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AUTHORS' RESPONSE

# Core Questions and Next Steps in Research on Aggression in Borderline Personality disorder: Rejoinder for "Aggression in Borderline Personality Disorder—A Multidimensional Model"

Falk Mancke, Sabine C. Herpertz, and Katja Bertsch
University of Heidelberg

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We were delighted to read the inspiring and thought-provoking commentaries on our conceptual article written by Drs. Coccaro, Flory, and Scott and Pilkonis. With our response, we aim to address two of their core questions and suggest next steps for research on aggression in borderline personality disorder (BPD).

## What Is Aggression?

We fully agree with Coccaro (2015, p. 292) who argues that aggression is "a deceptively 'simple' behavior that becomes more complex the more it is studied." Studying aggression is indeed highly demanding and challenging, and researchers need to precisely define "aggression" in any study. However, we would like to question Coccaro's assumption that "aggression, in fact, is any behavior in which verbal or physical force is used to injure, coerce, or to express anger." Without the notion of *intent to harm,* it would be necessary to classify any anger-associated behavior—regardless of whether the individual clearly means to injure another person or is just acting on or expressing her/his anger without affecting anybody—as aggression. Even actions of parents when disciplining a child would be designated as aggressive. Thus, despite the difficulties inherent in measuring intent in research designs, we think that the idea of intent to harm is required in a definition of aggression (see Baron & Richardson, 1994, for a more thorough discussion of the problems associated with the definition of aggression).

## Did We Choose the Right Dimensions?

With regard to the validity of the identified dimensions, Scott and Pilkonis (2015) raised doubts about the consistencies of findings on affect regulation in BPD. In this respect, we would like to highlight that abnormal prefrontal-limbic reactivity to emotional stimuli in BPD, which may be regarded as a neural correlate of affective dysregulation, is considered to be the most robust functional brain imaging finding in recent reviews (Schmahl et al., 2014; van Zutphen, Siep, Jacob, Goebel, & Arntz, 2015).

As pointed out by Coccaro (2015), as well as Scott and Pilkonis (2015), studies measuring empathic functions in BPD patients have also yielded mixed results. Here, we think it is particularly helpful to distinguish between the different facets of empathy, that is, parsing the construct into cognitive and affective empathy. Despite some inconsistencies (Dziobek et al., 2011), affective empathy seems to be intact in BPD patients (Franzen et al., 2011; Harari, Shamay-Tsoory, Ravid, & Levkovitz, 2010; New et al., 2012). In contrast, cognitive empathy was reproducibly impaired in BPD patients when compared to healthy participants (Dziobek et al., 2011; Harari et al., 2010; New et al., 2012; Preiβler, Dziobek, Ritter, Heekeren, & Roepke, 2010; Ritter et al., 2011). Aggressiveness in BPD patients therefore may be particularly related to deficits in cognitive but not affective empathy (see our conceptual article for more details concerning this point and the additional relevance of impaired self-other differentiation for aggression in BPD).

## What Are Possible Next Steps for Research on Aggression in BPD?

As illustrated by Flory (2015), as well as Scott and Pilkonis (2015), we constructed our model following a variable-centered approach, that is, the dimensions derived from cross-sectional studies comparing those affected by BPD to a control group. However, as emphasized in the article and in close agreement with all scholars of the commentaries, we believe that the relevance of every single dimension probably varies extensively across BPD patients. Thus, whereas our model might serve as a starting point, in the future, it may be crucial to identify subgroups lower in common symptoms than in common disturbances of biobehavioral dimensions. This approach—and here we share the view of Scott and Pilkonis (2015)—needs to encompass prospective studies and a developmental perspective in order to understand the etiological processes underlying the biobehavioral dimensions.

Moreover, future studies should aim at investigating the validity of the proposed biobehavioral mechanisms, that is, their power to predict aggression in BPD or in subtypes of BPD, respectively. The validated dimensions should then be tested for their significance as treatment targets. That is, consistent with

Falk Mancke, Sabine C. Herpertz, and Katja Bertsch, Department of General Psychiatry, University of Heidelberg.

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Correspondence concerning this article should be addressed to Falk Mancke, Department of General Psychiatry, University of Heidelberg, Voβstraβe 2, 69115 Heidelberg, Germany. E-mail: falk.mancke@med.uni-heidelberg.de

the Research Domain Criteria approach of the NIMH (Cuthbert & Insel, 2013), upcoming treatment development should be based upon these identified and validated dimensions of neurobiology and observable behavior. Ultimately, this may lead to the establishment of an empirically founded, individualized, and cost-effective mechanism-based psychotherapy of aggression in BPD.

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