Longitudinal Stability & Change in the Big Six

Cory Costello & Sanjay Srivastava

The Big Six

- Emerged in lexical studies in new languages & in more inclusive adjective-sets in previously studied languages.

- Adds **Honesty-Propriety** to familiar Big Five
  - Tendency to be honest, fair, and rule-abiding.

- Agreeableness changes
  - Centered on patience & even-temperedness (rather than compassion)

- I'll focus on Big Five + HP

Saucier, 2009
Thalmayer et al., 2011

How does personality change across adulthood?

- Mean-Level Change
  - Also called normative change.
  - Is there a general tendency for people to change in a particular way?
  - Indexed via mean difference.

- Rank-Order Stability
  - Is the relative ordering of people (on a given personality characteristic) preserved across time?
  - Is the most extraverted person at T1 the most extraverted person at T2?
  - Indexed via a test-retest correlation.
- We will look at each for the Big Six in the Life and Time dataset.

How does personality change on average?

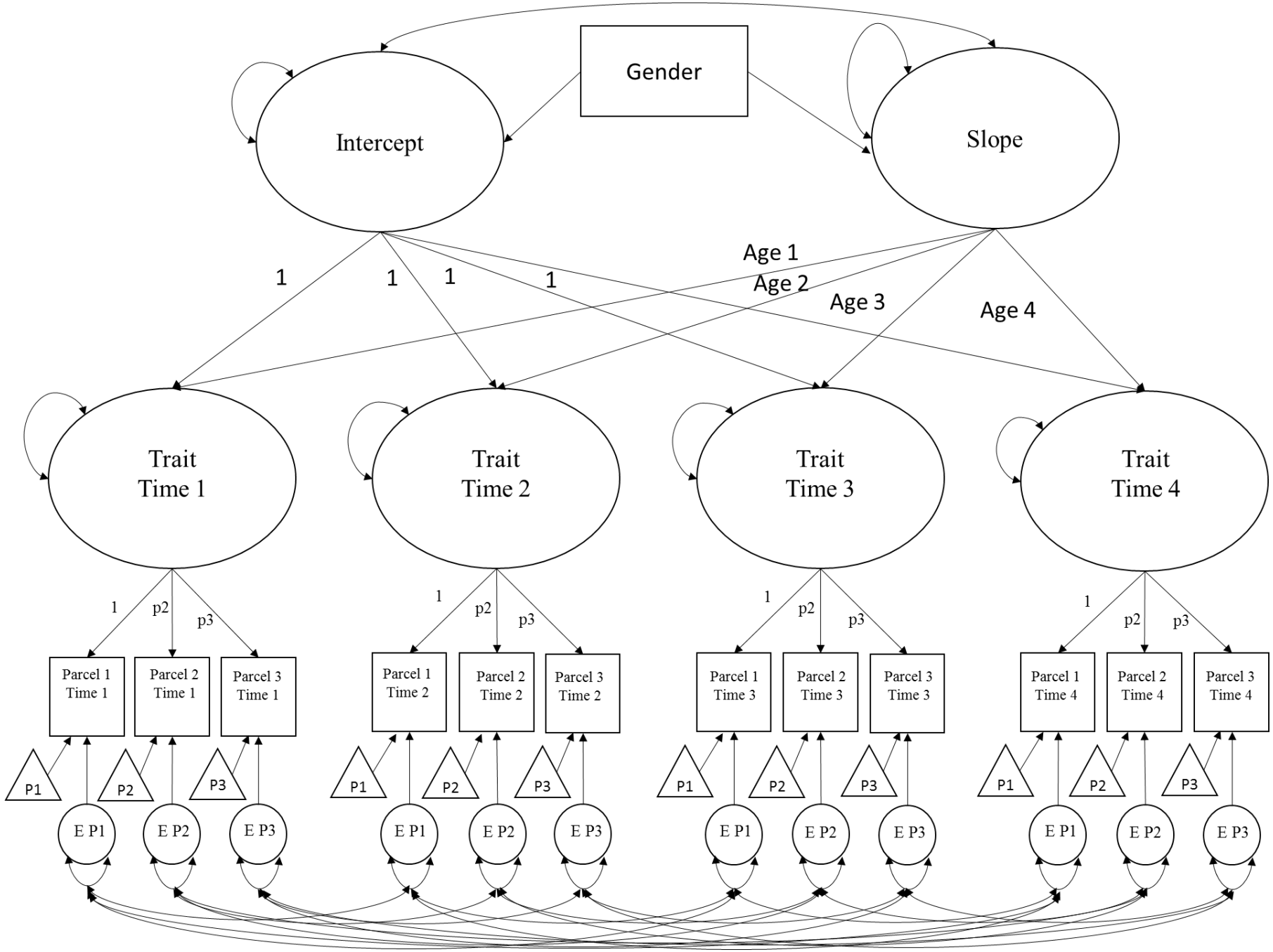
- People Consistently:
  - Increase in Agreeableness
  - Increase in Conscientiousness
  - Decrease in Neuroticism

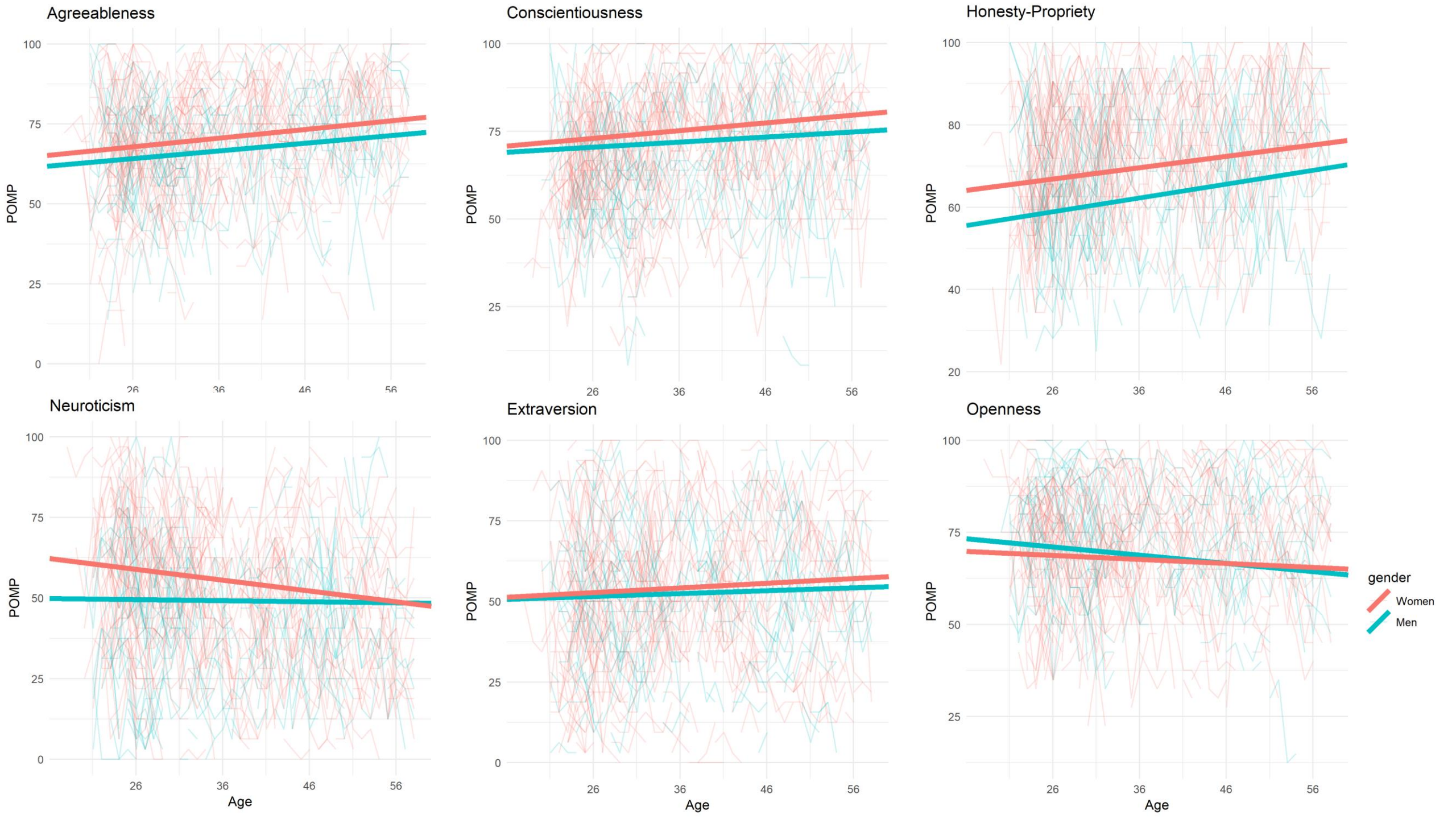
- **The Maturity Principle.**
  - People change in a way to better function in society & get along with others.
  - Following moral norms is critical to getting along with others.
  - Maturity principle would predict change in Honesty/Propriety.

Bleidorn et al., 2013
Lucas & Donellan, 2011
Roberts et al., 2006, 2008
Specht et al., 2011
Srivastava et al., 2003

Life & Time Dataset

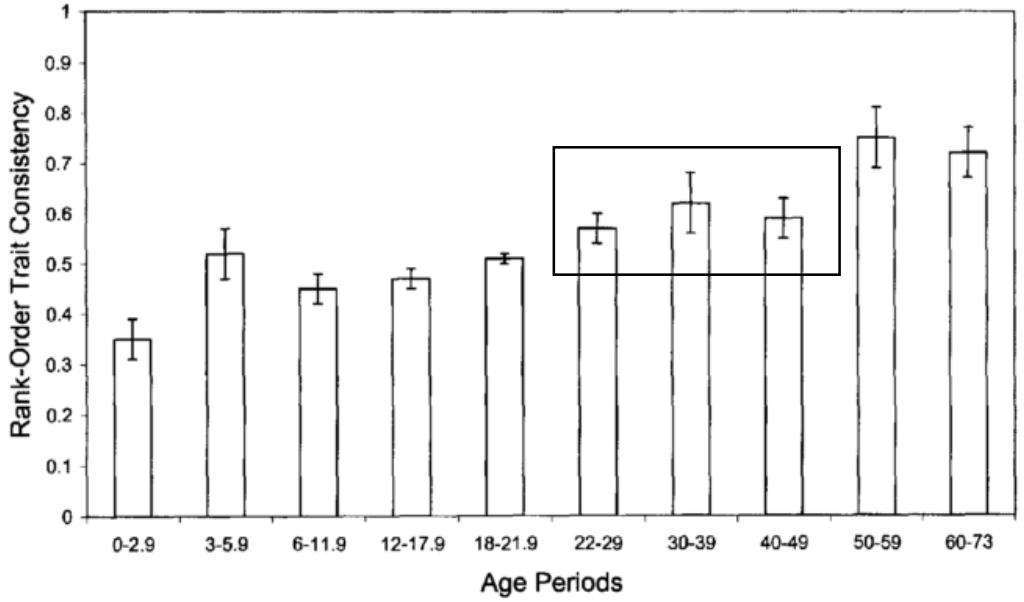
- Accelerated Longitudinal design.
- **Participants**
  - Initial *N* = 879; Final *N* = 858
  - 66% Female
  - Age at Time 1 ranged from **18 to 55**, M_{Age} (SD_{Age}) = 35.95 (10.53)
  - Roughly Nationally Representative
- **Measurement Occasions:**
  - 4 Waves, each 1 year apart.
  - Big 6 were measured using:
    - BFI-44 with additional items to measure Honesty-Propriety (taken from the QB6 family of measures).
    - Adequate internal consistency at each time point (α's from .68 to .91)
- Data analyzed in a R & Mplus (see https://osf.io/2cu8e/)


Gender
Intercept
Slope
1
1
1
1
Age 1
Age 2
Age 3
Age 4
Trait Time 1
Trait Time 2
Trait Time 3
Trait Time 4
1
p2
p3
Parcel 1 Time 1
Parcel 2 Time 1
Parcel 3 Time 1
Parcel 1 Time 2
Parcel 2 Time 2
Parcel 3 Time 2
Parcel 1 Time 3
Parcel 2 Time 3
Parcel 3 Time 3
Parcel 1 Time 4
Parcel 2 Time 4
Parcel 3 Time 4
P1
P2
P3
E P1
E P2
E P3


Agreeableness
Conscientiousness
Honesty-Propriety
Neuroticism
Extraversion
Openness
POMP
Age
gender
Women
Men

Rank-Order Stability

- Rank-order stability for personality characteristics tends to be high but depends on:
  - Length of Test-retest Interval
  - Age: increases w/ age
  - **Cumulative Continuity Principle**
    - Thought to stem from increasingly stable identity, social roles, and environment.
    - Stabilizing forces *accumulate*.

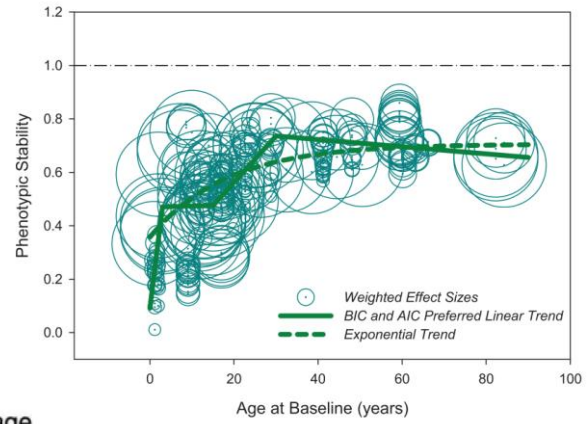


Fraley & Roberts (2005)

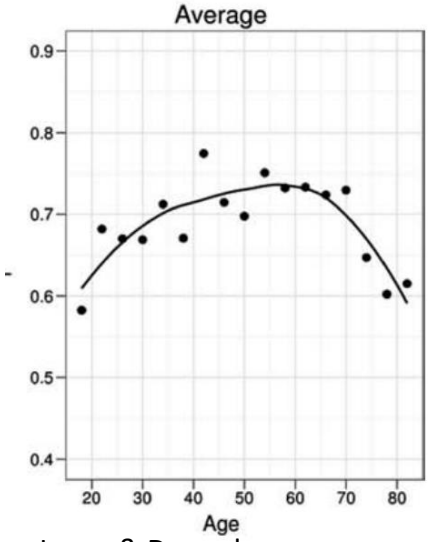
Roberts & DelVecchio (2000), **Fig. 1**

How Robust is Cumulative Continuity?

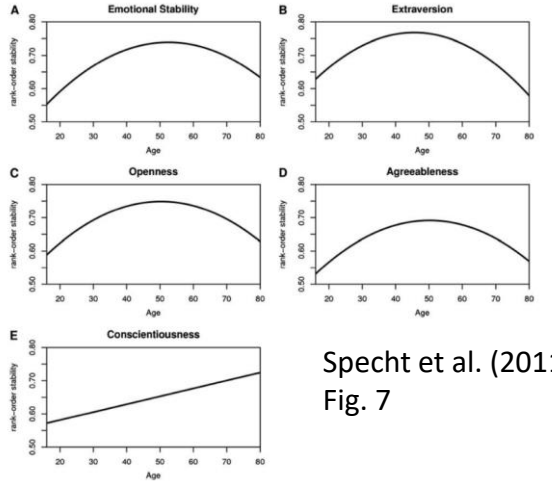
- Briley & Tucker-Drob (2014) note that increases in phenotypic stability "increase until age 30 and remain at this level" (p. 1319)
- Lucas & Donellan (2011) and Specht et al. (2011) found curvilinear, where it increased through adulthood and decreased in old age (GSOEP data).
- Wagner et al. (2019) found "limited evidence of cumulative continuity" in two large, national surveys (GSOEP & HILDA data).
- **Does stability actually increase continuously & linearly with age?**



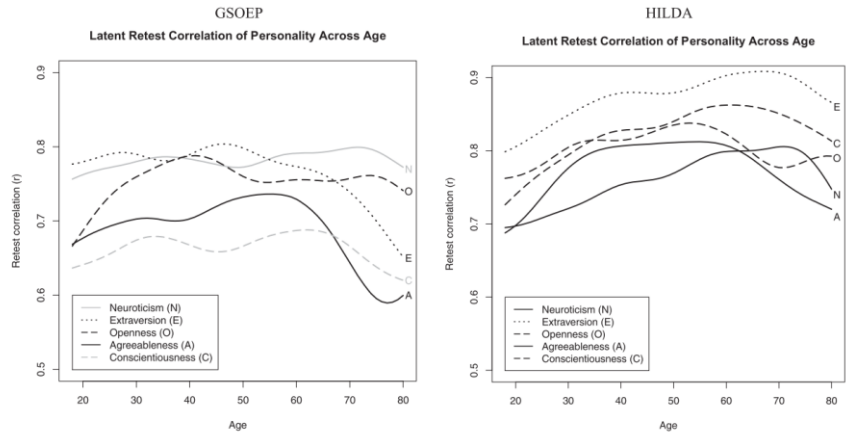
Briley & Tucker-Drob (2014), Fig. 4



Lucas & Donnelan (2011), Fig. 7



Specht et al. (2011), Fig. 7



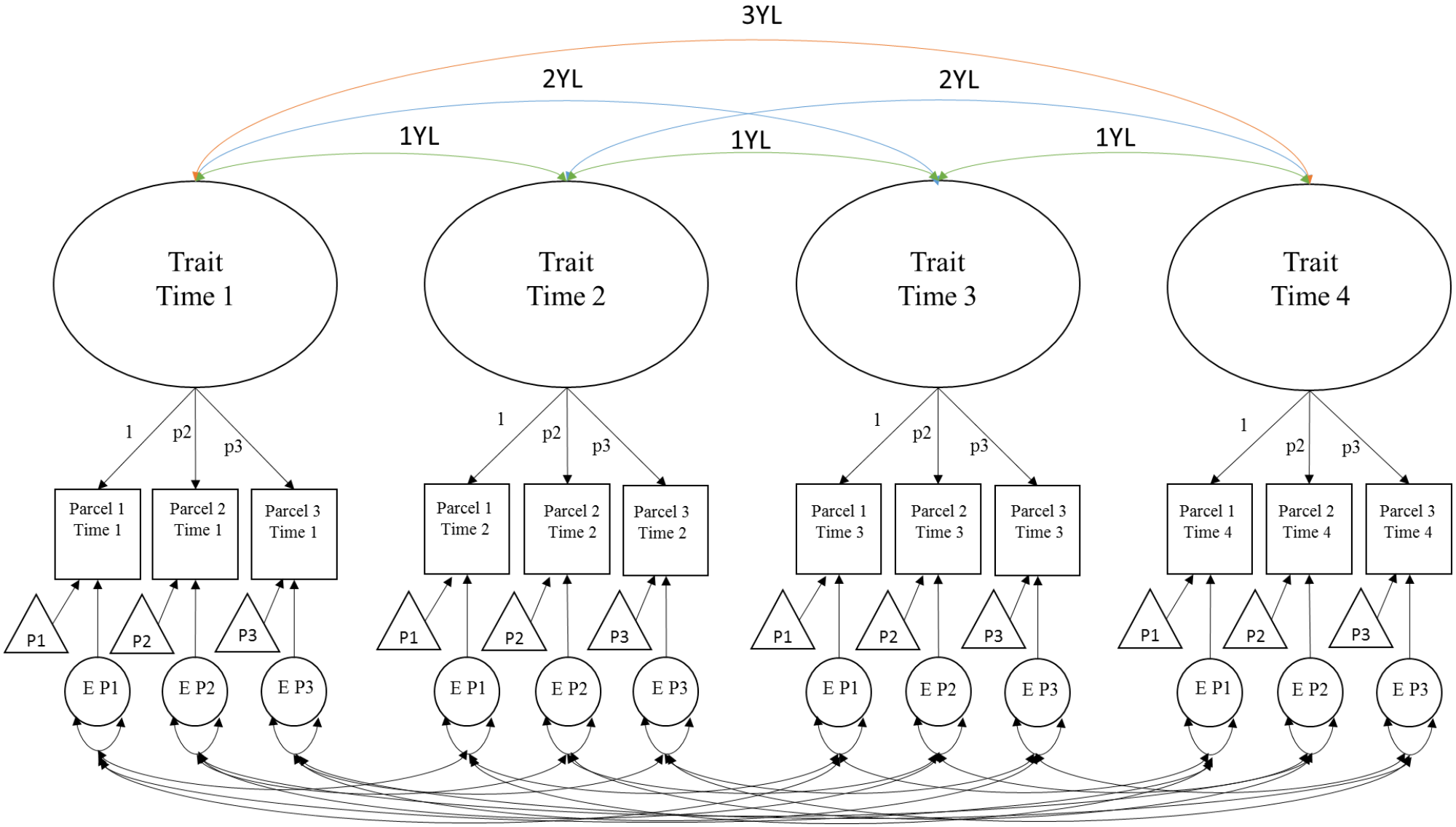
Wagner et al. (2019), Fig. 7

Testing the Cumulative Continuity Principle

- We split the sample into decade-based age groups:
  - 18-29 (*N* = 303)
  - 30-39 (*N* = 227)
  - 40-49 (*N* = 200)
  - 50-55 (*N* = 128)

- To test CCP we tested 2 models per characteristic:
  - Stability coefficients **not equal** across age groups (*Cumulative Continuity*).
  - Stability coefficients **equal** across age groups (*No Cumulative Continuity*).

Testing Cumulative Continuity Principle



Testing Cumulative Continuity Principle

Trait	Invariance	RMSEA [90% CI]	df	χ^2	X^2 / df	AIC
Agreeableness	CC					
	No CC					
Conscientiousness	CC					
	No CC					
Honesty-Propriety	CC					
	No CC					
Neuroticism	CC					
	No CC					
Extraversion	CC					
	No CC					
Openness	CC					
	No CC					

$\Delta_{RMSEA} \leq .01$ used for invariance

*p < .05; **p<.01; ***p<.001

Testing Cumulative Continuity Principle

Trait	Invariance	RMSEA [90% CI]	df	χ^2	X^2 / df	AIC
Agreeableness	CC	.031 [.018, .041]				
	No CC	.033 [.021, .043]				
Conscientiousness	CC	.037 [.025, .046]				
	No CC	.039 [.029, .049]				
Honesty-Propriety	CC	.039 [.029, .049]				
	No CC	.043 [.033, .052]				
Neuroticism	CC	.041 [.031, .050]				
	No CC	.042 [.033, .051]				
Extraversion	CC	.024 [.000, .036]				
	No CC	.024 [.000, .035]				
Openness	CC	.049 [.040, .058]				
	No CC	.051 [.043, .060]				

$\Delta_{RMSEA} \leq .01$ used for invariance

*p < .05; **p<.01; ***p<.001

Testing Cumulative Continuity Principle

Trait	Invariance	RMSEA [90% CI]	df	χ^2	X^2 / df	AIC
Agreeableness	CC	.031 [.018, .041]	333	401.32	1.21	
	No CC	.033 [.021, .043]	345	426.90*	1.24	
Conscientiousness	CC	.037 [.025, .046]	333	428.62	1.29	
	No CC	.039 [.029, .049]	345	459.97**	1.33	
Honesty-Propriety	CC	.039 [.029, .049]	333	443.77	1.33	
	No CC	.043 [.033, .052]	345	481.67***	1.40	
Neuroticism	CC	.041 [.031, .050]	333	453.04	1.36	
	No CC	.042 [.033, .051]	345	477.07*	1.38	
Extraversion	CC	.024 [.000, .036]	333	374.59	1.12	
	No CC	.024 [.000, .035]	345	385.89	1.12	
Openness	CC	.049 [.040, .058]	333	505.96	1.52	
	No CC	.051 [.043, .060]	345	540.39**	1.57	

$\Delta_{RMSEA} \leq .01$ used for invariance

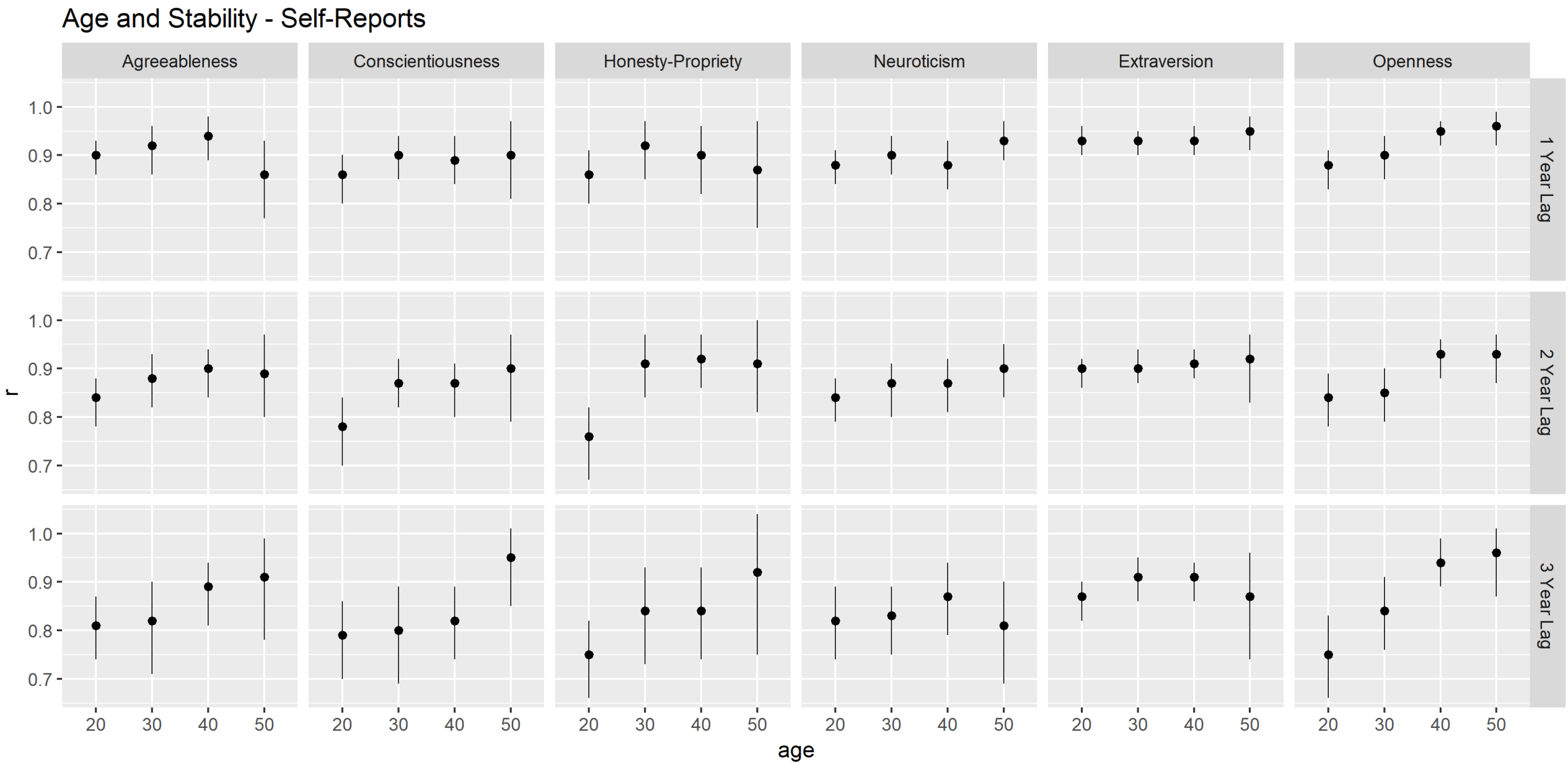
*p < .05; **p<.01; ***p<.001

Testing Cumulative Continuity Principle

Trait	Invariance	RMSEA [90% CI]	df	χ^2	X^2 / df	AIC
Agreeableness	CC	.031 [.018, .041]	333	401.32	1.21	**12551.16**
	No CC	.033 [.021, .043]	345	426.90*	1.24	12552.75
Conscientiousness	CC	.037 [.025, .046]	333	428.62	1.29	**12436.75**
	No CC	.039 [.029, .049]	345	459.97**	1.33	12444.10
Honesty-Propriety	CC	.039 [.029, .049]	333	443.77	1.33	**14218.57**
	No CC	.043 [.033, .052]	345	481.67***	1.40	14232.47
Neuroticism	CC	.041 [.031, .050]	333	453.04	1.36	**15067.54**
	No CC	.042 [.033, .051]	345	477.07*	1.38	15067.57
Extraversion	CC	.024 [.000, .036]	333	374.59	1.12	13552.17
	No CC	.024 [.000, .035]	345	385.89	1.12	**13539.48**
Openness	CC	.049 [.040, .058]	333	505.96	1.52	**11306.05**
	No CC	.051 [.043, .060]	345	540.39**	1.57	11316.48

$\Delta_{RMSEA} \leq .01$ used for invariance

*p < .05; **p<.01; ***p<.001


Age and Stability - Self-Reports
Agreeableness
Conscientiousness
Honesty-Propriety
Neuroticism
Extraversion
Openness
1 Year Lag
2 Year Lag
3 Year Lag
r
1.0
0.9
0.8
0.7
20
30
40
50
age

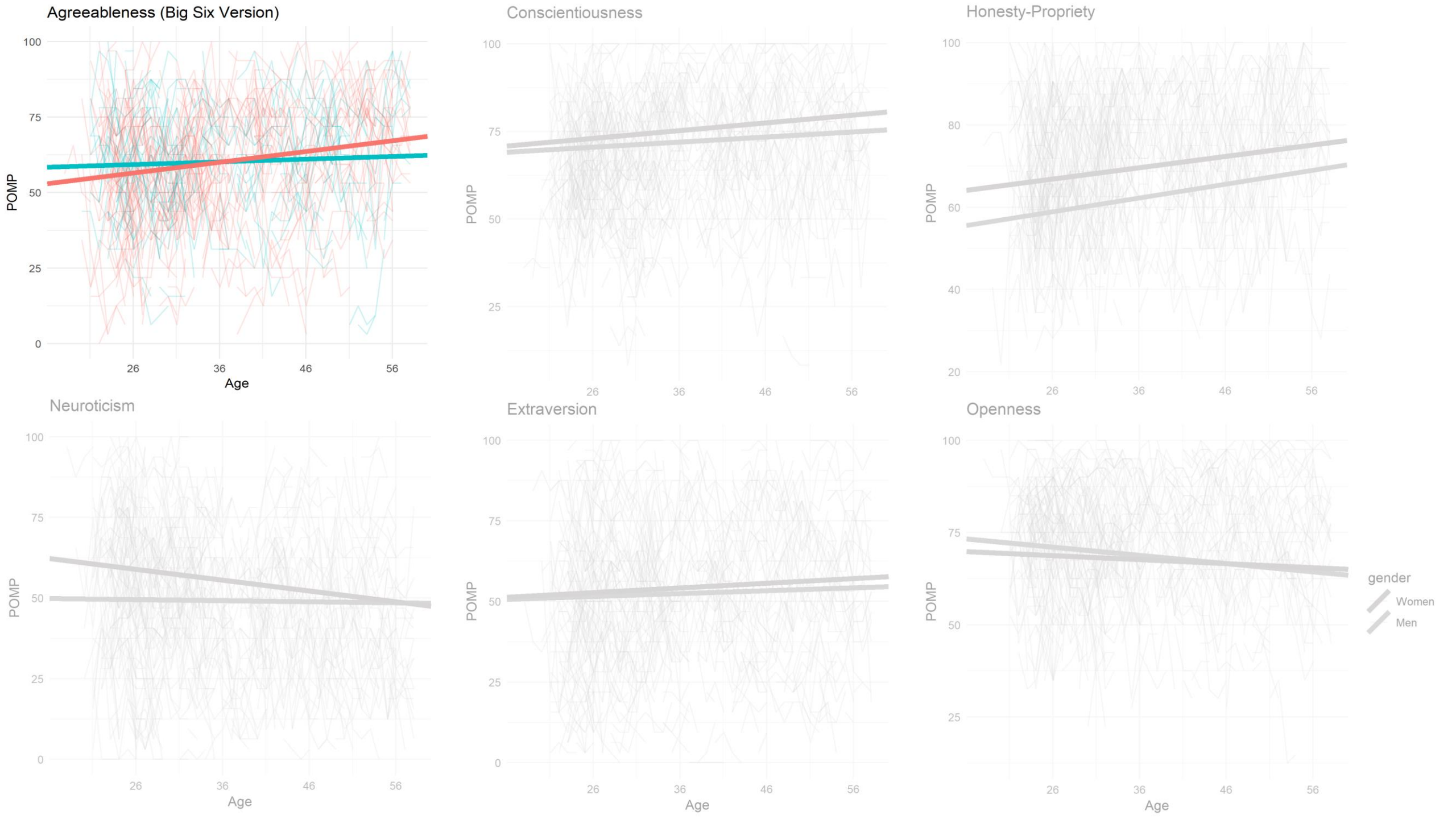
Conclusions

- Maturity Principle replicates & is further corroborated by Honesty/Propriety
  - Increases, as expected under notion of functional maturity

- Less consistent evidence for the Cumulative Continuity Principle.
- Why?
  - Possible that differences emerge only at larger test-retest intervals.
    - Original Meta-analysis had average lag of 6.75 years
  - Possibly due to methodological differences
    - MA included heterogeneous samples, heterogeneous measures, etc.

Questions

- Email: Ccostell@uoregon.edu
- Data & Code available here: https://osf.io/2cu8e/
- Preprint available here: https://osf.io/k86p9/


Agreeableness (Big Six Version)
Conscientiousness
Honesty-Propriety
Neuroticism
Extraversion
Openness
POMP
Age
gender
Women
Men