**Testing the Temporal Precedence of Family Functioning and**

**Child Psychopathology in the LONGSCAN Sample**

**Online Supplement**

**Testing The Longitudinal Models of Internalizing Net of Externalizing Problems and Externalizing Net of Internalizing Problems**

As a robustness check, we also tested models which included internalizing problems as a time-varying covariate of externalizing problems (i.e., internalizing net of externalizing problems) and externalizing problems as a time-varying covariate of internalizing problems (i.e., externalizing net of internalizing problems. This allowed us to determine whether the associations between family functioning and psychopathology were due to common variance or specific variance of internalizing or externalizing problems.

We found that for internalizing net of externalizing problems and externalizing net of internalizing problems, psychopathology to family functioning cross-paths were not significant. This means that the unique variance of internalizing problems and externalizing problems does not explain the relation we found of child psychopathology predicting subsequent family functioning. However, we did find that for externalizing net of internalizing problems, family functioning to psychopathology cross-paths were significant from ages 6 to 8 for cohesion (b = -.052, *p* < .05) and from ages 8 to 12 for emotional expressiveness (b = -0.062, *p* < .05). This means that family cohesion at age 6 predicted subsequent externalizing problems at age 8 and family emotional expressiveness at age 8 predicted subsequent externalizing problems at age 12.

Lastly, we found that for internalizing net of externalizing problems and externalizing net of internalizing problems the full stationarity model for each family functioning variable did not fit significantly worse compared to the baseline model (ΔCFI < .01). This means that the associations between the different measures of family functioning at age 6 and psychopathology at age 8 were equal to the associations between family functioning at age 14 and psychopathology at age 16. The parameter estimates for the stationarity models can be found in the supplementary file.

**Moderated Longitudinal Models**

For cohesion and emotional expressiveness, we could not fix the auto-regressive and cross-paths to be equal across race/ethnicity groups without substantially worsening model fit. This result implies that at least some of the parameters differ across groups. Full parameter estimates freely estimated across groups are reported in the supplementary file. A clear pattern was not initially found in terms of parameter estimates being stronger or weaker in certain groups. In response, we performed sensitivity analyses by freeing some parameters. First, we estimated models in which only the cross-paths or only the auto-regressive paths were fixed to be equal across groups. As these models have identical degrees of freedom, they are not nested. For cohesion, the model in which cross-paths were fixed to be equal (CFI = .993) fit much better than a model in which the auto-regressive paths were fixed to be equal (CFI = .985) and not substantially worse than the model in which all pathways were freely estimated (CFI = .997). Therefore, the stability paths seem to drive the moderation effect. Generally, stability coefficients were larger for participants who identified as White and Mixed-race, relative to participants who identified as Black and Hispanic. For emotional expressiveness, models with fixed cross-pathways (CFI = .976) or fixed auto-regressive pathways (CFI = .974) fit similarly and substantially worse than a model in which all parameters were freely estimated (CFI = .985). This result implies moderation across both sets of parameters.

Second, we estimated models in which all parameters were fixed across groups, except for one group. Thus, the model that fits the data best indicates the group that has parameters most different from the other groups. Importantly, sample size plays some role in fit statistics, so we should expect larger groups to have a larger impact on fit statistics, all else equal. For both cohesion and emotional expressiveness, the model with freely estimated parameters for the group of participants who identified as Black had the best model fit (CFIs = 1.00 and .979, respectively). As the group of participants who identified as Black was the largest, this result may be expected. Across variables, Black participants tended to have lower auto-regressive pathways and generally more negative cross-pathways, particularly for cross-pathways from child psychopathology to family functioning.

Finally, the cross-path estimates for the Hispanic participants group tended to display the most divergent results from the other groups, but these parameters were imprecisely estimated. The average cross-pathway standard error for the Hispanic participants was .307 whereas the average standard error for the White and Black participants was .100 and .073, respectively. Therefore, the results should be interpreted with caution. However, we found positive associations between early family cohesion and subsequent child psychopathology, particularly in the adolescent years. Similar results were found for emotional expressiveness positively predicting subsequent child psychopathology. These results run counter to our expectation that cohesion and emotional expressiveness would be negatively associated with child psychopathology.

In terms of the other psychopathology variables, we found evidence of moderation by race/ethnicity for cohesion and internalizing problems, emotional expressiveness and internalizing problems, emotional expressiveness and internalizing net of externalizing problems, and emotional expressiveness and externalizing problems. The moderation effects for cohesion and internalizing problems, emotional expressiveness and internalizing problems, and emotional expressiveness and internalizing net of externalizing problems were driven by the stability paths. For emotional expressiveness and externalizing problems, the moderation occurred across all pathways.

Similar to the results for total behavior problems, Black participants seemed to be the most differing group, driving the moderation effects for all psychopathology variables. Hispanic participants also displayed the most divergent results in terms of effect size for all psychopathology variables. As previously stated, these parameters were imprecisely estimated, and results should be interpreted with caution. We did however find positive associations between family cohesion and subsequent child psychopathology. Similar results were found for family emotional expressiveness and child psychopathology, whereas we found negative associations between family conflict and subsequent child psychopathology. These results differed from our expectations that cohesion and emotional expressiveness would be negatively associated with child psychopathology and conflict would be positively associated with child psychopathology.