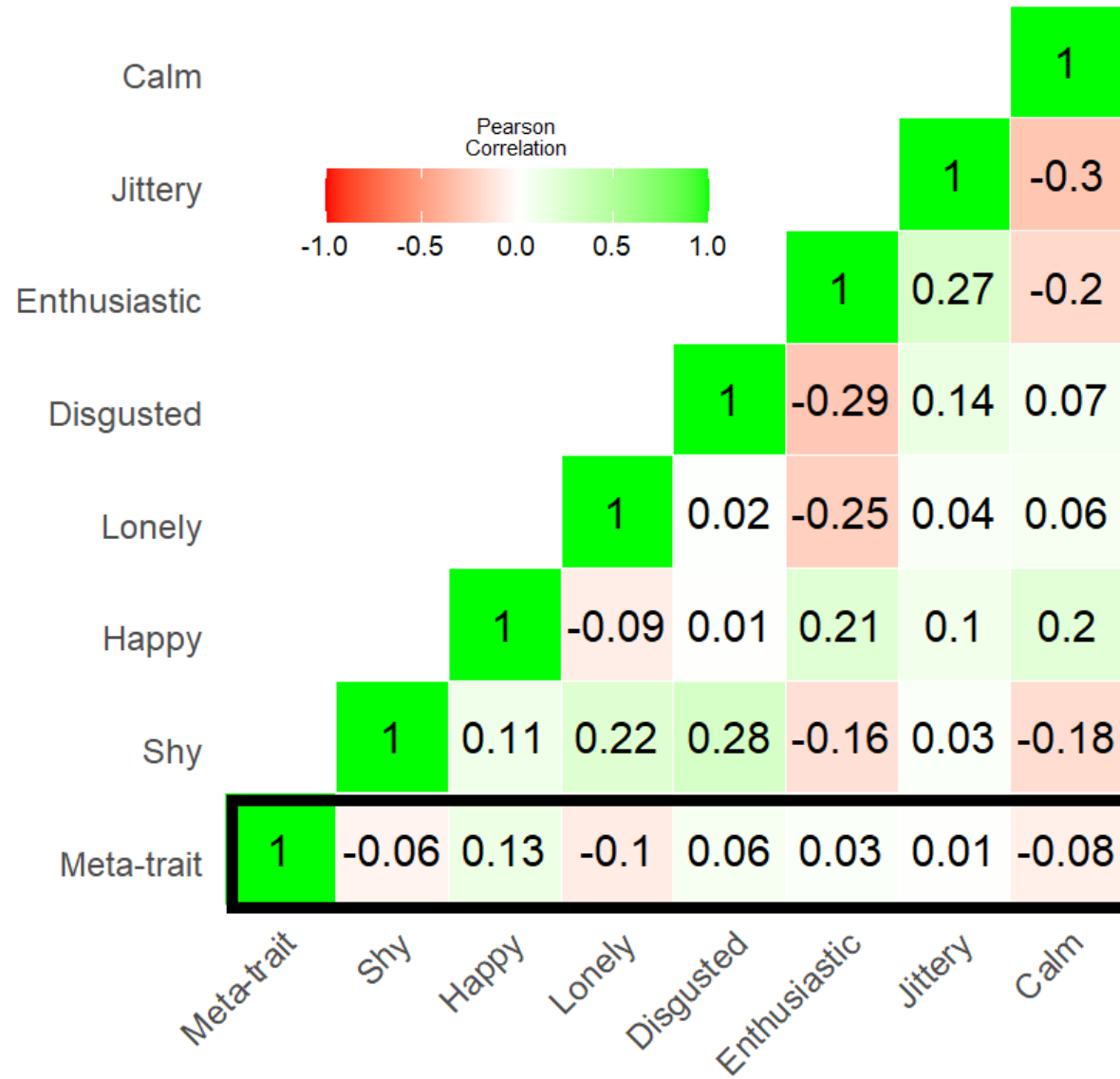
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Meta-Traits: The shared variance of Big Five traits

NULL

(Simulated)

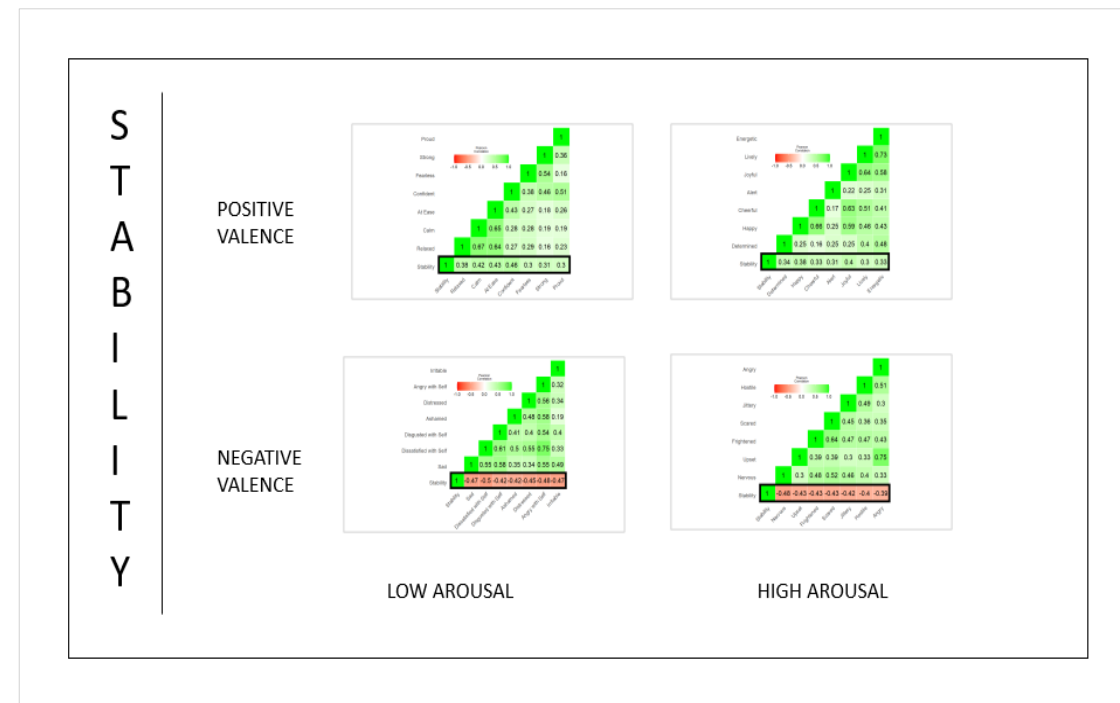
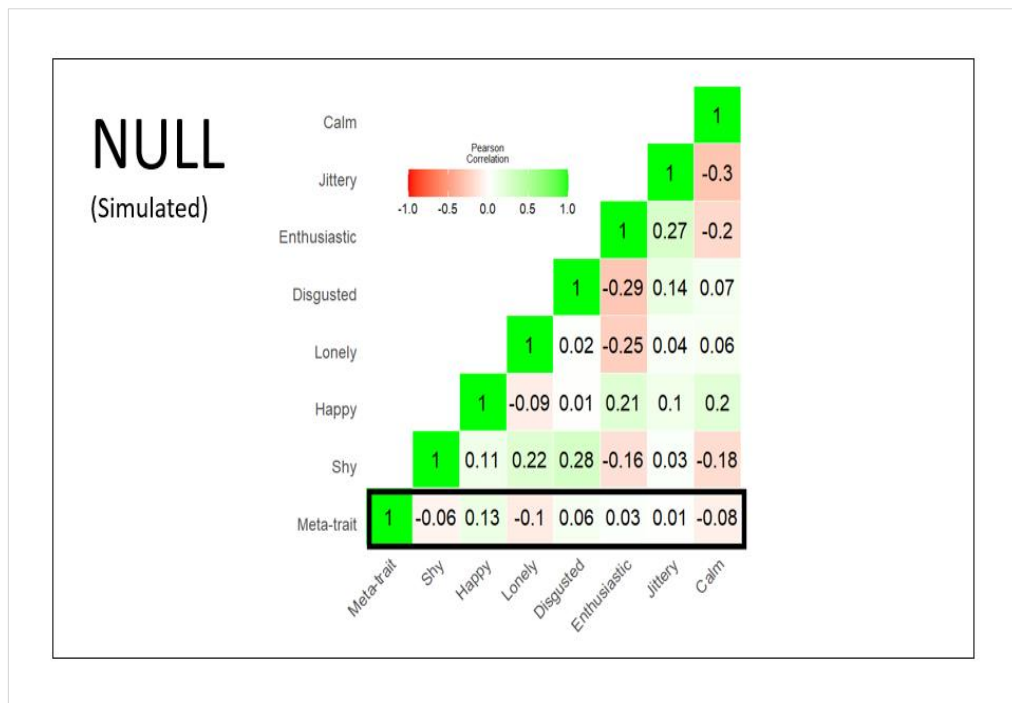


Hypotheses

1

2

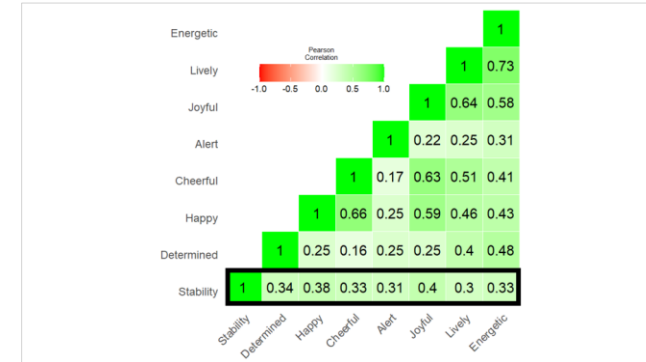
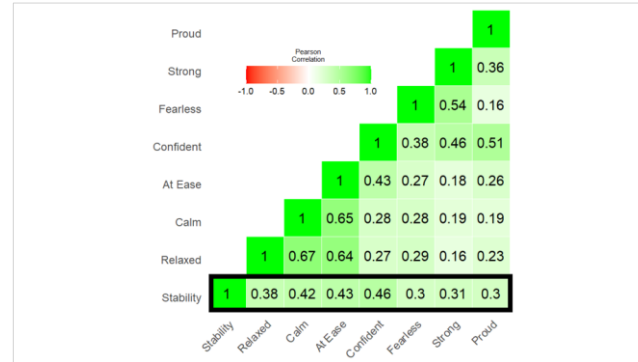
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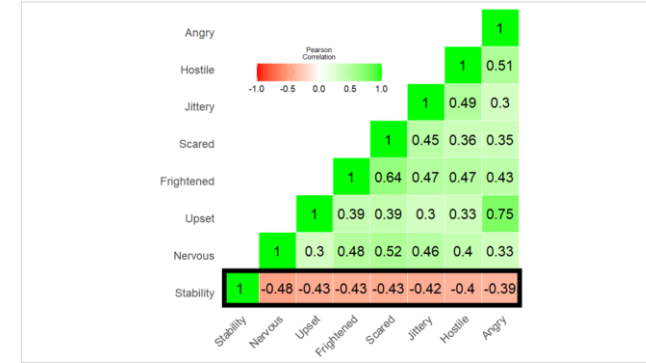
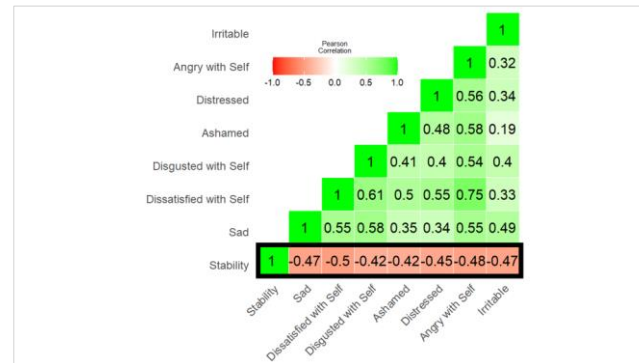
Meta-Traits: The shared variance of Big Five traits

STABILITY

POSITIVE VALENCE



NEGATIVE VALENCE



LOW AROUSAL

HIGH AROUSAL

Hypotheses

1

2

3



If Plasticity has engaging effects on emotions, then those higher in Plasticity will experience emotions more frequently.

Plasticity would *positively* correlate to emotions.

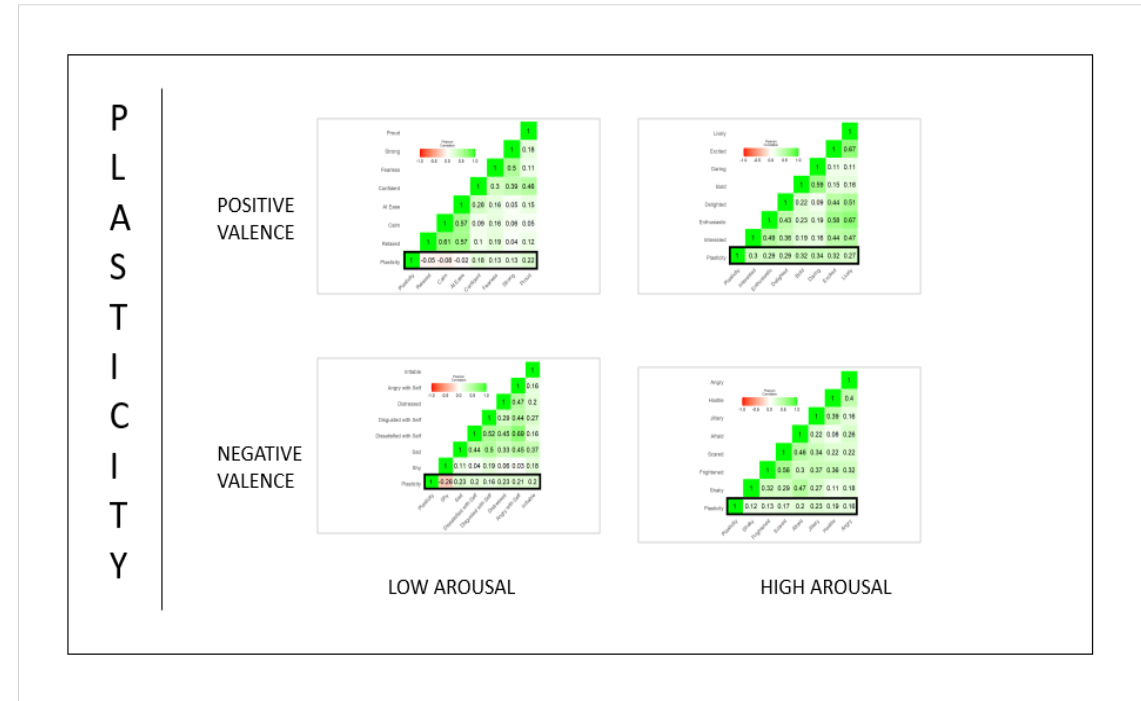
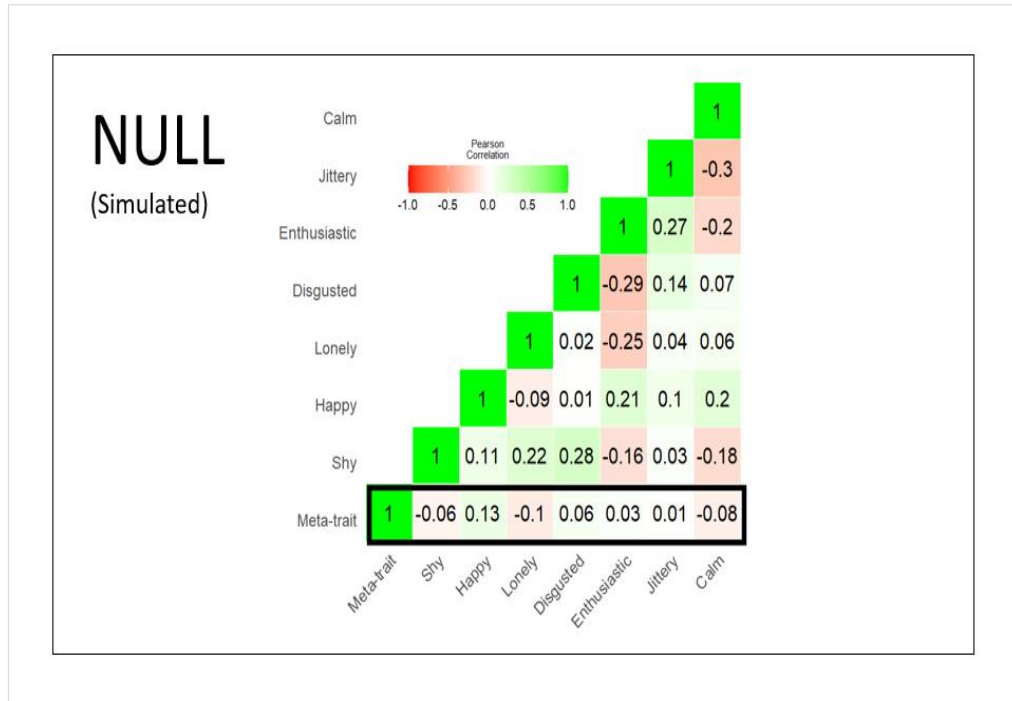
Meta-Traits: The shared variance of Big Five traits

Hypotheses

1

2

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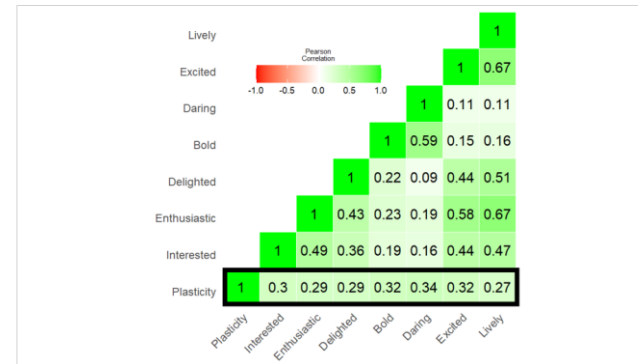
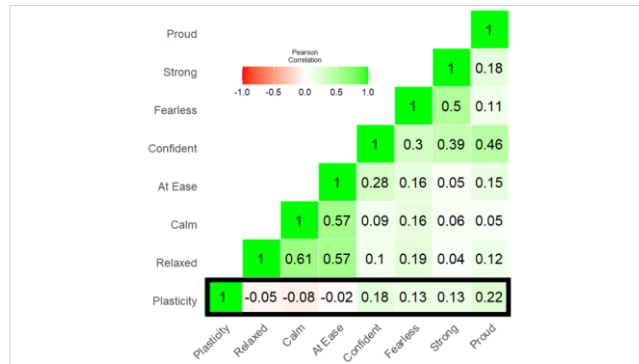


Meta-Traits: The shared variance of Big Five traits

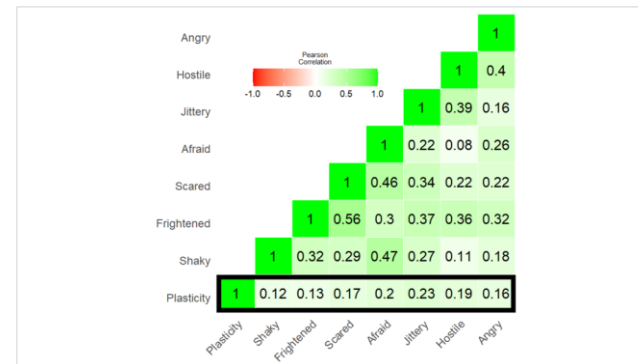
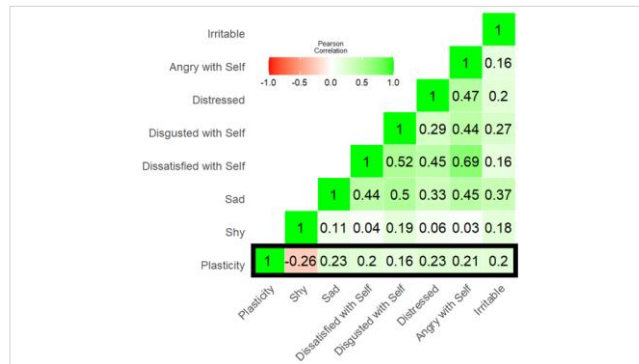
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P L A S T I C I T Y

POSITIVE
VALENCE



NEGATIVE
VALENCE



LOW AROUSAL

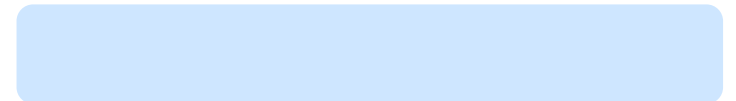
HIGH AROUSAL

Discussion

Stability predicted restraint dependent on valence

Plasticity predicted engagement dependent on arousal

Meta-Traits: The shared variance of Big Five traits



Discussion

Limitations

- Power
- Sample

Strengths

- Avoid COVID-19's influence on emotional experiences

Future Directions

- Structural Equation Modeling to investigate if Meta-Traits predict affect above and beyond Big Five domain
- Further analysis of differential valence and arousal

Meta-Traits: The shared variance of Big Five traits

Thank You!

Open Science Data Set from the Common Cold Project:

The data used for this article were collected by the [Laboratory for the Study of Stress, Immunity, and Disease](#) at Carnegie Mellon University under the directorship of Sheldon Cohen, PhD; and were accessed via the Common Cold Project (CCP) website (www.commoncoldproject.com). CCP data are made publicly available through a grant from the National Center for Complementary and Integrative Health (AT006694); the conduct of the studies was supported by grants from the National Institute of Allergy and Infectious Diseases (R01 AI066367) and National Institutes of Health (UL1 RR024153; UL1 TR000005).



Thank You!

Amazing Mentors:

Margaux Wienk
Anshu Patel

SIPPS Founders & Organizers

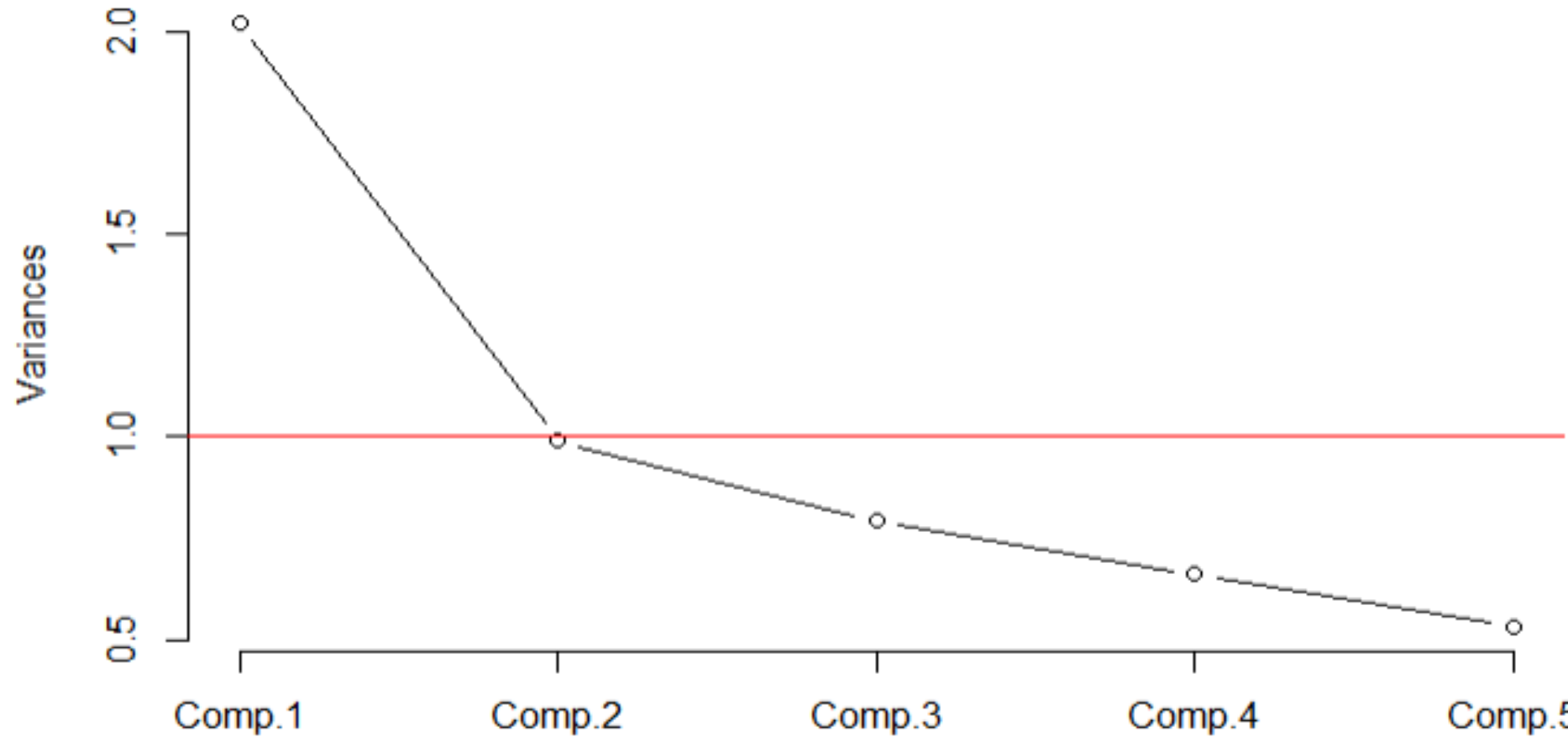
Ana DiGiovanni
Anna Vannucci
Manasi Jayakumar

Wonderful Friends:

Catalina Yang
Ellie Hansen
Erica Niemiec



Scree Plot

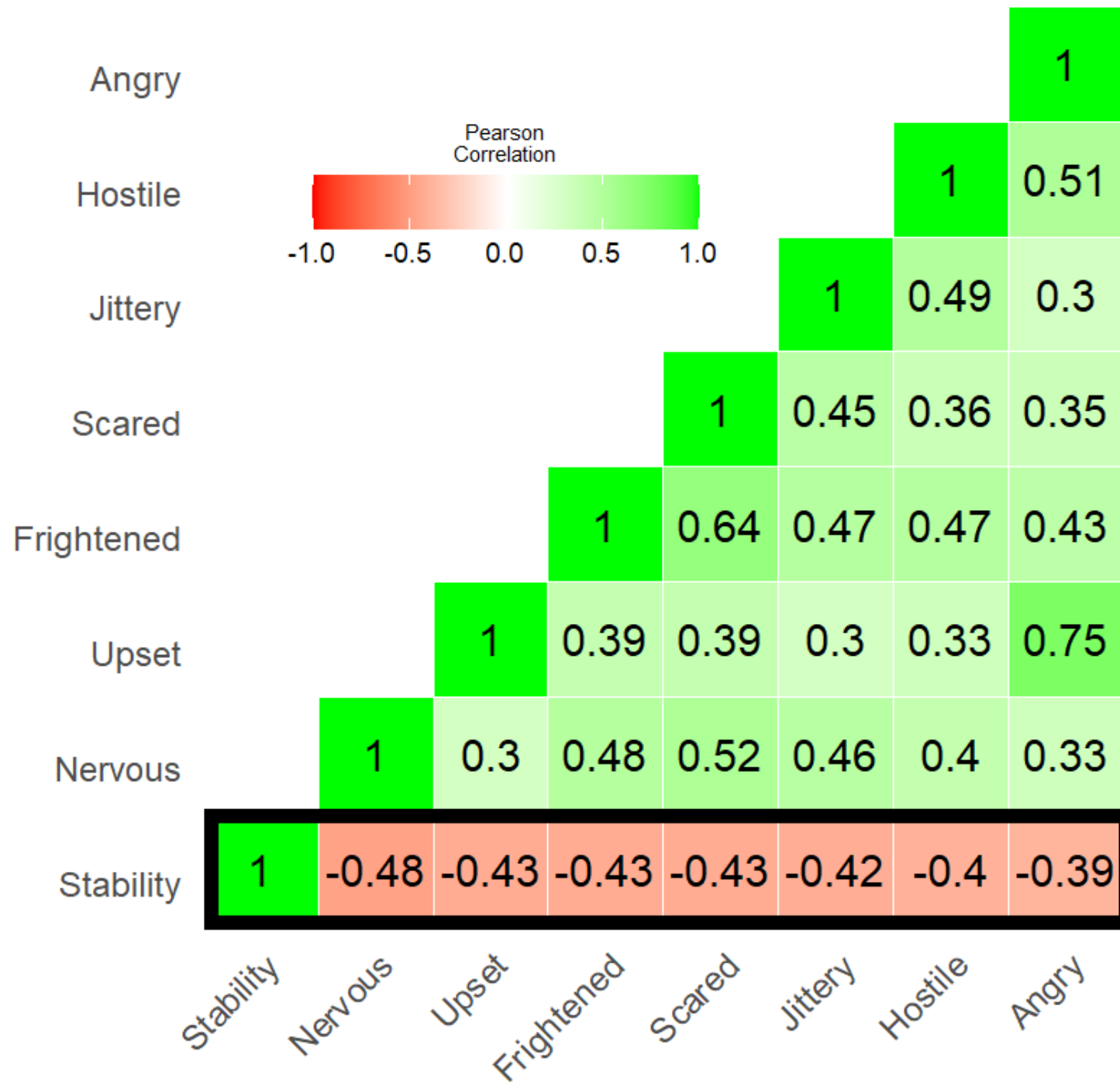


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Cumulative Var	0.4044701	0.6027046	0.7611319	0.8934092	1.0000000

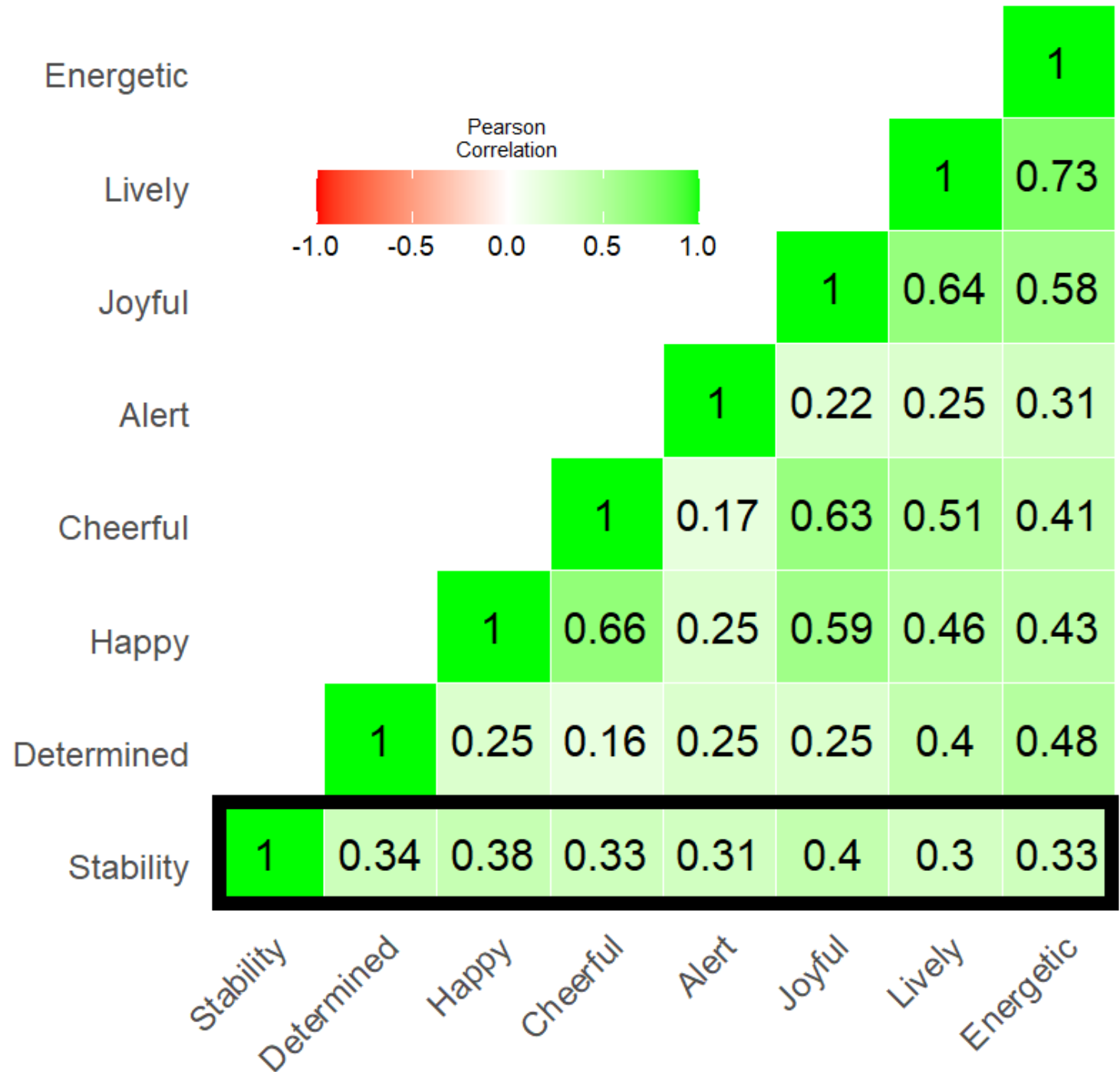
Supplemental Figures
Follow...

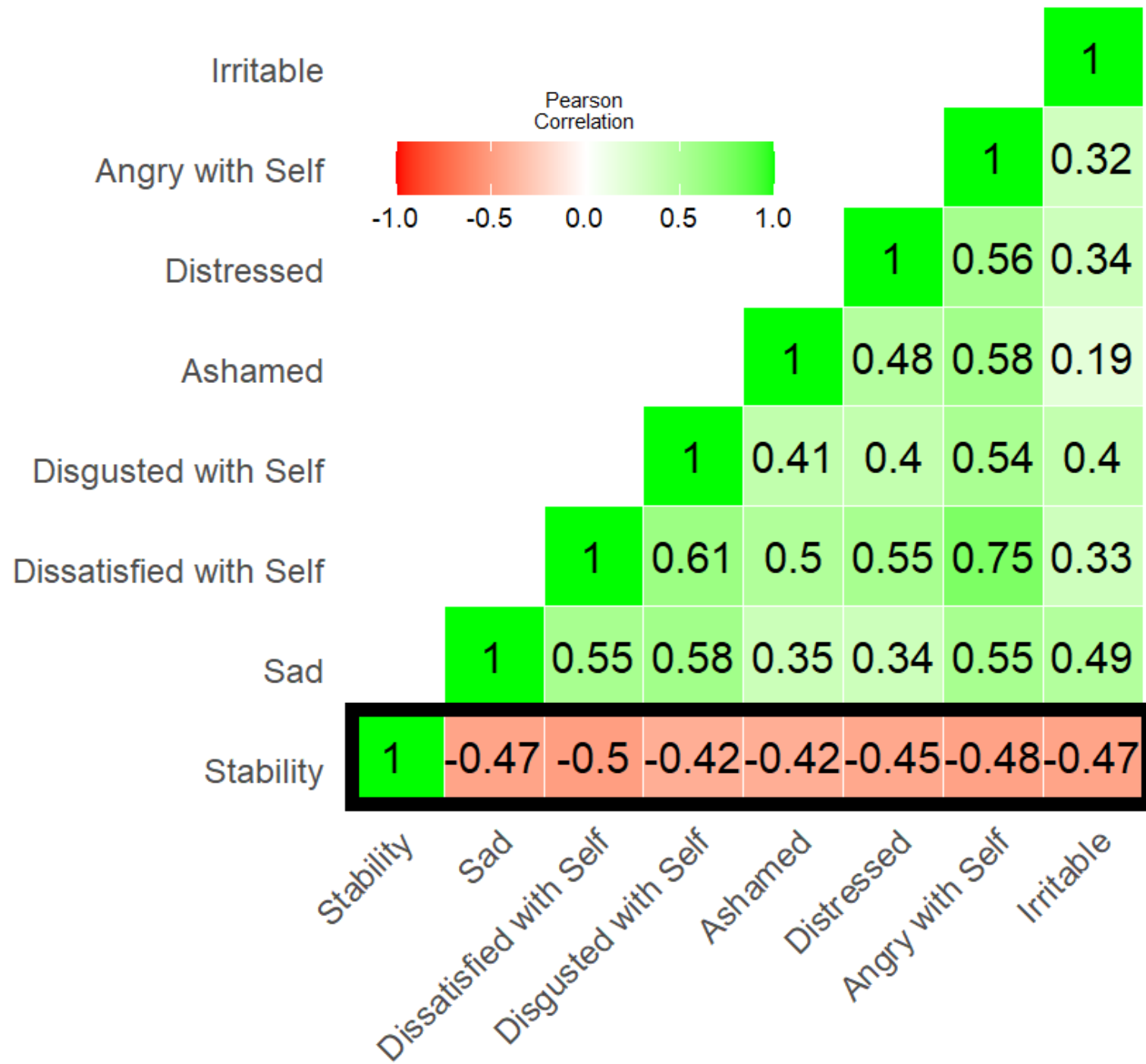
Descriptive Statistics, Reliabilities, and Factor Loadings for the Big Five Domains

	<i>M</i>	<i>SD</i>	Mean α	Interrater <i>r</i>	Stability	Plasticity
Extraversion	14.26	2.51	.86	.49	.008	.593
Agreeableness	16.49	1.96	.86	.31	.633	– .022
Conscientiousness	16.91	1.84	.85	.33	.409	.056
Neuroticism	10.26	2.52	.87	.38	– .838	.059
Openness	14.84	2.21	.85	.45	– .004	.483



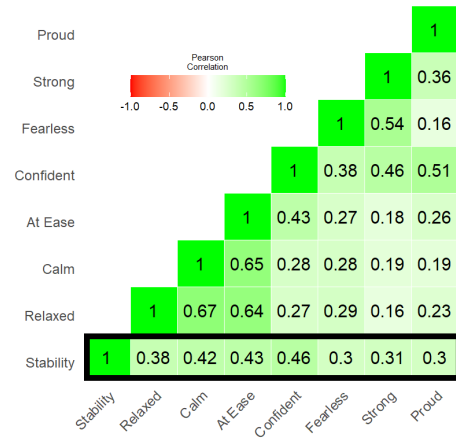




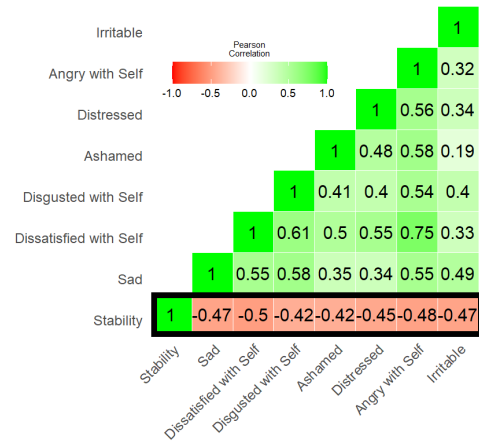


S T A B I L I T Y

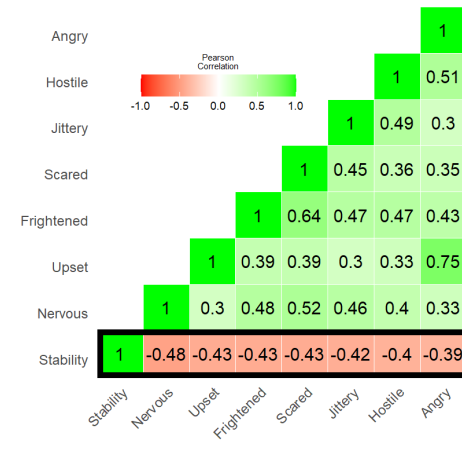
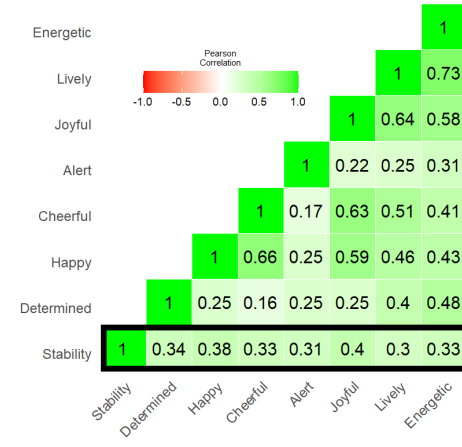
POSITIVE VALENCE



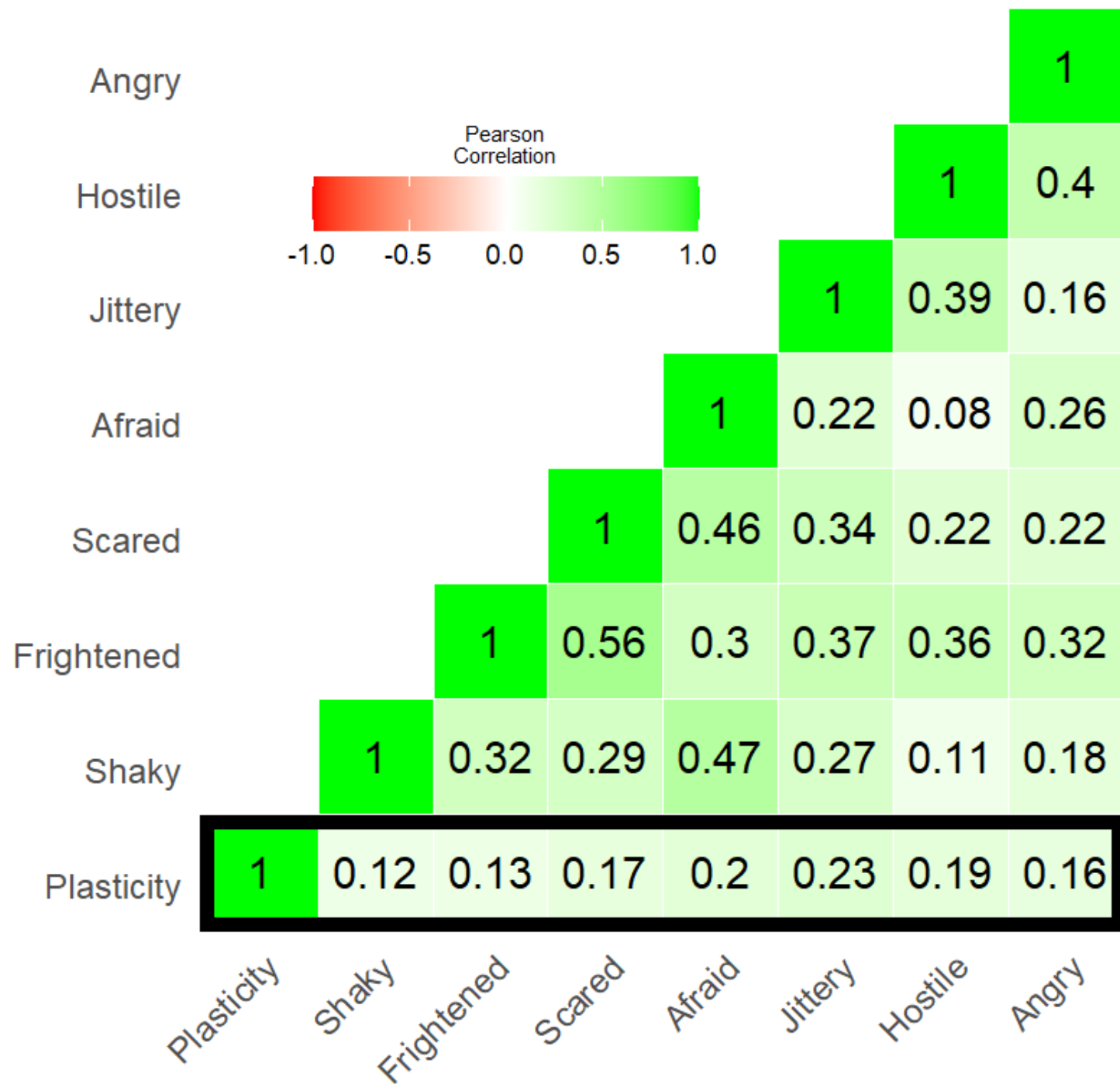
NEGATIVE VALENCE

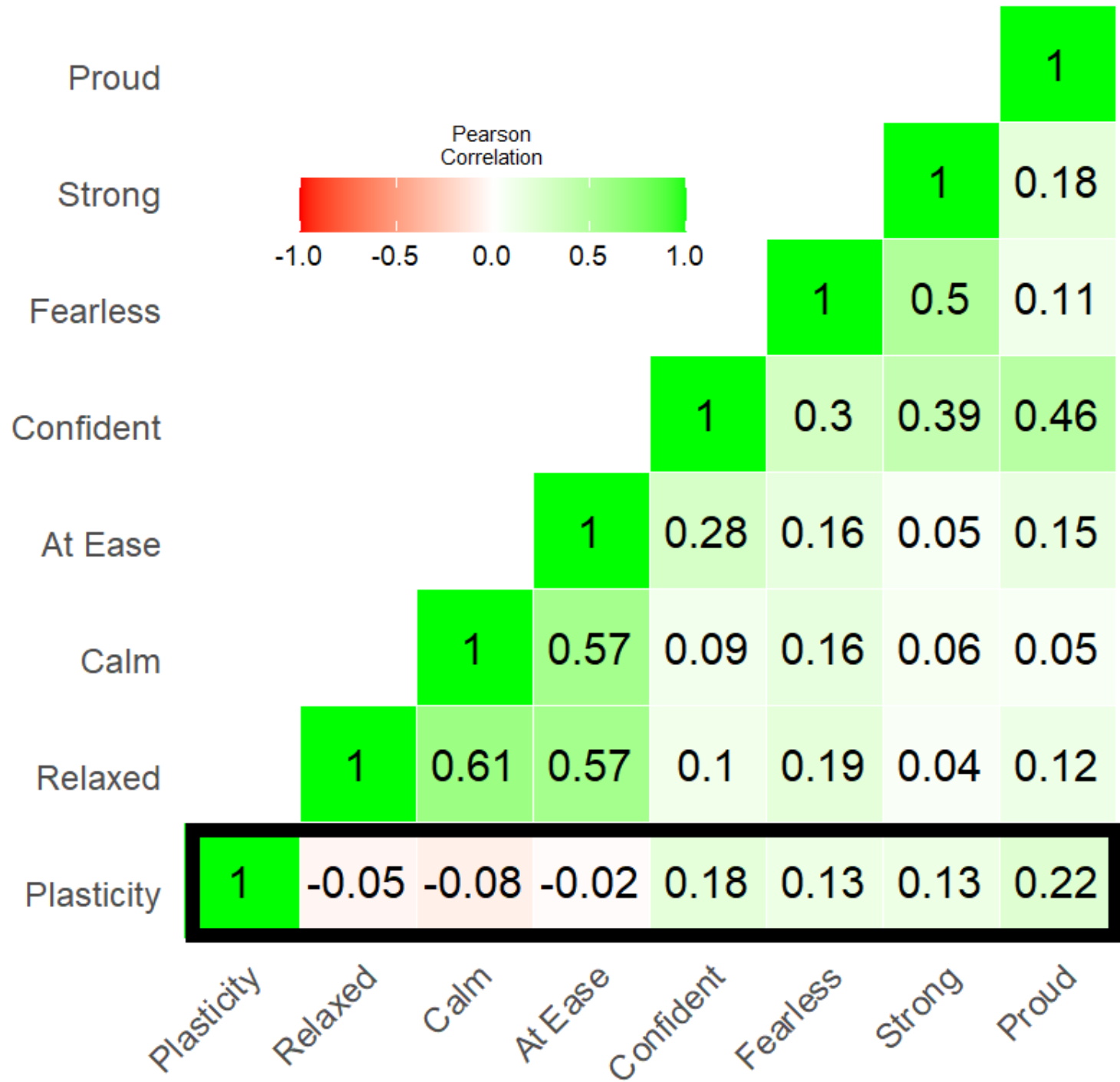


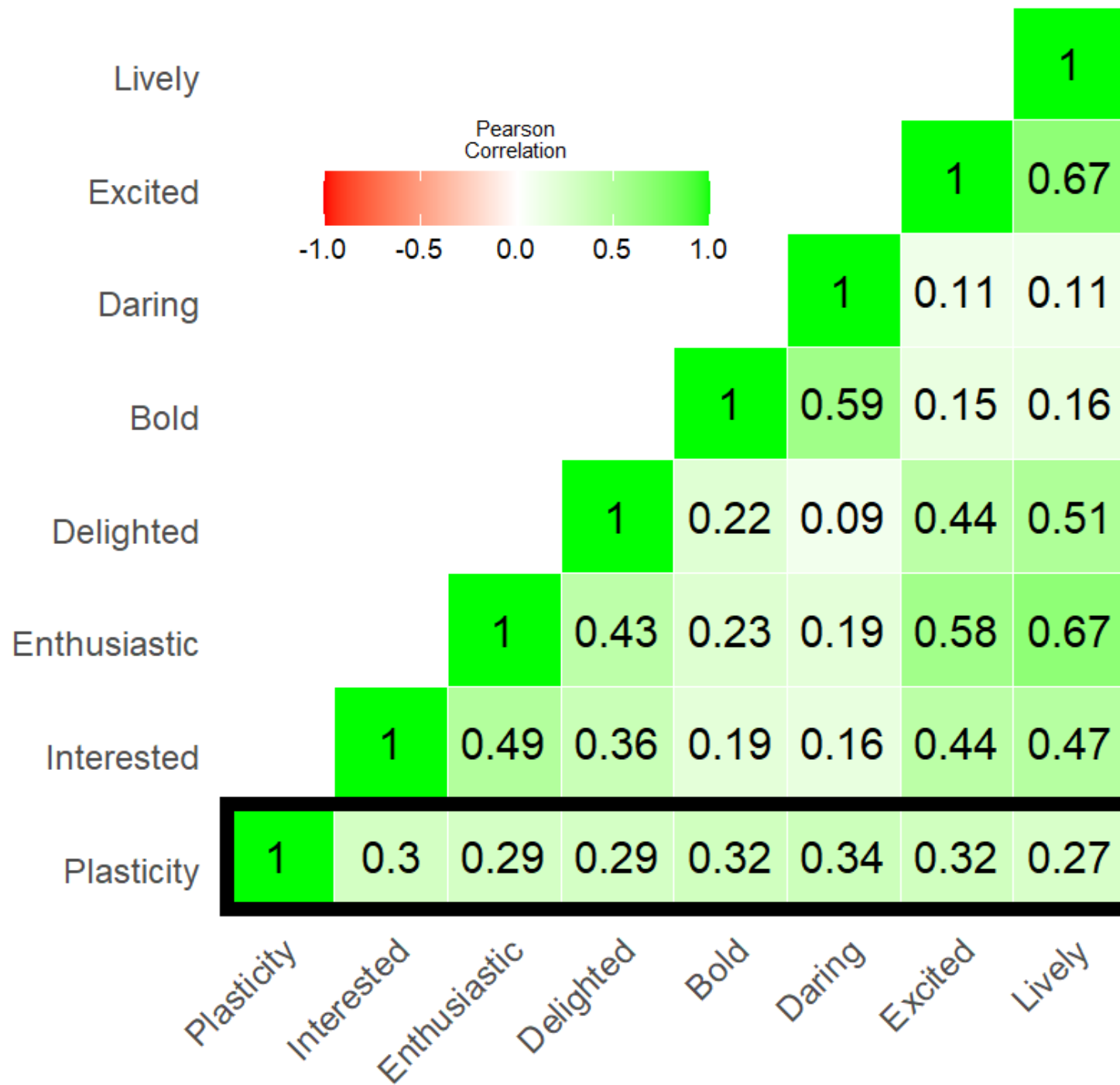
LOW AROUSAL



HIGH AROUSAL

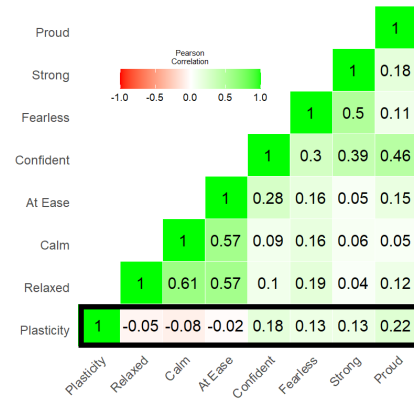




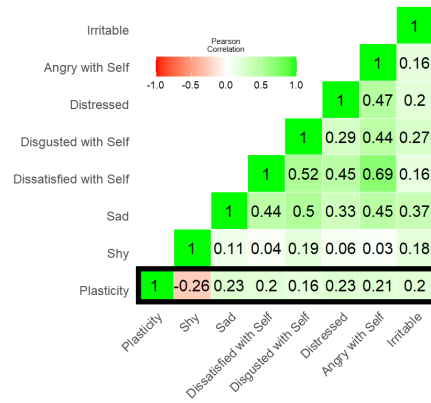


P L A S T I C I T Y

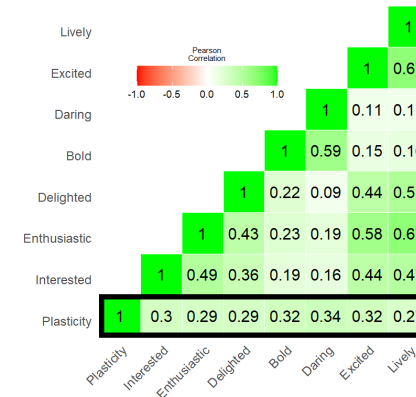
POSITIVE VALENCE



NEGATIVE VALENCE



LOW AROUSAL



HIGH AROUSAL

