

Supplementary Material II. PowerLAPIM: An Application to Conduct Power Analysis for  
Longitudinal Actor-Partner Interdependence Models that Include Quadratic Effects

Ginette Lafit<sup>1,2</sup>, Laura Sels<sup>3</sup>, Janne K. Adolf<sup>1</sup>, Tom Loeys<sup>4</sup>, & Eva Ceulemans<sup>1</sup>

<sup>1</sup> Research Group of Quantitative Psychology and Individual Differences, KU Leuven,  
Leuven, Belgium

<sup>2</sup> Department of Neurosciences, Center for Contextual Psychiatry, KU Leuven, Leuven,  
Belgium

<sup>3</sup> Department of Experimental-Clinical and Health Psychology, Ghent University, Gent,  
Belgium

<sup>4</sup> Department of Data Analysis, Ghent University, Gent, Belgium

- 11    Supplementary Material II. PowerLAPIM: An Application to Conduct Power Analysis for  
12        Longitudinal Actor-Partner Interdependence Models that Include Quadratic Effects

Table 1

*Model 1: Summary of fixed effects for the L-APIM model for distinguishable partners.*

*Standard errors in parentheses.*

Effects	Sample size	True value	Mean	Bias	CI width	(1 - $\alpha$ ) Coverage rate	Power
Intercept for partner A (women)	20	62.477	62.496 (0.088)	0.019	10.799	0.944	1.000 (0.000)
	40	62.477	62.586 (0.062)	0.109	7.630	0.947	1.000 (0.000)
	60	62.477	62.505 (0.051)	0.028	6.262	0.945	1.000 (0.000)
	100	62.477	62.511 (0.038)	0.034	4.837	0.952	1.000 (0.000)
	160	62.477	62.520 (0.031)	0.043	3.839	0.941	1.000 (0.000)
Intercept for partner B (men)	20	63.145	63.173 (0.087)	0.028	10.637	0.937	1.000 (0.000)
	40	63.145	63.079 (0.062)	-0.066	7.469	0.941	1.000 (0.000)
	60	63.145	63.207 (0.050)	0.062	6.143	0.933	1.000 (0.000)
	100	63.145	63.044 (0.039)	-0.101	4.767	0.949	1.000 (0.000)
	160	63.145	63.121 (0.031)	-0.024	3.773	0.949	1.000 (0.000)
Linear actor effect for partner A	20	0.348	0.349 (0.001)	0.001	0.092	0.966	1.000 (0.000)
	40	0.348	0.348 (0.001)	0.000	0.065	0.956	1.000 (0.000)
	60	0.348	0.348 (0.000)	0.000	0.053	0.938	1.000 (0.000)
	100	0.348	0.348 (0.000)	0.000	0.041	0.958	1.000 (0.000)
	160	0.348	0.348 (0.000)	0.000	0.033	0.952	1.000 (0.000)
Linear partner effect for partner A	20	0.055	0.057 (0.001)	0.002	0.094	0.952	0.679 (0.015)
	40	0.055	0.055 (0.001)	0.000	0.066	0.941	0.889 (0.010)
	60	0.055	0.055 (0.000)	0.000	0.054	0.953	0.979 (0.005)
	100	0.055	0.055 (0.000)	0.000	0.042	0.947	1.000 (0.000)
	160	0.055	0.055 (0.000)	0.000	0.033	0.950	1.000 (0.000)
Linear actor effect for partner B	20	0.290	0.292 (0.001)	0.002	0.089	0.946	1.000 (0.000)
	40	0.290	0.290 (0.001)	0.000	0.063	0.953	1.000 (0.000)
	60	0.290	0.290 (0.000)	0.000	0.051	0.942	1.000 (0.000)
	100	0.290	0.290 (0.000)	0.000	0.040	0.953	1.000 (0.000)
	160	0.290	0.290 (0.000)	0.000	0.032	0.956	1.000 (0.000)
Linear partner effect for partner B	20	0.058	0.058 (0.001)	0.000	0.088	0.946	0.737 (0.014)
	40	0.058	0.058 (0.001)	0.000	0.062	0.942	0.954 (0.007)
	60	0.058	0.058 (0.000)	0.000	0.051	0.951	0.993 (0.003)
	100	0.058	0.058 (0.000)	0.000	0.039	0.946	1.000 (0.000)
	160	0.058	0.058 (0.000)	0.000	0.031	0.954	1.000 (0.000)

Table 2

*Model 1: Summary of the variance components for the L-APIM model for distinguishable partners. Standard errors in parentheses.*

Effects	Sample size	True value	Mean	Bias
Standard deviation of the Level 1 error for partner A (women)	20	17.943	17.966 (0.011)	0.023
	40	17.943	17.955 (0.008)	0.012
	60	17.943	17.947 (0.006)	0.004
	100	17.943	17.943 (0.005)	0.000
	160	17.943	17.944 (0.004)	0.001
Standard deviation of the Level 1 error for partner B (men)	20	17.112	17.113 (0.011)	0.001
	40	17.112	17.113 (0.008)	0.001
	60	17.112	17.115 (0.006)	0.003
	100	17.112	17.116 (0.005)	0.004
	160	17.112	17.114 (0.004)	0.002
Correlation between the Level 1 errors of partner A and B	20	0.230	0.229 (0.001)	-0.001
	40	0.230	0.231 (0.001)	0.001
	60	0.230	0.231 (0.001)	0.001
	100	0.230	0.230 (0.000)	0.000
	160	0.230	0.230 (0.000)	0.000
Standard deviation of the random intercept of partner A	20	12.206	12.121 (0.064)	-0.086
	40	12.206	12.117 (0.046)	-0.089
	60	12.206	12.183 (0.037)	-0.023
	100	12.206	12.149 (0.028)	-0.057
	160	12.206	12.199 (0.022)	-0.007
Standard deviation of the random intercept of partner B	20	12.005	11.951 (0.064)	-0.055
	40	12.005	11.870 (0.043)	-0.135
	60	12.005	11.962 (0.037)	-0.043
	100	12.005	11.985 (0.029)	-0.020
	160	12.005	12.000 (0.022)	-0.005
Correlation between the random intercepts of partners A and B	20	0.365	0.362 (0.006)	-0.003
	40	0.365	0.356 (0.005)	-0.009
	60	0.365	0.364 (0.004)	-0.001
	100	0.365	0.366 (0.003)	0.001
	160	0.365	0.366 (0.002)	0.001

Table 3

*Model 9 (part 1): Summary of fixed effects.*

Effect	Sample	True				Std.	95% CI		Std.	
	Size	Value	Mean	Bias	Error	Error	Width	95% CR	Power	Error
Intercept for partner A	20	61.505	61.547	0.042	0.090		11.092	0.945	1.000	0.000
	40	61.505	61.626	0.121	0.064		7.835	0.951	1.000	0.000
	60	61.505	61.547	0.042	0.052		6.429	0.949	1.000	0.000
	100	61.505	61.547	0.042	0.039		4.966	0.951	1.000	0.000
	160	61.505	61.552	0.047	0.032		3.941	0.938	1.000	0.000
Intercept for partner B	20	62.439	62.469	0.030	0.089		10.833	0.935	1.000	0.000
	40	62.439	62.368	-0.071	0.064		7.606	0.937	1.000	0.000
	60	62.439	62.501	0.062	0.051		6.254	0.935	1.000	0.000
	100	62.439	62.333	-0.106	0.040		4.853	0.948	1.000	0.000
	160	62.439	62.402	-0.037	0.032		3.840	0.949	1.000	0.000
Linear actor effect for partner A	20	0.457	0.459	0.002	0.001		0.092	0.963	1.000	0.000
	40	0.457	0.458	0.001	0.001		0.065	0.954	1.000	0.000
	60	0.457	0.458	0.001	0.000		0.053	0.941	1.000	0.000
	100	0.457	0.458	0.001	0.000		0.041	0.952	1.000	0.000
	160	0.457	0.458	0.001	0.000		0.032	0.946	1.000	0.000
Quadratic actor effect for partner A	20	0.004	0.004	0.000	0.000		0.003	0.948	0.998	0.001
	40	0.004	0.004	0.000	0.000		0.002	0.950	1.000	0.000
	60	0.004	0.004	0.000	0.000		0.002	0.954	1.000	0.000
	100	0.004	0.004	0.000	0.000		0.001	0.964	1.000	0.000
	160	0.004	0.004	0.000	0.000		0.001	0.949	1.000	0.000
Linear partner effect for partner A	20	0.066	0.068	0.002	0.001		0.093	0.952	0.827	0.012
	40	0.066	0.066	0.000	0.001		0.066	0.943	0.970	0.005
	60	0.066	0.066	0.000	0.000		0.054	0.951	0.997	0.002
	100	0.066	0.066	0.000	0.000		0.042	0.946	1.000	0.000
	160	0.066	0.066	0.000	0.000		0.033	0.947	1.000	0.000
Quadratic partner effect for partner A	20	0.000	0.000	0.000	0.000		0.003	0.955	0.045	0.007
	40	0.000	0.000	0.000	0.000		0.002	0.960	0.040	0.006
	60	0.000	0.000	0.000	0.000		0.002	0.943	0.057	0.007
	100	0.000	0.000	0.000	0.000		0.001	0.940	0.060	0.008
	160	0.000	0.000	0.000	0.000		0.001	0.939	0.061	0.008

Table 4

*Model 9 (part 2): Summary of fixed effects.*

Effect	Sample	True				Std.	95% CI			Std.
	Size	Value	Mean	Bias	Error	Error	Width	95% CR	Power	Error
Linear actor effect for partner B	20	0.365	0.366	0.001	0.001		0.089	0.946	1.000	0.000
	40	0.365	0.364	-0.001	0.001		0.063	0.947	1.000	0.000
	60	0.365	0.364	-0.001	0.000		0.051	0.944	1.000	0.000
	100	0.365	0.364	-0.001	0.000		0.040	0.951	1.000	0.000
	160	0.365	0.365	0.000	0.000		0.031	0.950	1.000	0.000
Quadratic actor effect for partner B	20	0.003	0.003	0.000	0.000		0.003	0.952	0.957	0.006
	40	0.003	0.003	0.000	0.000		0.002	0.945	0.999	0.001
	60	0.003	0.003	0.000	0.000		0.002	0.960	1.000	0.000
	100	0.003	0.003	0.000	0.000		0.001	0.958	1.000	0.000
	160	0.003	0.003	0.000	0.000		0.001	0.951	1.000	0.000
Linear partner effect for partner B	20	0.076	0.076	0.000	0.001		0.088	0.949	0.926	0.008
	40	0.076	0.076	0.000	0.001		0.062	0.946	0.997	0.002
	60	0.076	0.076	0.000	0.000		0.051	0.953	1.000	0.000
	100	0.076	0.076	0.000	0.000		0.039	0.946	1.000	0.000
	160	0.076	0.076	0.000	0.000		0.031	0.955	1.000	0.000
Quadratic partner effect for partner B	20	0.000	0.000	0.000	0.000		0.003	0.945	0.055	0.007
	40	0.000	0.000	0.000	0.000		0.002	0.967	0.033	0.006
	60	0.000	0.000	0.000	0.000		0.002	0.953	0.047	0.007
	100	0.000	0.000	0.000	0.000		0.001	0.968	0.032	0.006
	160	0.000	0.000	0.000	0.000		0.001	0.947	0.053	0.007

Table 5

*Model 9: Summary variance components.*

	Sample	True			Std.
	Size	Value	Mean	Bias	Error
Std.dev Level 1 error for partner A (women)	20	17.822	17.846	0.024	0.011
	40	17.822	17.834	0.012	0.008
	60	17.822	17.826	0.004	0.006
	100	17.822	17.822	0.000	0.005
	160	17.822	17.823	0.001	0.004
Std.dev Level 1 error for partner B (men)	20	17.055	17.056	0.001	0.011
	40	17.055	17.056	0.001	0.008
	60	17.055	17.058	0.003	0.006
	100	17.055	17.059	0.004	0.005
	160	17.055	17.057	0.002	0.004
Correlation between Level 1 errors for partners A and B	20	0.229	0.228	-0.001	0.001
	40	0.229	0.230	0.001	0.001
	60	0.229	0.230	0.001	0.001
	100	0.229	0.229	0.000	0.000
	160	0.229	0.229	0.000	0.000
Std.dev random intercept for partner A	20	12.356	12.270	-0.086	0.064
	40	12.356	12.266	-0.091	0.046
	60	12.356	12.333	-0.023	0.037
	100	12.356	12.299	-0.057	0.028
	160	12.356	12.349	-0.007	0.022
Std.dev random intercept for partner B	20	12.053	11.999	-0.054	0.064
	40	12.053	11.918	-0.136	0.043
	60	12.053	12.009	-0.044	0.037
	100	12.053	12.033	-0.020	0.029
	160	12.053	12.048	-0.005	0.022
Correlation between random intercepts for partners A and B	20	0.362	0.359	-0.003	0.007
	40	0.362	0.353	-0.009	0.005
	60	0.362	0.361	-0.001	0.004
	100	0.362	0.363	0.001	0.003
	160	0.362	0.363	0.001	0.002