**Supplement 2. Latent Growth Models Using the Correlated PD Factors**

Validity studies have been criticized for not comparing predictions of the bifactor model to other models (Watts, Poore, & Waldman, 2019). We therefore ran a supplementary analysis of the part and full conditional growth models using PD factors from the correlated factors model. The correlated factors model conflates the general and specific variance in PD measures and hence should mirror existing studies of PDs predicting depression outcomes. That is, correlated PD factors should mimic the predictive effect of general PD, predicting higher baseline depression scores but not differential rates of change. Controlling for general PD, or in this case its sequalae (e.g., baseline depression severity), will minimise the predictive effect of correlated PD factors on initial depression severity and changes over time.

We report unstandardized regression coefficients for PD factors predicting the intercept factor (*b*0), linear slope factor (*b*1), and quadratic slope factor (*b*2). In the part conditional growth model with correlated PD factors (including antisocial, avoidant, borderline, narcissistic, obsessive-compulsive, and schizotypal PD factors) and clinical covariates, the schizotypal PD factor at admission predicted higher intercept scores (i.e. week 2 PHQ-9 scores; *b*0 = .80, *z* = 2.03, *p* = .043, 95% CI [0.03, 1.57]) and steeper linear declines in PHQ-9 scores (*b*1 = -0.94, *z* = -2.14, *p* = .033, 95% CI [-1.80, -0.08]). Higher borderline factor scores predicted stronger inverted U-shapedchanges in PHQ-9 scores (*b*2 = -0.40, *z* = -2.48, *p* = .013, 95% CI [-0.71, -0.08]), while higher antisocial factor scores predicted marginally stronger U-shapedchanges (*b*2 = 0.25, *z* = 1.90, *p* = .058, 95% CI [-0.01, 0.51]). Regression coefficients for the clinical covariates matched those in the full conditional growth model (see below).

In the full conditional model with correlated PD factors, clinical covariates, and demographic covariates, higher schizotypal PD factor scores continued to predict higher intercept values (*b*0 = .80, *z* = 2.03, *p* = .043, 95% CI [0.03, 1.58]) and steeper linear declines (*b*1 = -0.98, *z* = -2.23, *p* = .026, 95% CI [-1.83, -0.12]). Moreover, higher borderline scores continued to predict stronger inverted U-shapedquadraticgrowth(*b*2 = -0.36, *z* = -2.25, *p* = .024, 95% CI [-0.68, -0.05]), while higher antisocial scores significantly predicted stronger U-shapedgrowth (*b*2 = 0.26, *z* = 1.99, *p* = .046, 95% CI [0, 0.52]). Table S4 shows the regression coefficients for the remaining PD factors, clinical covariates, and demographic covariates.

 For reference, we ran a growth model with correlated PD factors but without clinical and demographic covariates as the latter might be controlling for variance associated with general PD. All PD factors predicted the intercept factor. Specifically, higher intercept values were predicted by higher avoidant (*b*0= 0.92, *z* = 2.34, *p* = .019, 95% CI [0.15, 1.70]), borderline (*b*0= 1.85, *z* = 3.44, *p* < .001, 95% CI [0.79, 2.90]) obsessive-compulsive (*b*0= 0.65, *z* = 1.57, *p* = .116, 95% CI [-0.16, 1.46]) and schizotypal scores (*b*0= 0.85, *z* = 1.44, *p* = .150, 95% CI [-0.05, 0.35]), though the latter two predictions are marginal at best. By contrast, lower intercept values were predicted by higher antisocial (*b*0= -1.25, *z* = 2.29, *p* = .022, 95% CI [-2.33, -0.18]) and narcissistic (*b*0= -1.10, *z* = 2.16, *p* = .031, 95% CI [-2.09, -0.10]) scores. No PD factor predicted variation in the linear slope factor, but the borderline factor predicted stronger inverted U-shaped changes in PHQ-9 scores (*b*2= -0.37, *z* = 2.34, *p* = .019, 95% CI [-0.67, -0.06]) and the antisocial factor marginally predicted stronger U-shaped changes (*b*2= 0.21, *z* = 1.63, *p* = .103, 95% CI [-0.05, 0.46]).

Comparing these growth models demonstrates how general severity can obscure the predictive effects of specific PDs on depression outcomes. For instance, in the final growth model reported with correlated PD factors alone, most factors predicted higher initial depression scores and no factors predicted linear changes in depression severity, mirroring the general PD factor in the bifactor growth model. It would thus appear that the predictive effects of the correlated PD factors were influenced by the general variance. The only factors that predicted lower initial depression scores were the antisocial and narcissistic factors, which also showed the greatest reliability beyond the general variance in the bifactor model (see Table S2).

By contrast, most of the predictive effects of the correlated PD factors on initial depression scores disappeared in the part and full conditional growth models that controlled for depression severity at admission. In other words, the confounding effect of general PD appeared to be negated after controlling for an index of general severity (e.g., baseline severity), giving the impression that PDs do not predict variation in depression outcomes. An exception to this was the schizotypal factor, which predicted higher initial depression scores and steeper linear declines, but this might reflect a baseline severity effect or regression to the mean.

**References**

Watts, A. L., Poore, H. E., & Waldman, I. D. (2019). Riskier Tests of the Validity of the Bifactor Model of Psychopathology. *Clinical Psychological Science*, 216770261985503. doi:10.1177/2167702619855035