Appendix A.

Immune Response

Lasting immune response is measured by the amount of IgG antibody to the specific pathogen circulating in the blood. IgG is a serum biological marker indicating that an individual received sufficient exposure to the pathogen to activate the adaptive immune response at some point over the life course. Recent infection is measured by IgM, however this antibody isotype is short-lived and difficult to capture in a population-based study. Moreover, recent infections with CMV, HSV-1, *H. pylori* and *T. gondii* in older age are generally rare in the U.S. as a majority of individuals are exposed at a young age (childhood-adolescence) and even earlier in Mexican Americans. Persistent infections establish residence in the body after initial infection and periodically reactivate inducing an increase in IgG antibody response. For these reasons, elevated measures of IgG levels among older age individuals are likely due to reactivation of a pathogen from exposure to stressor or age-related changes in immune competence.

Appendix B.

LPA Measurement Model

Supplementary Table 1 shows the results of the LPA measurement model for cumulative immune response from the four infection indicators for a one, two, three, four and five class solution. The best class number solution was determined based on comparison of standard fit measures, including the Baysian Information Criterion (BIC), sample size adjusted BIC, the Lo, Mendell and Ruben log-likelihood ratio test, and the bootstrapped log-likelihood ratio test (BLRT), as well as judgment on the nature of the groups (mean antibody level) and their interpretability in relation to theory and previous research (Marsh et al., 2009). Fit statistics were used to first compare all possible solutions. The three and four class solutions emerged as suitable for the data as the Lo, Medell, Rubin LRT was not statistically significant for the five-class solution. Then, the mean IgG level values for each group were reviewed for the three class and four class solution. Upon considering the nature of the groups and their interpretability, as well as prior research, a three class solution was deemed most appropriate even though the Lo, Mendell, Rubin LRT and the BLRT suggested that the four class solution was a numerical improvement over the three class solution. Class membership for this solution is as follows: the low cumulative immune response group (N=55, 4%) was seronegative to CMV and *T. gondii* and had mean IgG antibody levels to HSV-1 and *H. pylori* in the lowest tertile, the middle cumulative immune response group (N=777, 61%) was seronegative to *T. gondii* and had mean CMV, HSV-1 and *H. pylori* IgG antibody levels in the middle tertile, and the high cumulative immune response group (N=431, 34%) had mean IgG antibody levels in the middle tertile to all infections. The mean IgG antibody level for each infection within each class group is reported in Supplementary Table 2. The three class solution had high entropy (0.88), indicating good class

separation. Predicted class membership was extracted and then used as a nominal dependent variable in the SEM analysis with high cumulative immune response as the referent category.

Supplemental Table1. Measurement model for early life SEP, model fit: RMSEA=0.05, CFI=0.94

Indicator Loadings	Unstandardized Estimate		SE	Standardized Estimate		SE
Father's Education	1.00 (fixed)			0.73	***	0.054
Mother's Education	0.763	***	0.113	0.652	***	0.049
Father's Occupation	0.036	***	0.028	0.437	***	0.054
Mother's Occupation	0.153	***	0.029	0.380	***	0.071
Food Availability	0.036	*	0.015	0.117	*	0.049

*Significant at p<0.05, **Significant at p<0.01, ***Significant at p<0.001

Supplemental Table 2. Measurement models for cumulative immune response from LPA with log continuous IgG level indicators for four infections (n=1263)

Model Fit Measure	1 Class	2 Class	3 Class	4 Class	5 Class
AIC	10112	9747	9653	9507	9435
BIC	10153	9814	9745	9626	9579
Sample Size Adjusted BIC	10128	9773	9688	9552	9489
Entropy	n/a	0.875	0.879	0.836	0.856
Lo, Mendell, Rubin LRT	n/a	365 (p<0.001)	102 (0.02)	151 (p<0.001)	80 (0.06)
Bootstrapped Likelihood Ratio Test	n/a	p<0.001	p<0.001	p<0.001	p<0.001

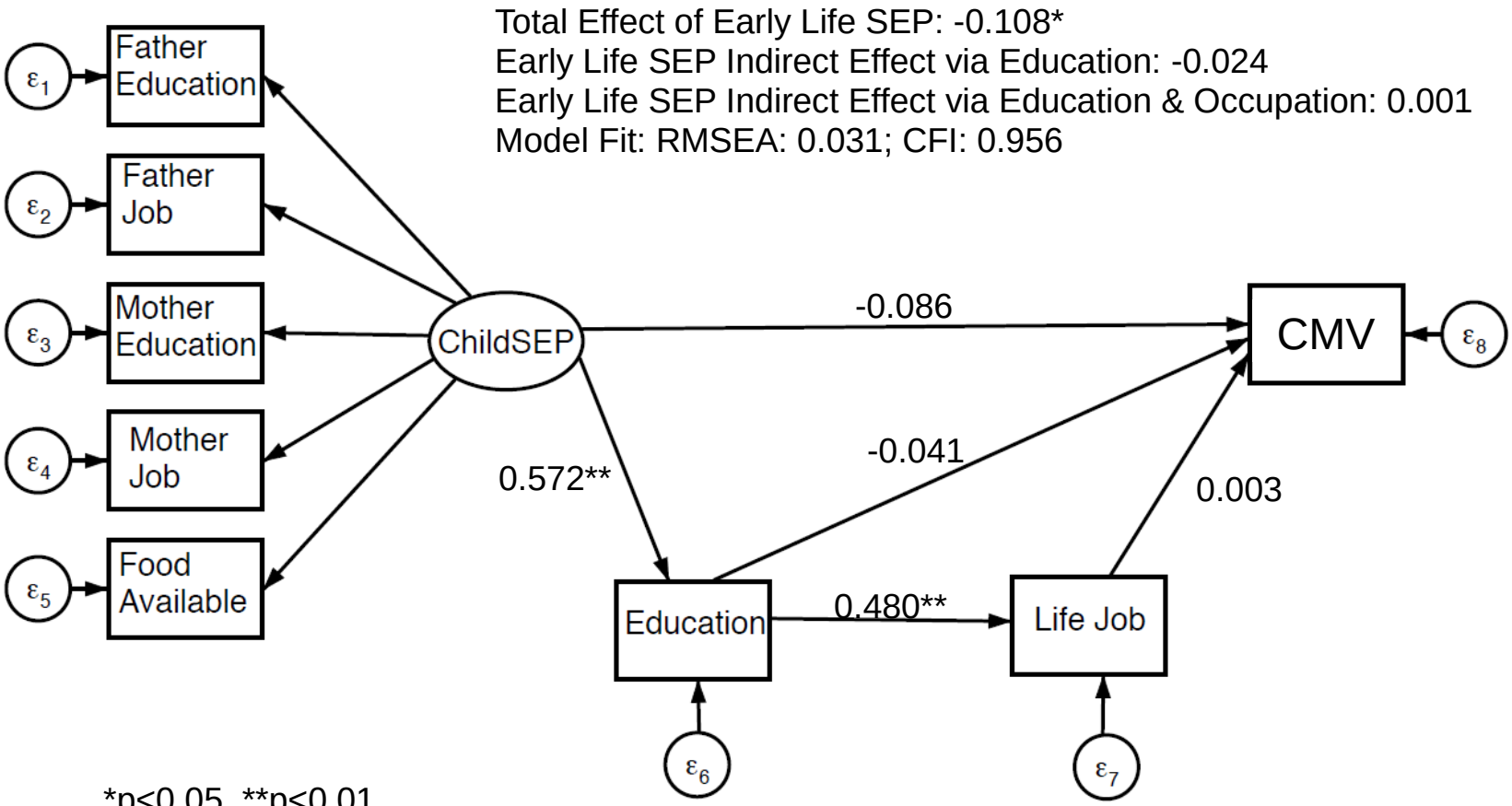
Supplemental Table 3. Mean IgG levels for the cumulative immune response three class measurement model solution (n=1263)

Cumulative Immune Response	Mean IgG Level (ODU) CMV	HSV-1	*H. pylori*	*T. gondii*
Low Group	0.05	1.67	2.57	0.40
Medium Group	2.02	2.10	3.15	0.47
High Group	1.85	2.16	3.24	2.37

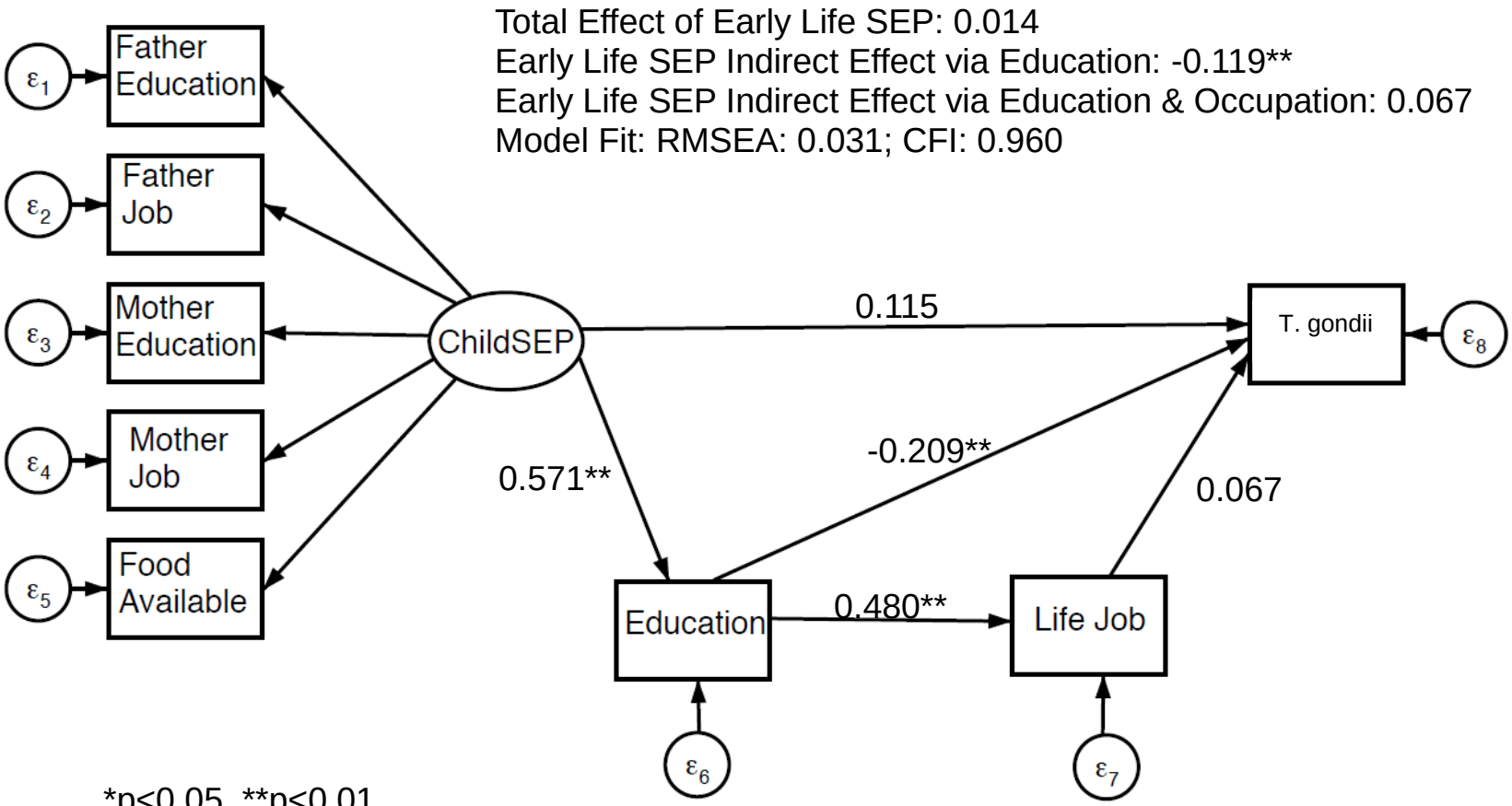
Supplemental Table 4. Standardized direct and indirect effects of SEP on later life immune response to *T. gondii* controlling for age, sex and nativity, N=1562

	T. gondii	p-value
Early Life SEP		
Total Effect	0.031	0.599
Direct Effect	0.084	0.319
Total Indirect Effect	-0.053	0.14
Decomposition of Indirect Effects		
via Education	-0.07	0.071
via Education and Occupation	0.017	0.137
Midlife SEP		
Direct Effect of Education	-0.132	0.067
Late Life SEP		
Direct Effect of Occupation	0.067	0.133
Model Fit		
RMSEA	0.037	
CFI	0.953	

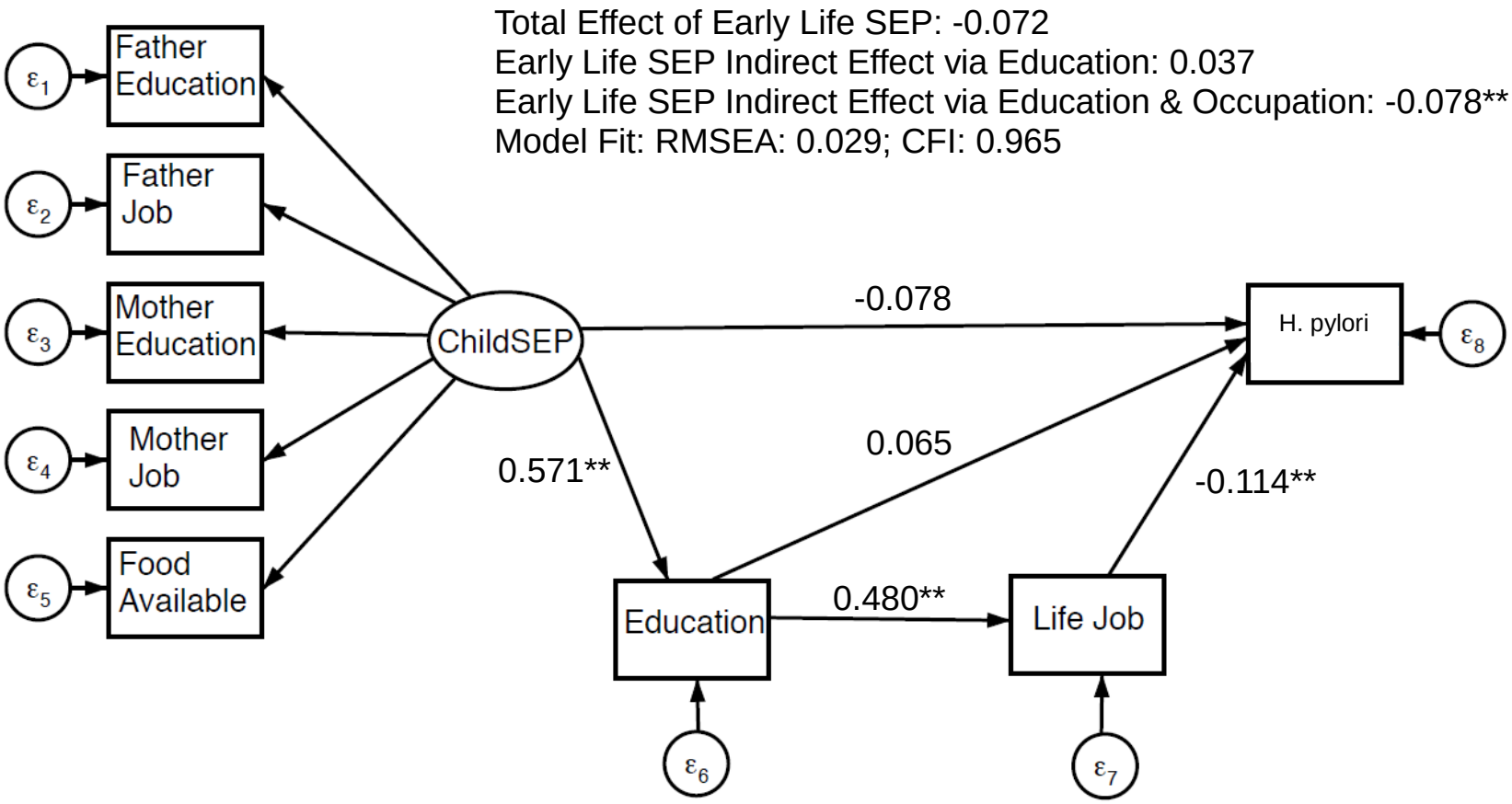
Supplemental Figure 1. Diagram of SEM for standardized direct and indirect effects of early life SEP on later life immune response to CMV, adjusted for age and gender, N=1562



Supplemental Figure 2. Diagram of SEM for standardized direct and indirect effects of early life SEP on later life immune response to *T. gondii*, adjusted for age and gender, N=1562

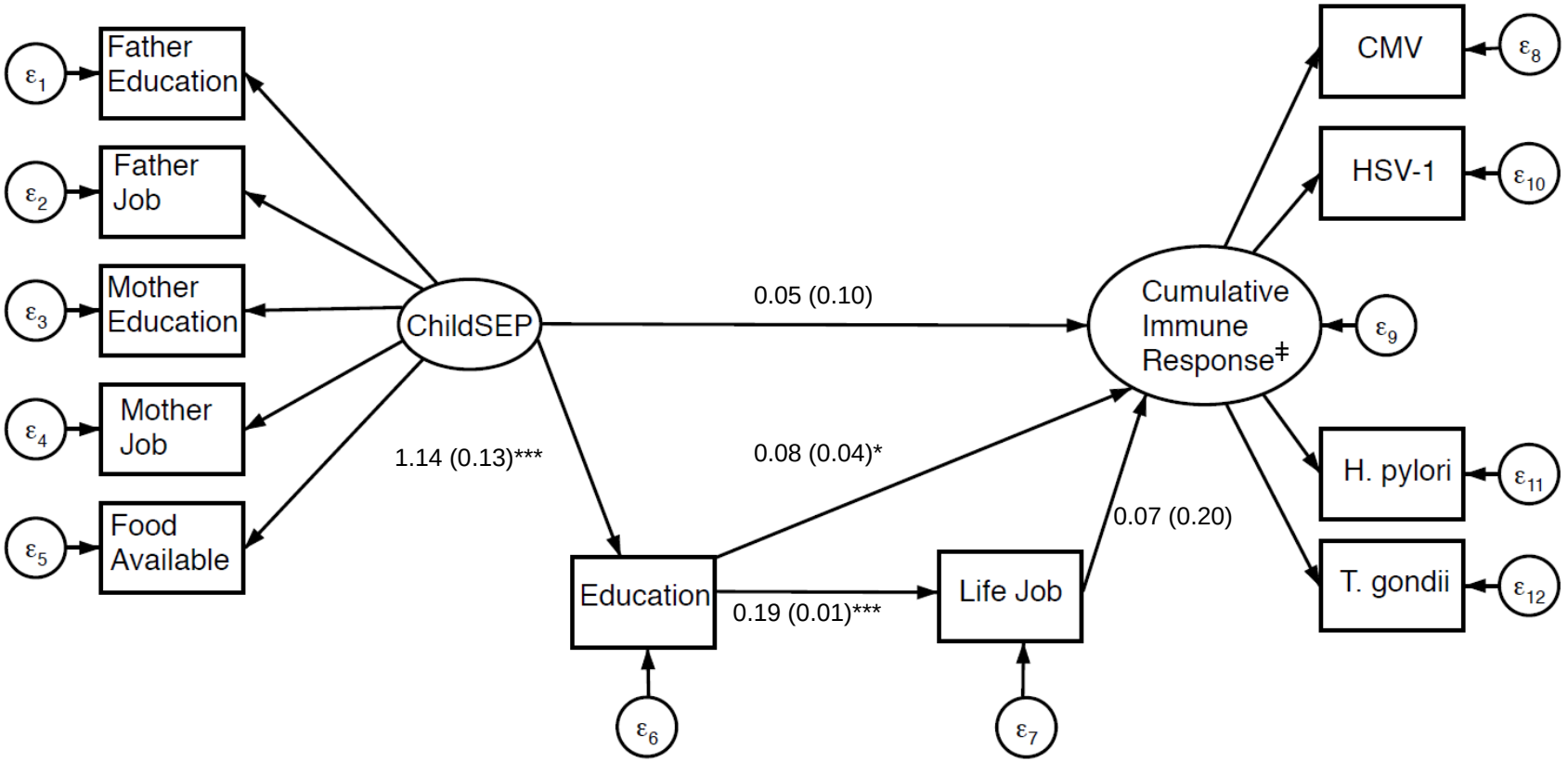


Supplemental Figure 3. Diagram of SEM for standardized direct and indirect effects of early life SEP on later life immune response to *H. pylori*, adjusted for age and gender, N=1562



*p<0.05, **p<0.01

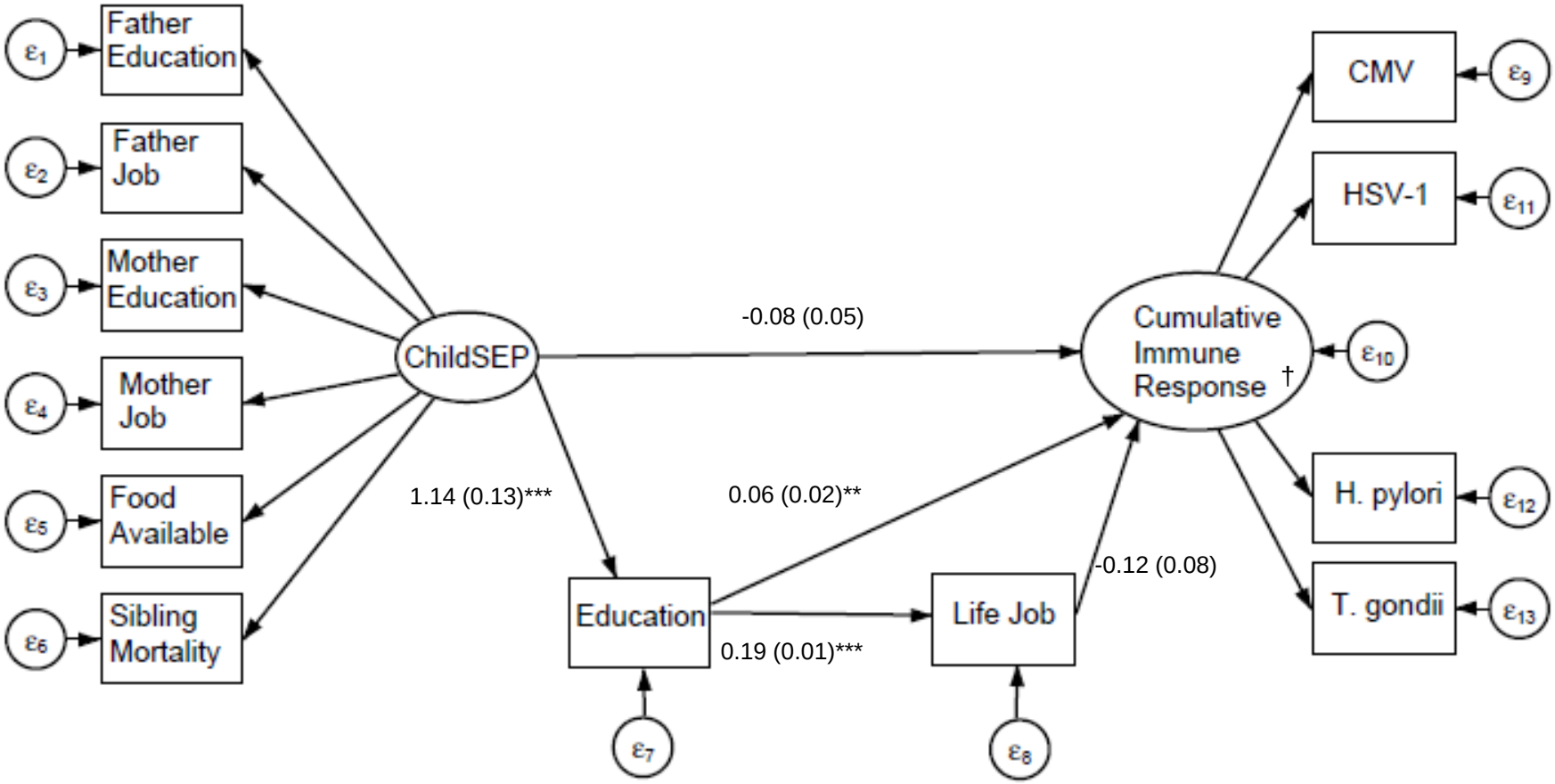
Supplemental Figure 4. Log Odds (SE) for SEM Model of Low v. High Cumulative Immune Response adjusted for age and gender, N= 1263



Total Effect of ChildSEP on Low v. High Cumulative Immune Response: 0.16 (0.08)
Total Indirect Effect of ChildSEP on Low v. High Cumulative Immune Response: 0.11 (0.05)*
Indirect Effect via Education Pathway: 0.09 (0.05)*
Indirect Effect via Education-Occupation Pathway: 0.02 (0.04)

‡ Modeling Low v. High Cumulative Immune Response Class
* Significant at p=0.05; ** Significant at p=0.01;*** Significant at p=0.001

Supplemental Figure 5. Log Odds (SE) for SEM Model of Middle v. High Cumulative Immune Response adjusted for age and gender, N= 1263



Total Effect of ChildSEP on Middle v. High Cumulative Immune Response : -0.20 (0.12)
Total Indirect Effect of ChildSEP on Middle v. High Cumulative Immune Response: -0.12 (0.06)
Indirect Effect via Education Pathway: -0.09 (0.06)
Indirect Effect via Education-Occupation Pathway: -0.03 (0.02)

† Modeling Middle v. High Cumulative Immune Response Class
* Significant at p=0.05; ** Significant at p=0.01;*** Significant at p=0.001