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Fundamental Questions in Personality

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**Abstract**

The network perspective represents a novel contribution to personality theory by conceptualizing personality traits as emerging from the mutual dependencies between fundamental and causal affective, behavioral, and cognitive components. We argue that incorporating a more nuanced biological and developmental perspective to causality and a more precise approach to affective, behavioral, cognitive, and motivational components may serve to enrich the network perspective. Although the graphical approach to modeling personality is aesthetically pleasing, analytic techniques are not yet available to put network models to the (quantitative) test.

## Fundamental Questions in Personality

How should personality traits be conceptualized? What are the fundamental units of personality? How should personality be modeled? We laud Cramer et al.'s willingness to take on a number of overarching issues that drive our field, and we structure our response around these questions below.

### How should traits be conceptualized?

Personality traits may be thought of as hierarchically organized and biologically based individual differences in patterns of affect (A), behavior (B), and cognition (C) (Revelle, Wilt, & Condon, 2011). Importantly, the hierarchical organization of traits means that broad traits (such as the Big-Five) encompassing many related ABCs are located near the top of the hierarchy, whereas very specific patterns of ABCs (i.e., items) are located near the bottom. The most popular view about why more narrow traits cohere into broader traits (Markon, 2009) is that the narrow traits (e.g., “liking parties, liking people, and enjoying conversation”) all share something (e.g., extraversion) in common. Theorists in the Five-Factor Model (McCrae & Costa, 2008) tradition have gone further to proffer that the shared aspects of lower-order traits - or latent factors - are themselves causal entities that bind the lower-order traits together. Cramer et al. vehemently oppose this view. They claim that cause flows in the opposite direction, specifically that item-level constructs each have unique causes and effects, are mutually dependent on each other, and that higher-order traits emerge from these components as “a flock emerges out of the synchronized behavior of the birds it contains.”

Recent works that criticize the FFM position on the causal nature of traits as

tautological (Boag, 2011; Piekkola, 2011) side with Cramer et al., and we agree (and have long argued) with the sentiment that latent factors should not be reified (?, ?). However, not all theorists advocating for a causal model of traits reify the latent factors emerging from factor analysis of personality items. Indeed, Cramer et al. focus solely on genetic determinants of personality and thus seem to ignore sophisticated biological theories that posit neurophysiological causes of the major dimensions of personality as the link between genetics and behavior (Depue, 1995; Eysenck, 1967; Gray, 1981; Gray & McNaughton, 2000). The argument for biological factors as being the common thread tying together narrower aspects of personality has received a great deal of empirical support (Canli, 2006). For genes no more cause personality than they cause items. Genes code for proteins which in turn affect the development and functioning of biological systems. Although the exact biological mechanisms are still undetermined, theories of the conceptual nervous system allow for an integration of the ABCDs. Also supporting this view are developmental studies (Rothbart, Sheese, & Conratt, 2009) and animal studies (Gosling & John, 1999) suggesting that observed regularities in the behavioral and emotional patterns of young children and animals may be accounted for by biological factors. By implying that the empirical relations between narrow aspects of personality are due to mutual dependencies between items, Cramer et al. may be taking an unnecessarily restrictive stance on the constructs they include in their causal model. Their model may profit by considering “post-genetic” biological factors of the type postulated by Eysenck, Gray, etc.

What are the fundamental units of personality?

Cramer et al. point to “affective, cognitive, and behavioral components (i.e., items)” rather than latent factors as the fundamental units of personality. This position echoes Mayer’s (2000) view that affect, behavior, and cognition may be construed as “primary parts” of personality and is reminiscent of Loevinger’s (1957) notion of items as representative mini-scales. If motivation is added to this list of components, Cramer’s view would align closely with our own that personality psychology, at its heart, seeks to understand variation in how people feel, act, think and want (Revelle, 2008). That is, personality is concerned with affect, behavior, cognition, and desire (D), the “ABCDs” of personality (Wilt, Oehlberg, & Revelle, 2011; Wilt & Revelle, 2009). Most personality items, however, reflect a heterogeneous mixture of ABCD content (Pytlik Zillig, Hemenover, & Dienstbier, 2002), and therefore all items might not be suitable measures of primary parts. Our lab is currently in the process of conducting content analyses of items in the International Personality Item Pool (Goldberg et al., 2006) in order to identify relatively “pure” ABCD items that may be used as markers of ABCD components. To illustrate relative purity, asking participants whether they generally “feel anxious” is likely to reveal more pure affective content than asking participants whether they generally “feel anxious when interacting with other people.” Considering ABCDs as potentially separate components may aid Cramer et al. in their stated aim of organizing personality.

How should personality be modeled?

“Personality research depends entirely on the soundness of personality description and measurement” (Cattell, 1943, p. 560). The network approach advocated by Cramer

et al. produces beautiful graphs describing the relations between personality items that may stimulate a number of interesting hypotheses that may depart from results obtained using factor analytic techniques. For example, factor analyses typically yield two higher-order factors above the Big-Five in the personality hierarchy: the first factor is marked by agreeableness, conscientiousness, and emotional stability (neuroticism reversed) items, and the second factor is marked by extraversion and openness items (DeYoung, Peterson, & Higgins, 2002; Digman, 1997). Figure 2 in Cramer et al., however, suggests closer relations between neuroticism and conscientiousness items, as well as between extraversion and agreeableness items. These contrasting observations set up a natural test of competing hypotheses. Unfortunately, Cramer et al. acknowledge that the quantitative algorithms necessary for the measurement of network models do not yet exist, although see Schweinberger (2011) for a promising beginning to this endeavour. Thus, the graphical approach falls short of factor analytic methods when it comes to exploratory and confirmatory analyses necessary to test theoretical models of personality (Tukey, 1950) <sup>1</sup>.

Cramer et al. (Figure 7) contrast their network model in which genes have separate effects on each item with a latent model in which the effects of genes are mediated through high level traits such as neuroticism. We prefer to think in terms of genetically caused biological systems which operate on the ABCDs of personality which in turn lead to individual outcomes such as those measured by items. Cramer et al.'s ideas pertaining to the conceptualization of personality traits and the fundamental units of personality are no doubt valuable contributions to personality theory. We believe that incorporating a more nuanced biological and developmental perspective on causation and adopting a

more precise approach to the ABCDs of personality may complement and enrich their perspective. We eagerly await the development of analytic methods that will put the network perspective to the (quantitative) test.

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### Footnotes

<sup>1</sup>For a comparison of network and more conventional factor analytic displays using R, see our working paper at <http://personality-project.org/pmc/manuscripts/rwcb.pdf>