



Overexcitabilities and Openness to Experience Are Not the Same: A Critique of a Study and Reflections on Theory, Ethics, and Truth

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ABSTRACT

A recent study claiming to provide a basis for gifted education to drop the construct of overexcitabilities in favor of the construct of openness to experience and align itself with the Five Factor Model and a talent development perspective on gifted education is shown to be without merit. An analysis shows that the study supports the conclusion that the constructs are less similar than they appear to be from descriptions in the literature. This raises questions about the evidence needed for a field to drop constructs and the role of theory and research in guiding practice. It is argued that proposals for a field to change direction must be very strong and that gifted education should pay increased attention to justifying ethical claims.

KEYWORDS

ethics; Five Factor Model; openness to experience; theory of positive disintegration

In two papers, Vuyk et al. (2016a, 2016b) argue that they have done a study that provides a basis for the field of gifted education to drop the construct of overexcitabilities in favor of the construct of openness to experience and align itself with the Five Factor Model (FFM) and a talent development perspective on gifted education. Vuyk et al. (2016a) claimed to have shown that *overexcitabilities* (OEs) and facets of *openness to experience* (OtE) are the same constructs, and that, “accordingly, the field should align with well-researched psychological theories like the five-factor model of personality and begin to talk about openness rather than OEs” (p. 192). In a subsequent paper, Vuyk et al. (2016b) review additional literature and again claim that this equivalence “serves as ground to support the shift from OEs to openness to experience” (p. 66) and that “gifted education should shift its way of explaining these tendencies by framing them as the personality trait of openness to experience rather than OEs” (p. 59). I show that the Vuyk et al. (2016a) findings do not support their claim that OEs and OtE facets are equivalent or their proposal that the field of gifted education drop OEs in favor of openness to experience and align itself with the Five Factor Model and a talent development perspective on gifted education. I take the demonstration of this lack of support as an opportunity to address two questions that follow upon it: When does the force of reason and evidence obligate a field to drop one theory and adopt a competing theory? What is the place of theory and research in guiding practice?

The first section of this paper argues that the Vuyk et al. (2016a) study does not show that OEs are OtE

facets. The second section examines claims and errors related to the Vuyk et al. (2016a, 2016b) broader goal of moving the field toward dropping OEs and adopting OtE and the FFM. The third section addresses the question of when a field of study should drop one theory in favor of another. The fourth section argues that we may never know the truth of the OE/OtE facets relationship or anything else in the field of gifted, but as moral agents using our views to impact the lives of students, we ought to be able to justify our interventions.

The Vuyk et al. (2016a) study does not show that OEs are OtE facets

The Vuyk et al. (2016a) study examined the relationship between the construct of overexcitabilities drawn from the theory of positive disintegration (Dąbrowski, 1970, 1972; Mendaglio, 2008) as assessed with the OEQ-II and the construct of openness to experience, one factor of the Five Factor Model of Personality (De Raad & Mlačić, 2015), as assessed with the NEO PI-3. Overexcitabilities are “channels of information flow” (Piechowski, 1975, p. 256), tendencies “to respond in an intensified manner to various forms of stimuli” (Limont et al., 2014, p. 199). There are five overexcitabilities: Psychomotor, Sensual, Imaginational, Emotional, and Intellectual. The Five Factor Model is a “personality trait model constituted by . . . five factors or dimensions” based on a “common stock of words” that embody distinctions people “have found worth drawing” (De Raad & Mlačić, 2015, p. 559) —Neuroticism, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. The

factor that Vuyk et al. (2016a) examine, Openness to Experience, is comprised of six facets: Fantasy, Esthetics, Feelings, Actions, Ideas, and Values.

Vuyk et al. (2016a) reviewed literature on OEs and the Five Factor Model of Personality (FFM) and concluded that descriptions of OEs and OtE facets were very similar. They noted that there is a “relationship between openness to experience at the domain level and OEs” (p. 194), that is, between the factor of openness to experience and the five OEs. They expected that their study, the first to examine the relationship between the five OEs and the six OtE facets, would find strong relationships between OEs and their corresponding OtE facets.

Using a sample of 312 adults recruited via the Amazon Mechanical Turk and 149 creatively and intellectually gifted adolescents and adults from the Midwest, they tested two models of the relationship between OEs and OtE facets. They used both Exploratory Structural Equation Modeling (ESEM) and Confirmatory Factor Analysis (CFA) for a total of four analyses. They found that ESEM performed better for both models. Model 1, a “separate-factor model [in which] indicators of OEs and indicators of openness facets were modeled as two separate constructs expected to show a very strong correlation” met their criteria for the model fitting their data but “could not be meaningfully interpreted based on theory” (p. 198). The model “did not follow the expected factor structure” (p. 198) and did not show the “expected . . . very strong correlation” between OEs and OtE facets modeled as separate constructs (p. 194). The analysis yielded a factor that made no sense and items that did not correlate with their expected factor.

Model 2, a “joint factor model of the OE-OtE facets relationship, which had “all openness and OE items belonging to each combination load into a single latent variable,” yielded a “worse fit” (p. 198) with the data than Model 1 and required dropping three variables from the NEO PI-3 (pp. 197–198) that did not correlate with other variables. It did “fit the data well” (p. 198) and yielded interpretable results. Items from each of the five OE-OtE facets pairs correlated with a third, latent variable: Imaginational OE and the Fantasy OtE facet items loaded onto one latent variable, Emotional OE and Feelings OtE facet items loaded onto another latent variable, and so on. Values did not line up with any of the OEs.

The claim that OEs are really facets of OtE is based on the *fact* of the Model 2 fit and two sets of correlations: “subscale Pearson correlations among openness facets and OEs” and “interfactor correlations” from one of the Model 1 tests (p. 198). I show that the model fit and the higher set of correlations, the interfactor correlations, do not support the conclusion that “all five OEs can entirely

be represented by a facet of openness” (Vuyk et al., 2016a, p. 203).

OEs and facets of OtE are *similar* constructs. The literature Vuyk et al. (2016a) reviewed shows this. This similarity is noted by proponents of the TPD and others (e.g., Gallagher, 2013; Limont et al., 2014; Silverman, 2016). But, the Vuyk et al. (2016a) study does not support claims to “call it like it is,” as they subtitle the first of their papers. The claims include: OEs and facets of OtE “are the same underlying construct with different names” (p. 205); “all five OEs can be entirely represented by a facet of openness” (p. 203).

Categorical claims based on a single study are rarely, if ever, warranted

“No single study can answer any question, because too many factors perturb the results of any given study” (Schmidt & Oh, 2016, p. 33) neatly sums up why the Vuyk et al. (2016a) study—and any other single study—cannot be definitive, regardless of its quality. One factor is the composition of a sample. Three hundred and twelve “regular” adults, most from India and the United States, and 149 creatively and intellectually gifted adolescents and adults from the Midwest do not represent the target population of the claim of OE and OtE equivalence, which is most of the literate population in the world.

The research examining OEs and the five factors at the factor level that the Vuyk et al. (2016a) study builds on, for example, illustrates this. The Botella et al. (2015) validation study of the French OEQ-II found that in a group of French middle school students all OEs except Psychomotor correlated low to moderately with openness to experience. The Limont et al. (2014) study of Polish secondary school gifted and regular students found significant correlations between OtE and all OEs save Psychomotor for a gifted sample and all OEs save Psychomotor and Emotional for a sample of regular students. Martowska and Matczak (2016) reported on a Polish factor analytic study by Limont et al. (2010) using the OEQ-II and the NEO-FFI, an earlier, shorter version of the NEO PI-3, that found two factors: one on which Imagination, Sensual, and Emotional Overexcitabilities plus Openness and Neuroticism FFM factors loaded—and a second on which Psychomotor OE plus Extraversion, Conscientiousness, and Agreeableness FFM factors loaded. Intellectual Overexcitability did not load on either factor. In a study of 516 Dutch students using the OEQ-II and the NEO-FFI done after Vuyk et al. (2016a), De Bondt et al. (2019) found weak relationships between OEs and the factors of openness, conscientiousness, and

neuroticism, with the exception of a moderate relationship between OEs and openness for females. That relationships between the five OEs and the five factors vary from French to Polish to Dutch samples and between Polish gifted and regular student samples suggests that the Vuyk et al. (2016a) sample cannot be grounds for definitive claims about OE and OtE facet relationships.

If the OEQ-II does not measure OEs, the Vuyk et al. (2016a) study cannot support claims of equivalence

The study examines the relationship between scores on the NEO-PI-3 and the OEQ-II, not the constructs of OEs and OtE. The fact that constructs must be operationalized in order to examine their relationship is complicated by Vuyk et al.'s (2016a) concern about the psychometric qualities of the OEQ-II, doubts that there is an empirical basis for OEs, and rejection of the meaningfulness of studying OEs independently of the TPD.

They said about the OEQ-II, “quality of instruments has likely affected results of this study, as the OEQ-II has shown inadequate fit in the literature” (Vuyk et al., p. 205). They claimed that OEs “lack empirical support” (Vuyk et al., 2016b, p. 68) and “empirical evidence supporting their existence is scant” Vuyk et al. (2016a, p. 193), and the “science behind OEs is not sound” (2016b, p. 68). Others disagree about the quality of the OEQ-II (e.g., De Bondt & Van Petegem, 2015; Van den Broeck et al., 2013).

Without trying to settle the matter of the construct validity of the OEQ-II, I point out that the Vuyk et al. (2016a, 2016b) criticism of the OEQ-II makes the claim to have shown that OEs and OtE facets “can be considered as . . . equivalent construct[s] measured by different instruments” awkward. If the OEQ-II is a poor measure of OEs, it cannot be used to show that OEs are OtE facets. We must assume, as Vuyk et al. (2016a) do in practice, that the OEQ-II does a satisfactory job of measuring OEs.

We must also conclude that OEs can be studied independently of the rest of the TPD. Vuyk et al. (2016a) claim that “according to Dąbrowski’s TPD, OEs serve a purpose within a larger theory and are meaningless on their own” (p. 204). It is true that OEs serve a purpose within the TPD. It is also true that OEs can be studied independently of the TPD. Dąbrowski studied four OEs decades before he created the TPD (Dąbrowski, 1938/2019). Researchers *can* meaningfully assess OEs and have no interest in the rest of the TPD. OEs *can* be used “merely as descriptive constructs” (Vuyk et al., 2016b, p. 60). OEs are characteristics of individuals. The OEQ-II more or less measures these

characteristics. If you want to know someone’s intensity of OEs, use the OEQ-II. This is what Vuyk et al. (2016a) did, while declaring the use of the OEQ-II in this way “meaningless.”

Claims of OE and OtE equivalence are not supported by the reported findings

Vuyk et al. (2016a) misstated their results at more than one point, as in the abstract to the 2016b paper: “OEs seem to define the personality trait of openness to experience described in the five-factor model of personality (FFM) as each OE can be matched with a specific facet of openness” (p. 59). According to their interpretation of their results, Psychomotor OE has no relationship to an OtE facet. The broader claim that “gifted education should shift its way of explaining these tendencies by framing them as the personality trait of openness to experience rather than OEs” (Vuyk et al., 2016a, p. 59) is inconsistent, not only with the finding that Psychomotor OE has no relationship to an OtE facet, but also with the finding that the NEO PI-3 has two facets, Action and Values, that have no relationship to an OE.

The meaning of the fit of the model claimed to fit the data is misinterpreted

Vuyk et al. (2016a) stated that Models 1 and 2 “tested the hypothesis that openness facets and their corresponding OEs represent the same latent constructs” (Vuyk et al., 2016a, p. 194). What the models tested are two *different* OE-OtE facet pair relationships. Only Model 1 addressed the question of whether corresponding OEs and OtE facets are related to *each other*. Model 1 treated “each openness facet and each OE . . . as separate latent variables expected to show a very strong correlation” (p. 194). But, there was no relationship between “indicators of OEs and indicators of openness facets . . . modeled as two separate constructs” (p. 194). They mentioned that this result failed to conform to theory and used the Model 2 fit to support the claim of OE-OtE facet equivalence. Model 2 examines a very different relationship between OEs and OtE facets: whether corresponding OEs and OtE items load on the same latent variables. But, loading on a common latent factor does not show anything definite about the OE-OtE facets relationships.

Vuyk et al. (2016a) stated that the successful Model 2 fit supported the hypothesis that “openness facets and their corresponding OEs represent the same latent constructs” (p. 194). The fit does indeed show that they may *represent* the same latent constructs or variables, but the inferences that Vuyk et al. (2016a) draw from this are

invalid: “the joint-factor model had acceptable fit and interpretable loadings; thus, openness seems to encompass OEs” (p. 192); the pairs “appear to be equivalent to each other as they loaded onto the same factor” (p. 198). From the fact that the pairs “loaded onto the same factor,” we cannot infer anything about the relationship *between* the pairs. The Model 2 fit simply does not and cannot tell us anything specific about the OE-OtE facets relationship. Here is why.

All latent constructs have indicators that are to some degree independent of each other. We see this in the OtE scale of the FFM. Each of the six facets tells us something about OtE. Each facet *represents* OtE, but the facets do not tell us the same thing about OtE and they are not interchangeable, otherwise they could not be distinct facets. We also see this independence in intelligence tests that have subtests. The subtests collectively tell us something, indicate something, about a broad factor of intelligence, and they individually tell us something about a component of the broad factor. Arithmetic, vocabulary, general knowledge, and other subtests are distinct elements of intelligence. They each tell us something unique about intelligence, but not necessarily much about one another. Each subtest *represents* intelligence, but the subtests are not interchangeable.

Support for the hypothesis that OEs and OtE facets *represent* the same latent constructs means that OEs and OtE facets each tell us something, indicate something, about five latent constructs, but the support does not tell us anything about the OE-OtE facets relationship. It leaves entirely open the question of whether OEs and OtE facets are like arithmetic and vocabulary subtests and OtE facets or if they are like, for example, short and long forms of a scale that are more or less interchangeable ways of measuring the same construct. The Model 2 fit does not support Vuyk et al. (2016a) claims to “call it like it is.” The factor-analytic models Vuyk et al. (2016a) tested either failed to fit their data or showed nothing definite about the relationship of OE and OtE facets to each other. The five interfactor correlations do not support their conclusion either, as I show below.

The finding that OEs and OtEs represent the same latent construct is based on claiming a model fit based on multiple tries at finding a fit and the freedom to loosely follow fit criteria after collecting and examining data

To support the claim that they make about the relationship between OEs and facets of OtE, Vuyk et al. (2016a) should have developed specific criteria for determining sameness, articulated reasons for adopting the criteria, rigorously applied the criteria, and reached a conclusion

(Gelman & Loken, 2014; Simmons et al., 2011). They did not do this.

The claim that the data showed that OEs are OtE facets is dependent upon making use of researcher degrees of freedom (Simmons et al., 2011). Vuyk et al. (2016a)—it does not matter whether intentionally or not—took steps that biased results in favor of finding a fit when there may not be one, in two ways. They had four chances to find a model that fits their data—two types of factor analysis (CFA and ESEM) applied to two models—yet set criteria for fit as if they were doing a single comparison defined in advance. And in doing this, they ignored the failure of the model that did address the hypothesis that OEs and OtE facets are equivalent to fit their data. They treated their criteria of “acceptable fit” of model to data, following Fan and Sivo (2005), as “guides rather than stringent cutoff values” (p. 196), which allowed them to decide that Model 2 fit the data, even though this required dropping three variables from the NEO PI-3 that did not correlate with other variables and relaxing their fit criteria. In summary, Vuyk et al. (2016a) did four analyses, and, ignoring the absence of a fit with the model that addressed their hypothesized OE/OtE facets relationship, they found that one analysis yielded results that, with modifications of their fit criteria and dropping variables, supported their expectations. The Vuyk et al. (2016a) study is acceptable as an exploratory study, but it offers no support for their claims to “call it like it is.”

The inference that OE and OtE facet correlations demonstrate equivalence is invalid

From the interfactor correlations, Vuyk et al. (2016a) concluded that OEs and OtE facets “can be considered as an equivalent construct measured by different instruments” (p. 198). Their justification for this claim is that the correlations are “*high enough* that they can be considered as an equivalent construct measured by different instruments” [*italics added*] (p. 198). The argument in support of this conclusion is based on a reference that offers no support and assumes that correlations can show equivalence of measures.

Vuyk et al. (2016a) report these interfactor correlations: Imaginational OE and Fantasy .761; Sensual OE and Esthetics .865; Emotional OE and Feelings .826; Psychomotor OE and Actions .186; and Intellectual OE and Ideas .813. They cite Goldberg (1999) as their authority for the claim that “different personality tests measuring the exact same constructs have correlations ranging between .70 and .80” (Goldberg, 1999, p. 194). They cite Goldberg specifically in support of the claim that “intercorrelations between each openness facet and

its corresponding OE are high enough that they can be considered as equivalent constructs measured by different instruments” (Goldberg, 1999, p. 198).

Goldberg (1999) did not make the claim attributed to him or give reasons why it could be true. If he had made the claim, he would have wrongly assumed that claims of equivalence based on correlation coefficients are justified. As Branch (1990) argued:

In regard to psychological and educational testing practices, when comparing tests, the examiner or researcher must consider test means, variances, and even item content before deciding if two similar-looking tests are truly measuring the same construct. Correlation coefficients do not imply causation, but neither do they imply equivalency. (p. 296)

Correlations in the .70s and .80s are not even necessarily impressive (McGrew, 2009). McGrew showed that converting correlations to shared variance yields less impressive and more meaningful numbers than do correlations. The correlations Vuyk et al. (2016a) obtained —.761, .865, .826, .186, and .813—converted to variances (i.e., squared) are .58, .75, .68, .03, and .66. This means that the NEO-PI-3 fails to account for from 25% to 97% of the variance in the OEQ-II scores and vice versa. These variances tell us about differences across individuals, and they mean that individuals’ scores on one measure may be quite different from scores on the other (McGrew, 2009). These numbers are from a single study. The degree of variance will differ in subsequent studies as a function of the reliability of the instruments and sample variations. All that we can conclude from the Vuyk et al. (2016a) numbers is that OEs and OtE facet pairs are different constructs sharing common variance, ranging from 3% to 75% in a single study, as measured by the OEQ-II and the NEO PI-3.

The Vuyk et al. (2016a) findings failed to support a claim of OE and OtE equivalence and showed that OEs and OtE are less similar than they appeared to be from descriptions in the literature. Four OE and OtE facets pairs that looked similar did share variance as measured by the OEQII and the NEO PI-3: Imaginational OE and Fantasy; Sensual OE and Esthetics; and Emotional OE and Feelings. But Psychomotor OE and Actions are not related, and Values has no relationship to any OE.

The Vuyk et al. (2016a) reasons for gifted education to adopt the FFM are flawed

If Vuyk et al. (2016a) had shown that OEs and OtEs are identical constructs, they would have made an extraordinary discovery. They would have shown that overexcitabilities, which a Polish psychiatrist

conceived of 80 years ago on the basis of clinical observations and assessed with a 100-item measure (Dąbrowski, 1938/2019, 1967; see also: Mendaglio, 2008; Piechowski, 2006, 2008), are really the same constructs as ones developed from word usage and factor analysis in the late 20th century. Dąbrowski’s pioneering work would have been verified with sophisticated contemporary statistical analyses and research designs.

If core constructs of the TPD and of the FFM were shown to be identical, two previously unrelated theories or models and bodies of research would be joined at central constructs. A number of possible avenues for research and theory explorations would open up. We could explore folding the FFM into the TPD, folding the TPD into the FFM, seeing how each could enrich the other, combining the two into a new theory, dropping OEs in favor of OtE facets and retaining the rest of the theory of positive development, dropping OtE facets in favor of OEs, and so on. Vuyk et al. (2016a), selected one possibility and argued that gifted education should stop talking about OEs and talk about openness to experience instead and move toward the FFM and talent development model of giftedness. The previous section showed that Vuyk et al. (2016a) offered no “ground to support the shift from OEs to openness to experience” (Vuyk et al., 2016b, p. 66). In this next section, I address errors Vuyk et al. (2016a, 2016b) made that invalidate their proposal for gifted education to move to the FFM, even if they had shown OEs and OtE facets to be equivalent.

The TPD is not the field of gifted education, and the FFM is not the field of personality theory

Vuyk et al. (2016b) argue the because OEs and OtE facets are the same, the “field should align with well-researched psychological theories like the five-factor model of personality and begin to talk about openness rather than OEs” (Vuyk et al., 2016a, p. 192). But the FFM is just one model in the field of personality studies, and the TPD is just one theory used in gifted education. Any descriptions that either can provide about the characteristics of gifted students are just some of many possible descriptions. Personality psychology does not have a single paradigm (Weiss, 2018). There are upwards of 50 peer-reviewed journals that address personality and a number of actively researched personality theories, ranging from psychoanalytic to humanistic to neurobiological. There are a number of theories in gifted education. There are at least six in the Plucker and Callahan (2014) review of the field of gifted education. The TPD is not among them.

The FFM is not a theory and cannot replace the TPD, which is a theory

I have been following Vuyk et al. (2016a, 2016b) in calling the Five Factor Model a theory as opposed to a model, as it is named, but it is a model, not a theory. The difference matters to whether or not FFM could possibly be a substitute for the TPD.

A theory is a set of propositions addressing recognized phenomena (occurrences in nature) and offering an explanation of them. A model simply depicts reality. The TPD is a theory because it posits specific processes and characteristics of humans that explain developmental changes. OEs constitute part of the potential for change. Costa and McCrae (2010), two influential proponents of the FFM, call FFM a model, “an account of the structure of individual differences in personality . . . an empirical taxonomy of traits open to many different theoretical interpretations” (p. 91). They distinguish it from Five Factor Theory (FFT). Vuyk et al. (2016a, 2016b) usually call FFM a theory, but in two sentences they promote its value by claiming that it “has theoretical support” in the Cybernetic Big Five Theory (2016b, p. 60). The TPD is a theory because it both describes and explains paths of personality development. This renders problematic the Vuyk et al. (2016a) claims that switching to the FFM would provide “sounder explanation[s]” of gifted behaviors (p. 205), allowing us, for example, to “predict a developmental trajectory of openness for most individuals” (p. 205). It is an open question in personality theory whether traits can explain behaviors (Fajkowska & Kreitler, 2018). I address this next.

A fair literature review gives equal attention to the flaws and virtues of the TPD and of the FFM

Vuyk et al. (2016a, 2016b) dismiss the TPD without examining the empirical support for it, though, they cite a book with a chapter summarizing TPD research (Mendaglio, 2008). They promote the FFM without a single criticism of the model or mention of its limitations, though there are substantial criticisms of the FFM (e.g., Block, 1995; Boyle, 2008; Carlo et al., 2014; McAdams, 1992; De Raad & Mlačić, 2015; Uher, 2013). The FFM is based on factor analysis. There are criticisms of the capability of factor analysis to identify actual, intraindividual causal factors and not just to summarize relationships among variables (Borsboom, 2006; Borsboom et al., 2003). The factors in the FFM are traits. Trait theory is still grappling with questions that have been around for as long as there have been trait theories. Fajkowska and Kreitler (2018) in the introduction to a special issue of the *Journal of Personality* wrote,

“there are important issues that have not been successfully elucidated by trait theories, including satisfactory answers to six ‘burning questions’” (p. 9). Three of these questions are: Are traits stable or changeable? What is the relation between traits and behavior? What exactly can traits describe and explain? These are substantial questions that render problematic claims that the field of gifted education would benefit from a switch to the FFM.

Well-researched, leading theories are not necessarily true

A claim in both of the Vuyk et al. (2016a, 2016b) papers is that well-researched and “leading” theories are preferable to theories that are not well-researched or dominant. They referred to “well-researched psychological theories like the five-factor model of personality” (Vuyk et al., 2016a, p. 192), which is the “leading personality model in psychology” (Vuyk et al., 2016b, p. 60) and contrasted this with the TPD, whose “empirical support is insufficient” (Vuyk et al., 2016b, p. 61). There are two problems with this view: it fails to address quality of research, and it is not consistent with how science works.

A theory that has a lot of supporting research is not necessarily true. Newton’s theory was true until Einstein came along. Einstein’s theory will probably not be the last word on the nature of time and space. Psychological science has been battered by the replicability crisis, and it’s unknown what will survive (e.g., Gelman & Geurts, 2017; Schmidt & Oh, 2016; Shrout & Rodgers, 2018). It is an open question today if any theory in psychology can be said to be “well-supported,” or, better put, if current psychological research can withstand the challenges to mainstream research that have come with the replicability crisis.

A recent study (Motyl et al., 2017) found that social and personality psychology researchers generally perceive that the quality of research in the field has increased over the past 10 years. The study did not attempt to quantify just how good or bad actual research in the field was and is. The title of the article, “The State of Social and Personality Science: Rotten to the Core, Not so Bad, Getting Better, or Getting Worse?” suggests the answer may not be encouraging. Claims that a theory is “well-researched” describes the state of a body of scholarly literature: Money and personnel are flowing into an area of study and publications, most with significant *p*-values, are flowing out. They do not mean a theory is true.

The claim that well-researched theories are preferable to less well-researched theories is not consistent with

how science works. In any field at any time there are more and less well-researched theories, as various ideas about the world and how it works are proposed, explored, and dropped. Even the FFM at one point had little or no evidence in its support. If it were generally accepted that well-researched theories are preferable to less well-researched theories, researchers would adopt the well-researched theory in their field and none would see the point of creating a new theory. But, every personality theory from Hippocrates to Freud and onward in modern times has had its day, and the support of a theory has much to do with social factors unrelated to truth (e.g., what is “hot” and likely to get grant funding and what is taught in graduate schools).

Well-researched, leading theories are not necessarily useful

We certainly should not drop a theory because it is poorly researched or adopt one because it has a lot of research in its support. We choose a theory to guide practice and research, not only because of its research base, but also because it is useful and speaks to things that matter to us. The research base of a theory addresses only one of several functions of theory (Grant & Piechowski, 1999): representing and explaining some part of the world. This is the “scientific” aspect of theory that Vuyk et al. (2016a, 2016b) address. Theories also help us do things and may be vehicles for values and philosophies of life. To be useful or influential, a theory need not have empirical support. Freud’s psychoanalytic theory in psychology and string theory in physics have been highly influential in their respective fields despite lacking empirical support. We evaluate and choose a theory on the basis of more than its research support.

Subotnik et al. (2011) were vexed by the many definitions of giftedness and proposed a “comprehensive” definition of giftedness as the potential for future eminence. But the many different conceptions of giftedness we have reflect a variety of views on the responsibilities of public education and on the human characteristics and abilities and sorts of lives that are worth promoting. Most of the research they review serves their view that “eminence should be the goal of gifted education” (2011, p. 40). This view of gifted education is an ethical position that cannot be derived from psychological sciences or from surveys of values held by members of society. If one is not interested in developing eminence, the Subotnik et al. (2011) arguments and collection of findings lose much of their force. Borland (2012), for example, rejected their view of giftedness on the nonscientific grounds that the goal of education “is not to produce eminent adults but to make education appropriate for

students of high-ability” (5th para). Similarly, if you want to help students develop their potential for personal growth or for advanced development, the FFM or research that serves developing the potential for eminence is not of much use, but the TPD and Maslow are. If you want to study personality characteristics of gifted individuals, the FFM, the TPD, and many other theories and approaches are available.

When should gifted education or any field drop a theory?

Vuyk et al. (2016a, 2016b), in advocating that the *field* of gifted education adopt a particular theory, raises the general question of when the force of reason and evidence obligates a field to drop one theory and adopt a competing theory. Their study offers no basis for the field of gifted to adopt the FFM or even compelling reasons for those who use the OEQ-II independently to adopt openness to experience instead, but what should?

If there are theories so clearly true, so unlikely to be overturned by research or theoretical developments, so independent of fashion, funding priorities, values, and other social factors that it would be irrational not to adopt them, certainly, gifted education should embrace them. How do we identify these truths? What are compelling reasons for a field or an individual to drop a theory that has demonstrated practical merit, embodies treasured values, and is the fruit of thousands of hours of thinking and study? What reason and evidence should compel a field of scientists with integrity and love of truth to acknowledge that a theory is a dead end that future research and thinking cannot rescue? Just laying out the question in these forms shows that the reasons must be strong.

The theory must be nearly unassailable, as shown by multiple studies in its support and the absence of successful criticism. Competing views must be clearly flawed, as shown by multiple studies and successful criticism. In practice, these broad, abstract claims mean simply that a claim to drop a theory in favor of another should withstand challenges to the logic and evidence used to support the claim. And, even then, a field or individuals may still have reason to hang on to a theory because of these caveats: It’s difficult to account for the role of social forces in deciding what is true, and no one can predict the future.

Most of us see physics as the paradigmatic science. Physicists coldly, neutrally probe the nature of matter and reveal hard truths about reality. But, even here, group-think, careerism, and funding priorities play a role in identifying targets of research and determining what passes

for promising lines of research and truth (cf., Hossenfelder, 2018a). If we could quantify groupthink in the hard sciences, imagine how the social sciences, which study people and are generally concerned with “improving” the quality of human lives, would rank? I ask this as an alert to the possibility that what we think is real and obviously true may be partly a projection of our values. Duarte et al. (2015), for example, argue that “an academic field can become a cohesive moral community, creating a shared reality . . . that subsequently blinds its members to morally or ideologically undesirable hypotheses and unanswered but important scientific questions” (p. 4) and that this has happened to the field of social/personality psychology.

Theories that appear to have been dealt fatal blows may be right after all (e.g., Noah et al., 2018). Theories that have fallen out of favor may make a comeback (e.g., Davenport, 2002; Hossenfelder, 2018b). Theories that were rejected when first proposed turned out to be revolutionary advances (e.g., Harvey, Semmelweis, Einstein). Theories that are wrong as complete accounts of the phenomena they address may still have value (e.g., Behaviorism has a life underpinning Applied Behavior Analysis). Theories may seem true for decades before better explanations are devised (e.g., phlogiston as an explanation for combustion). Science does not move in a straight line.

With these broad considerations in mind, there is no reason for the *field* of gifted education to adopt the FFM, the TPD, or any other single theory or model. Proponents of any theory used in the field of gifted education can continue their research and thinking with a conscience clear of fear that there is a true theory in their vicinity that they ought to adopt. Researchers should ask interesting questions, do good research, and create theories that foster practices they value. And, as the next section is titled, they should justify their ethical claims.

Writers in the field of gifted education should justify their ethical claims

If Vuyk et al. (2016a, 2016b) had interpreted their findings tentatively, presenting and discussing various explanations that later studies might explore, there would be no need for this paper. They would have titled their “Call It Like It Is” paper modestly and their study would have been a contribution to a body of research that might later support the bold claim of the paper. But the most significant error in the Vuyk et al. papers (2016a, 2016b) and in the field of gifted education in general doesn’t have to do with research claims. It has to do with a mistaken view on the relationship between theory and research on one hand and practice on the other.

Vuyk et al. (2016b) wrote that “practices in gifted education are often being based on philosophy or untested theories rather than being evidence-based” (p. 59). But *all* practices in *every* field are based on philosophy, that is on ethics. Research can only tell us what the world is like, how it works, and how to alter it, *from a point of view*. It cannot tell us what we *should* do. It cannot tell us that gifted education should promote eminence or personal growth or provide appropriate special education to certain groups of students. These existential, ethical, and political questions cannot be answered by science. Yet, they are the most important questions in the field of gifted and in all applied fields.

As my discussion of the Subotnik et al. (2011) definition of giftedness and of the role of social forces in science showed, I must qualify my claim about what research and theory can tell us: Research and theories cannot tell us what we should do, *except* as values are presupposed by a theory or line of research. Social science theories are not value-neutral depictions of the world. If this notion is not commonplace, it should be (cf. Longino, 1990). Social science theories contain moral values, images, sometimes clear, sometimes implicit, of what sort of lives are most worth living. Anderson (2006) argues that “all inquiry is directed toward answering a question. Where the question is value-laden—for example, when it asks about the impact of some practice on human well-being—successful inquiry will need to engage assumptions concerning well-being” (p. 1). We see this clearly in the work of Subotnik et al. (2011), which Vuyk et al. (2016a, 2016b) reference approvingly. Their paper on rethinking giftedness by drawing on psychological science argues for more equitable, more effective means of generating “eminence” for the benefit of society. Even if every study they cited withstood multiple attempts at disconfirmation, their paper would still be arguing an ethical claim and their driving assumption could not be touched by any amount of psychological science. If you do not value promoting eminence or talent development, Subotnik et al. (2011), and Vuyk et al. (2016a, 2016b) will not be of use to you.

Research and theories are flawed. We may never know if OtE facets are really OEs. But, all researchers, theorists, and practitioners *act*. As moral agents we ought to be able to justify our actions. If you care about promoting talents or eminence or personal growth or some other goal of gifted education, then you should attempt to ethically justify the actions you advocate.

Most of the questions that matter in gifted education are ethical and political. Most of what the field of gifted education does is select students in order to expose them

to interventions intended to change their thinking, skills, attitudes, and behaviors in an institution they are compelled by law to attend. The general lack of awareness in the field that gifted education is a collection of moral programs and the absence of arguments in the field showing why selection criteria and interventions in a context of compulsory attendance are morally good or acceptable ought to be a source of concern for gifted education (Grant, 2009). I am not claiming that gifted education is unethical. I am making an observation that can be verified by reading the literature in gifted education: Few practitioners make ethical arguments for the practices they advocate. The same is true of the field of education in general, counseling and psychotherapy, and other applied academic fields.

Summary and conclusion

This paper demonstrated that Vuyk and her coauthors failed to support their claim that OEs and OtE facets are equivalent and so provide no empirical support for their proposal that the field of gifted education drop OEs in favor of openness to experience and align itself with the Five Factor Model and a talent development perspective on gifted education. I took the occasion of this absence of support to explore two broad questions: When does reason and evidence compel a field to recognize that a theory is so deeply flawed that a competing theory should be embraced? What is the place of theory and research in guiding practice?

Our current state of knowledge is that OEs are similar to, but not equivalent to, OtE facets. The Vuyk et al. (2016a, 2016b) claim to have shown that they are equivalent can be rejected on multiple grounds.

- A single study cannot be used to make definitive claims. This is particularly so when earlier, precursor studies (in this case studies looking at the relationship between OEs and all five factors in the FFM) show sample variation.
- Given the Vuyk et al. (2016a) rejection of the validity of the OEQ-II and the use of the OEQ-II independently of the TPD, their study lacks a rational basis. It is not rational to argue that an instrument has poor validity and is based on poor science and cannot be used independently of a particular theory and then use that instrument independently of the theory to show that what it is supposed to measure, but lacks evidence that it does actually measure, is equivalent to another construct.
- Vuyk et al. (2016a, 2016b) misstated their findings. Taken at face value, their findings did not show that “all five OEs can be entirely represented by a facet

of openness” (2016a, p. 203) but instead, that one of the OEs, Psychomotor OE, has no relationship to an OtE facet and that two of the OtE facets, Action and Values, have no relationship to an OE.

- Vuyk et al. (2016a) used researcher degrees of freedom to declare a fit between one of their models of the OtE facets-OE relationship, ignored the failure of the model that actually tested their hypothesis to fit their data, and misinterpreted the meaning of the one that did fit.
- Vuyk et al. (2016a) based their claim that OtE and OE correlations show that the constructs are equivalent on a single, misapplied reference (Goldberg, 1999), and the mistaken view that correlations alone can be used to show equivalence of measures.

Even if Vuyk et al. (2016a) had shown that OEs are OtE facets, it does not follow that the field of gifted education should embrace OtE and the FFM. The TPD is but one theory in gifted education. The FFM is but one model of personality and, as a model, describes, but cannot explain. The TPD can. Vuyk et al. (2016a) promote the FFM uncritically, mentioning no literature critical of it or of trait theories (such as the FFM) in general. They implicitly equate the fact that there is much research on the FFM with the FFM being true. They show no awareness that a theory can be flawed and lack empirical support and still be useful.

I spent the bulk of the paper showing errors in the Vuyk et al. (2016a, 2016b) claims in the interest of forestalling false conclusions entering the gifted education literature. The larger questions are perhaps more important. It is not easy to show that a theory is a dead end or that one set of constructs should be replaced by another set. The obstacle to showing this is the necessity of extensive, high-quality research, the absence of certainty about what the future might bring, and the difficulty in setting aside the influence of social forces on judgments of truth.

The lack of awareness in the Vuyk et al. (2016a, 2016b) papers that gifted education practices are in the realm of ethics, not just of science, is common in gifted education and probably in most other applied fields. Researchers usually think that evidence alone can guide practice. Practitioners are guided by “best practices” and cultural norms. Both groups rarely step back and show how the practices they advocate, the interventions into the lives of children they conduct and promote, can be ethically justified. Whether or not the construct Openness to Experience is a contemporary equivalent to the decades old construct of Overexcitabilities is a less important

question than how any gifted education intervention, based on any theory or model or construct, can be ethically justified.

Disclosure statement

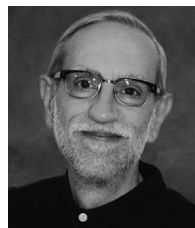
No potential conflict of interest was reported by the author.

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