RESPONSE

Given increasing evidence of the long-term health risks associated with disturbed stress responses, there is a clear need for studies elucidating the mediators and predictors of the neuroendocrine response to psychological stress. Interindividual differences in hypothalamic-pituitary-adrenal axis response to psychological stressors have been attributed to a number of personality traits, including hostility, agreeableness, extroversion and neuroticism, optimism, self-efficacy, neuroticism, and anger expression style and defensiveness (1). Comparatively little has been reported about perfectionism and/or the defining dysfunctional cognitive patterns and emotional consequences which motivate the various behavioral components of perfectionism (e.g., prolonged overtime work, workaholic behavior), which contribute to the long-term health risks associated with perfectionism, including chronic fatigue, exhaustion, and burn-out (2).

Given this background, in their letter, McGirr and Turecki describe an interesting preliminary study in which they report a positive association between self-criticism as measured by the French Version of the Depressive Experiences Questionnaire (DEQ) (3) and salivary α -amylase reactivity in response to psychosocial stress (TSST). In contrast to our previous work (1), there was no evidence of a relationship with cortisol. However, TSST did not elicit a significant overall cortisol response, which complicates the interpretation of this negative finding. The authors used the self-criticism dimension of the DEQ to assess self-critical perfectionism, whereas our study used the dimension "concern over mistakes and doubts" (CMD) of the German Version of the Frost Multidimensional Perfectionism Scale (MPS-d) (4). We generally agree with the authors that, to some extent, divergent results may be attributable to the fact that these two questionnaire scales measure different aspects of perfectionism. Perfectionism is indeed a multidimen-

sional personality trait, which is not clearly defined and hence unfortunately not measured in a standardized way. However, validated measures that explicitly assess perfectionism comprise the Multidimensional Perfectionism Scales by Frost (MPS-F) and Hewitt (MPS-H), the Perfectionism Inventory (PI) by Hill and others (2). To the best of our knowledge, neither the DEQ as a measure of depressive experiences nor its subscales explicitly measure perfectionism, although depression has admittedly been associated with perfectionism (2). Hence, it remains unclear whether or not the questionnaires applied indeed measure separate constructs of perfectionism and how well this can be separated from subclinical depressive symptoms.

Nevertheless, the study by McGirr and Turecki extends our previous findings as they assess stress reactivity of α -amylase and report for the first time positive associations with self-criticism. Moreover, they find these associations in a study sample that consists mainly of women (10 women versus 6 men), whereas we included only men in our study. This points to a potential role for α -amylase in the context of self-critical perfectionism and suggests that perfectionism may be associated with elevated physiological stress reactivity not only in men but also in women. Notably, α -amylase is suggested to be an indirect marker of sympathetic nervous system activity that is reportedly uncorrelated with catecholamine release (5,6) although this is not unequivocal (7). Therefore, the reported higher α -amylase stress reactivity with self-criticism is not necessarily a contradiction to our nonsignificant catecholamine findings (1). Moreover, the fact that mainly women were included in the study may explain that the authors could not confirm our reported associations between cortisol stress reactivity and perfectionism as assessed by the CMD scale: Notably, stress reactivity of salivary cortisol is strongly influenced by the menstrual cycle and by oral contraceptive (OC) intake (8). As the authors do not indicate that these confounders as well

as other well-known confounders such as smoking have been taken into account, it cannot be ruled out that the lack of a cortisol increase resulted from confounding influences. Particularly as the sample size is very small, the dampening influence of confounders, such as the menstrual cycle or OC intake, may have a particularly strong impact on existing effects. Such a reasoning is in line with the observed significant increases in α -amylase and its relationship to self-criticism as the influence of these confounders on α -amylase stress reactivity seems to be—if at all—of minor impact (9).

Taken together, this is an interesting starting point for future research on the possible relationship(s) between perfectionism and other relevant personality traits, disturbed stress responsiveness, and long-term health risks.

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