

Where does this scale fit anyway? Methods for incorporating personality scales into the Big Five

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Introduction

- Construct proliferation is prevalent in personality and social psychology (Goldberg, 1999).
- Multiple constructs measuring the same or closely related phenomena (i.e., the Jangle fallacy) can make it hard for researchers to understand the nomological network of their constructs of interest.
- Yet many of these constructs appear to measure personality traits, so should be able to be located within the Big Five (or HEXACO).¹
- Relatively straightforward methods for incorporating scales into the Big Five are absent.
- Here we introduce:

An ongoing study to expedite the process of incorporating constructs into the Big Five.

A method to try and determine if particular scales can be incorporated into the Big Five.

Too many scales, not enough time

- Gathering data for individual scales is time-consuming, so can only slowly deal with construct proliferation.
- Instead, we propose that:

A scale's likely location in the Big Five may be identifiable by knowledgeable 'experts'

Such a process may reduce the time to provide evidence that a new scale is likely either a facet of or redundant with a Big Five domain.

We are currently running a study to see how accurately psychologists can predict correlations with the Big Five

Research Questions

- How accurately can psychologists predict correlations with the Big Five?
- How accurately can psychologists predict which domain will have the highest correlation with each scale?
- What characteristics of psychologists affect prediction accuracy?

Predicting Correlations with the Big Five

Participant Tasks

- Examine six items per scale for a random selection of highly cited scales.
- Report what correlations they expect an aggregate of these items to have with each of the Big Five².
- Indicate if they know or can guess what the scale might be.
- Report their:
 - Years of experience in research
 - Level of academic achievement (e.g., permanent academic position, doctoral student etc.)
 - Familiarity with the Big Five
 - Relative interest in personality psychology.

Analysis

- The research questions will be answered for scales for which we do have data.
- Cross-validation will be used to determine accuracy.
- Predictions will be made for scales for which we do not have data based on cross-validated results.

Would you like to participate?

- Our prediction study is on-going and we would greatly appreciate it if you would participate.

You can opt to receive a personalised report of your accuracy

- The report will be sent to your email **after** results are analysed.
- For more information:
 - Contact Tim Bainbridge at tfb@student.unimelb.edu.au or
 - Ask Tim Bainbridge or Luke Smillie at the conference.
- To participate navigate to the link to the right or scan the QR code.



www.tinyurl.com/predictingcorrelations

A method to incorporate constructs into the Big Five

- We propose:

A scale can be considered part of the Big Five if the scale shares as much variance with the Big Five as a typical facet of the Big Five.

- We introduce a structural equation model (SEM; Figure 1) that can:
 - a) Determine if this condition is met
 - b) If (a) is met, determine the scale's location within the Big Five.

The Model

- The left side of the model (Figure 1) is an Exploratory SEM (Asparouhov & Muthén, 2009).³
- The right side is the measurement model of the scale of interest.⁴
- The centre is a regression of the scale's latent variable on the Big Five:
 - Thus, an R^2 can be calculated, which indicates the shared variance between the scale and the Big Five; and,
 - The regression parameters indicate each scale's location within the Big Five.

Cut-offs for inclusion in the Big Five

- The model can be run with each of the facets from a separate Big Five inventory in the place of the scale to give an indication of the typical amount of shared variance between the Big Five and Big Five facets.
- We have run these on the facets from two student samples (MTurk and Community samples pending)⁵.
 - Summaries of the R^2 values of these models are presented in Table 1.
 - Given that the facets were explicitly designed to be part of the Big Five, we propose that any scale which overlaps with the Big Five as much as the 27th highest (4th lowest) facet or greater (i.e., about a third of the variance) is a good candidate to be part of the Big Five.

Figure 1: A model to enable identification of a scale's overlap with and location in the Big Five

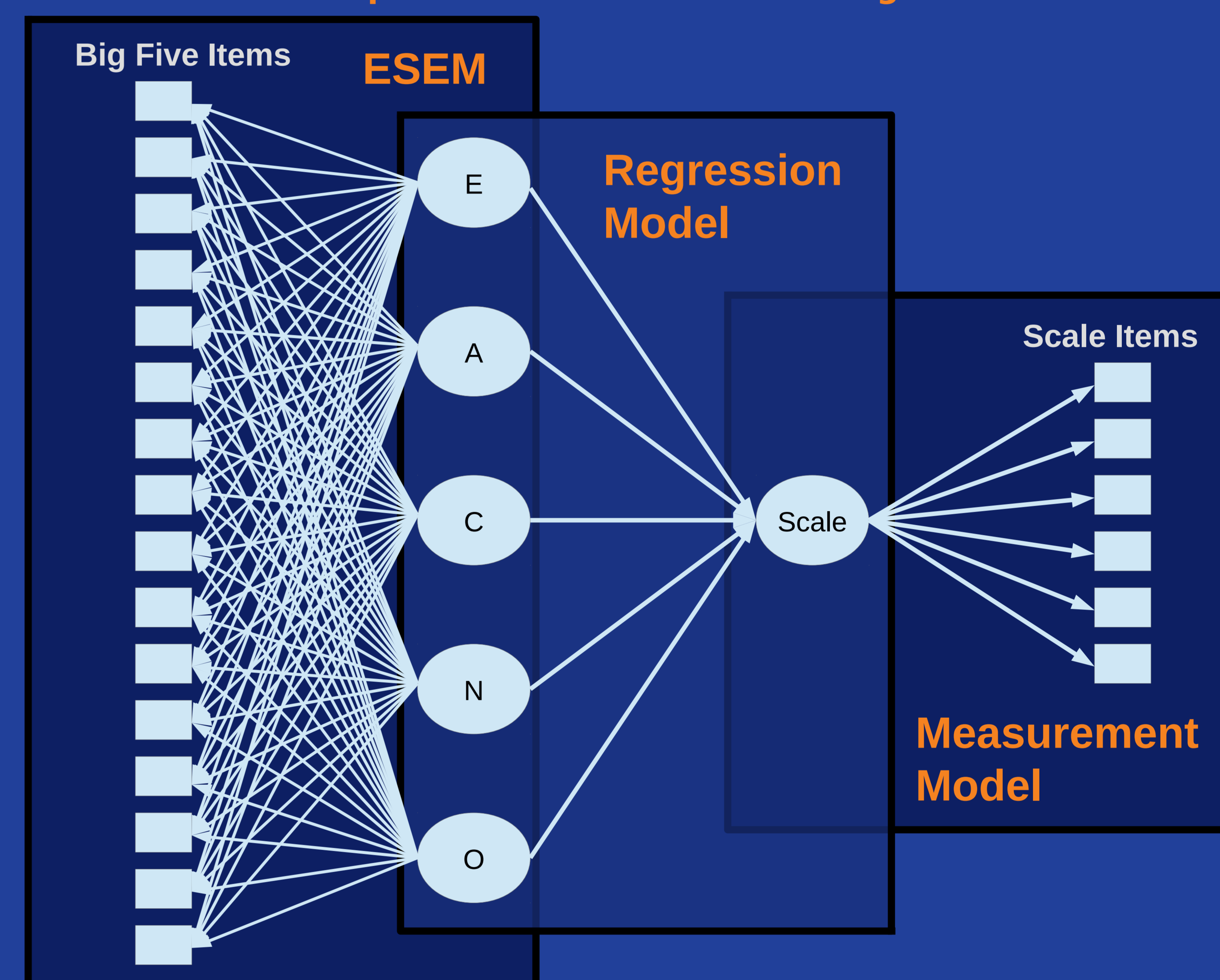


Table 1: R^2 of facets of the IPIP-NEO-120 predicted by the BFI-2 factors

	Mean	Median	27th facet (of 30)
Study 1	61.3%	64.3%	36.6%
Study 2	59.4%	58.5%	30.2%
Average	60.4%	61.4%	33.4%

Notes

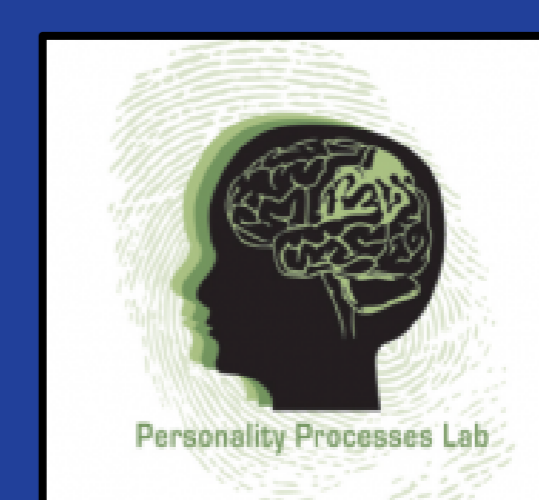
1. Given that the Big Five and HEXACO were developed from the lexicons of languages, if these lexicons include words that describe most personality traits (i.e., the lexical hypothesis), then the Big Five and HEXACO describe the major dimensions of personality.
2. As measured by the Big Five Inventory 2 (Soto & John, 2016).
3. An ESEM is an Exploratory Factor Analysis embedded in a SEM.
4. This model assumes that the scale structure has been adequately identified and is well-described as a single dimension with no correlations between residuals. If these conditions are not met, then we recommend using the identified scale structure in the right side of the model if the scale structure has been adequately identified elsewhere. If the scale structure has not been adequately identified elsewhere then one might first identify the structure and insert it into the right side of the model or one may simply use the structure as presented here and take appropriate action to deal with the likely presence of *interpretational confounding* (Burt, 1976), which occurs when parameters change dramatically depending on if and what external variables are included in the model.
5. Using the IPIP-NEO-120 to measure the facets (Maples et al., 2014) and the BFI-2 to measure the Big Five (Soto & John, 2016).

References

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