by relying on social-cognitive mechanisms, one could aim to manipulate momentary associations of social cues and response patterns by means of training procedures (e.g., Schnabel & Asendopf, 2015) and test their causal effects on behaviors such as talking or commanding.

After committing to a conceptual definition of a trait that does not rely on the behaviors that the trait is assumed to cause, we will be able to design measures of traits (and corresponding states) that do not overlap in content with measures of behaviors and outcomes. This is important for an experimental approach because the effectiveness of manipulations can be checked prior to testing their effects on behaviors. Moreover, this is important for correlational studies that can complement experiments and serve to test indirect effects of traits on outcomes via repeated behaviors.

In sum, we agree with Mõttus that it is sensible to conduct facet-level and item-level analyses when scrutinizing correlations between trait measures and outcome measures. These analyses are important for distinguishing between correlations due to item content overlap and psychologically informative correlations. However, inspecting the concordance of correlations of items/facets with outcomes cannot determine whether an underlying trait is causal. Mõttus fails to consider that a trait might exert opposing indirect effects. Most importantly, to scrutinize the causality of traits, empirical analyses (correlational or experimental) need to be preceded by theoretical elaboration on precise definitions of personality traits.

Composites Can Be Causal Too

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Abstract: Mõttus gives the impression that composites, as well as other models in which traits are a result rather than a cause of their indicators, require "emergent properties" to have causal power. We argue that this is not necessary; composites can be considered causally relevant by themselves when they mediate the relation between their constituents and the outcome variable. Copyright © 2016 European Association of Personality Psychology

Mõttus describes a number of alternatives to reflective measurement models in personality. Examples are (a) the model proposed by McCrae (2015) in which traits are unions of their semi-autonomous constituents, (b) network models as proposed by Cramer et al. (2012), and (c) Wood, Gardner, and Harms's (2015) model, in which traits are formed by behaviors that covary due to shared functional values. Mõttus suggests that for such models in which semi-autonomous behaviors constitute a trait (rather than reflecting it), causal power is more accurately ascribed to the constituents rather than to the trait:

If [traits are artificial constructions], attributing causality to traits as such seems equally questionable regardless of whether their constituents have similar or different associations with the outcome at hand. Even if the associations generalize across trait constituents, causal interpretations may be more fruitfully based on these constituents rather than the summary-level traits (p. 21).

As an example of an "artificial construction", Mõttus gives socioeconomic status (SES): a composite of education level, income, occupational status and the quality of one's residence. (A composite is a function of its constituents, which completely determine it; an example is a sum score based on questionnaire items, which is completely determined by the item scores). Mõttus concludes that we should not interpret SES as a cause of its associated outcomes "because SES itself is then the *result* rather than the cause of its constituents and, unless it takes on emergent properties, it thereby owes its outcome correlations to these constituents." (p. 22). We disagree. We argue that composites can in fact have causal relevance over and above their indicators, and that this is a realistic possibility in the context of personality.

Introducing a composite as a cause of a particular outcome involves a conjunctive hypothesis; namely, it implies that scores on one constituent can make up for scores on any other. Consider as a small example two constituents: (1) the number of males on a train and (2) the number of females on the train, which together entirely determine the composite 'the number of people on the train'. It is entirely reasonable to conclude that the composite itself (rather than its constituents) causes the outcome variable 'the time it takes to find an empty seat on the train'. In this example, the composite itself is causal because it fully mediates the relation between the constituents and the outcome variable: If one knows the number of people on the train, the number of women on the train does not predict any additional variance in the outcome.

But does that mean that the composite variable 'number of people in the train' has emergent properties with respect to its constituents? That seems implausible. A composite can have causal force without having emergent properties in any interesting sense of the word.

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In the example, the constituents show causal unity; they are linked with the outcome in a similar way. However, if the outcome were different (say, 'the number of high heels on the train'), the composite may no longer mediate the relation between 'the number of females on the train' and the outcome variable. Thus, a composite may screen off the relation between indicators and outcomes, but does not necessarily do so. With respect to the variable, 'the number of high heels', a constituent variable (i.e., the number of females on the train) may have a unique causal relation with the outcome.

Could personality traits function like people on a train? We think they could. All that is required is for the constituents to play compensatory roles with respect to the outcomes of interest. Consider the impulsiveness items, "I have trouble resisting my cravings", "When I am having my favourite foods, I tend to eat too much", and "I sometimes eat myself sick": it is not implausible that obesity could be caused by a high sum of these constituents, whether that sum is due entirely to any one, two, or a combination of all three items.

Mõttus argues convincingly that researchers must test whether trait-outcome relations are due to the unique influence of specific items and facets of the trait. We strongly agree and note that it is possible to perform such a test whether the trait is conceptualized as a common-cause latent variable or as a composite. In the former case, a structural equation model can be used to model the item-trait-outcome relations explicitly and examine unique effects. In the latter case, the composite variable must be defined independently of the outcome (e.g., by weighting all constituents equally; Howell, Breivik, & Wilcox, 2007). Figure 1 depicts what these two test models might look like for the Impulsiveness → BMI example from Terracciano et al. (2009).

Rather than dismissing composites as lacking causal power at the level of the trait, we think it is important to take seriously the possibility that personality traits may be the *result* of a set of behaviors. Composites can have causal relevance without being emergent, but constituents can also have unique causal force. As Mõttus argues persuasively, just like we should not *assume* that causality is at the level of the trait rather than the item or facet, but *demonstrate* this, we should do the same when considering the causal power of composites.

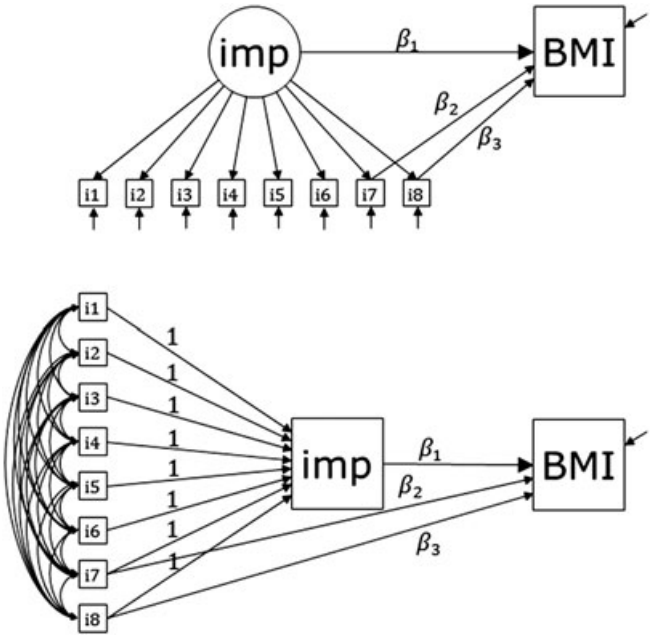

Figure 1. SEM models for testing item-outcome associations for impulsiveness and BMI. Upper panel: reflective latent variable model. Lower panel: composite model. Indicators i7 and i8 refer to eating-related behaviors. A significant β_1 coefficient would mean that the trait as a whole is related to BMI. β_2 and β_3 coefficients reflect unique effects of i7 and i8.

The Roles of Personality Traits in Health Outcomes

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Abstract: Broad domains of personality traits have organizational utility in grouping specific traits and can sometimes be effective predictors of health outcomes. However, theories about how and why personality affects differing aspects of health often require refinement. This refinement is best achieved by moving beyond broad, multifaceted personality constructs to their constituent subcomponents. Such specificity can also facilitate translational work parleying basic personality research into health intervention and prevention efforts. Multiple levels of analysis in the trait hierarchy are useful in the study of personality and health outcomes. Copyright © 2016 European Association of Personality Psychology

Mõttus provides a valuable contribution to the long history of calls for the decomposition of multifaceted scales to test theories (Carver, 1989) or maximize predictive accuracy (Mershon & Gorsuch, 1988). These

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