Background Telomere length (TL) is a marker of biological aging and numerous studies have shown associations between shorter TL and somatic as well as psychiatric disorders with robust effect sizes across all psychiatric disorders (Darrow et al., 2016). While it is still unclear whether telomere shortening is just a marker or a cause for such disorders, a recent study showed that never-depressed children of depressed mothers display shorter TL. Studies furthermore indicate an association between maternal stress during pregnancy and shorter TL in newborns as well as adult offspring.

The aim of the present study was to investigate associations between maternal stress during pregnancy as well as maternal life-time diagnosis of psychiatric disorder (LTPD) and TL in newborns. Furthermore, possible associations with paternal factors such as age and LTPD were analyzed.

Methods Data of 410 pregnant women were assessed via face to face interviews and questionnaires during 3rd trimester. Cord blood for newborns´ telomere analysis was collected at birth. Biomaterial from 319 children and 318 mothers was available. For fathers, the information regarding their TL was not available. Relative TL was measured using a quantitative PCR assay comparing a TL PCR product (T) against a PCR product of a reference gene (S). Thus TL is defined as the telomere to single copy gene ratio.

Results Mothers´ LTPD was correlated with TL in mothers (r=-.12, p=.03), but not with TL in newborns. Mothers´ perceived stress during pregnancy showed no correlation with TL in mothers and a correlation with TL in newborns (r=-.12, p=.04). Fathers´ age was not correlated with TL (r=.07, p=.22). Fathers´ LTPD was correlated with shorter TL in newborns (r=-.12, p=.04). The association was strongest in girls (r=-.20, p=.01), non-significant in boys (ß=.04, p=.67) and strongest for younger fathers (as defined by a median split; r=-.32, p=.002).

Discussion The relation between mothers´ stress during pregnancy and shorter TL in newborns is in line with prior studies which comprised much smaller sample sizes. It may be explained by the increased vulnerability of unborn children to stress. As expected, LTPD did affect mothers´ TL but not the newborns´. Since fathers´ age has been reported to correlate with offspring´s TL, we hypothesized that age as well as other factors such as the fathers´ psychiatric condition may have an effect on offspring´s TL. While no correlation for fathers´ age was observed, fathers´ LTPD was associated with shorter offspring´s TL, namely girls and namely in younger fathers. Although this could be chance findings, sex-specific associations have been described before. The stronger association for younger fathers could indicate that fathers who were able to reproduce at a comparatively old age might be ‘fitter’. To our knowledge, this is the first time that an association between the father´s psychiatric condition and the offspring´s TL could be shown.

Despite the relatively large sample size, our results still could be chance findings and further research is necessary to validate them.

Disclosure: Nothing to Disclose.