

## Online Appendix

### Online Appendix 1.

Balance of outcomes and child and household characteristics between sample communities and communities excluded after the baseline due to the discovery of school feeding

	Longitudinal Sample		Community dropped after baseline		Difference (1)-(2)
	N	Mean/SE	N	Mean/SE	
Math	4507	2.523 [0.042]	1295	2.361 [0.076]	0.162*
Literacy	4507	3.103 [0.056]	1295	2.843 [0.097]	0.259**
Age in years	4800	9.643 [0.044]	1376	9.530 [0.082]	0.113
Male	4800	0.518 [0.007]	1376	0.520 [0.013]	-0.002
Enrolled	4517	0.980 [0.002]	1266	0.987 [0.003]	-0.007
Private school	4780	0.105 [0.004]	1362	0.057 [0.006]	0.048***
Repeated grade	4160	0.143 [0.005]	1186	0.138 [0.010]	0.005
Absent previous school week	4251	0.148 [0.011]	1217	0.065 [0.013]	0.083***
Height-for-age z-scores	4338	-1.105 [0.020]	1271	-1.073 [0.037]	-0.032
Sick in previous week	4564	0.090 [0.004]	1318	0.086 [0.008]	0.004
Number of target age children in the household (5-15 years)	4800	3.357 [0.025]	1376	3.480 [0.049]	-0.123**
Number of under 5 years old	4800	0.938 [0.014]	1376	0.922 [0.025]	0.017
Household size	4800	6.757 [0.041]	1376	6.871 [0.079]	-0.114
Head of the household is male	4800	0.798 [0.006]	1376	0.836 [0.010]	-0.038***
Household owns livestock	4800	0.656 [0.007]	1376	0.728 [0.012]	-0.072***
Mother's age	4621	38.999 [0.164]	1309	38.506 [0.297]	0.494

Mother's education	2078	6.038 [0.100]	463	6.201 [0.227]	-0.162
Wealth index	4363	13.925 [0.183]	1241	13.284 [0.316]	0.641*
Sold agriculture produce in the past year	4800	0.463 [0.007]	1376	0.423 [0.013]	0.040***
Per capita expenditure	4800	2065.831 [15.110]	1376	1886.849 [28.530]	178.982***
Urban	4796	0.064 [0.004]	1376	0.033 [0.005]	0.031***
Northern regions	4800	0.448 [0.007]	1376	0.710 [0.012]	-0.263***
Head of the household's age	4772	45.696 [0.180]	1372	46.255 [0.362]	-0.560
Treatment	4724	0.545 [0.007]	615	0.080 [0.011]	0.465***

Notes: Columns 1-2 test whether there were differences between sample communities and communities that were dropped after baseline due to discovery of presence of school feeding.

Online Appendix 2.

Balance of selected child and household characteristics at baseline (Panel A) and endline (Panel B) for the longitudinal sample, all children and stratified by gender, household poverty and northern regions

<b>Panel A. Balance of baseline characteristics for longitudinal sample</b>								
	<b>Child age in months</b>	<b>Male</b>	<b>Household size</b>	<b>Head of the household is male</b>	<b>Mother's age</b>	<b>Wealth index</b>	<b>Has sold any produce in the past year</b>	<b>Livestock</b>
<b>All children</b>								
<b>School feeding</b>	1.002 (1.491)	-0.026 (0.019)	-0.159 (0.315)	-0.003 (0.041)	1.092 (0.730)	0.206 (1.554)	-0.067 (0.055)	-0.015 (0.048)
<b>Constant</b>	102.756*** (1.140)	0.535*** (0.014)	6.776*** (0.237)	0.806*** (0.031)	37.365*** (0.545)	13.219*** (1.108)	0.508*** (0.039)	0.676*** (0.033)
<b>Observations</b>	3,170	3,170	3,170	3,170	3,052	2,902	3,170	3,170
<b>R-squared</b>	0.000	0.001	0.001	0.000	0.003	0.000	0.005	0.000
<b>Girls</b>								
<b>School feeding</b>	1.079 (1.669)	0.000 (0.000)	-0.161 (0.320)	0.040 (0.046)	1.059 (0.894)	0.461 (1.685)	-0.074 (0.055)	0.004 (0.053)
<b>Constant</b>	101.259*** (1.232)	0.000 (0.000)	6.612*** (0.246)	0.768*** (0.037)	37.848*** (0.751)	13.156*** (1.134)	0.507*** (0.040)	0.648*** (0.037)
<b>Observations</b>	1,517	1,517	1,517	1,517	1,461	1,387	1,517	1,517
<b>R-squared</b>	0.000		0.001	0.002	0.002	0.000	0.005	0.000
<b>Below poverty line</b>								
<b>School feeding</b>	5.087** (2.547)	-0.017 (0.037)	-0.089 (0.535)	-0.056 (0.047)	0.869 (1.442)	0.465 (0.910)	-0.018 (0.082)	0.027 (0.061)
<b>Constant</b>	101.072*** (1.820)	0.530*** (0.030)	7.046*** (0.367)	0.872*** (0.030)	38.535*** (1.140)	8.028*** (0.714)	0.542*** (0.055)	0.742*** (0.047)
<b>Observations</b>	721	721	721	721	708	665	721	721
<b>R-squared</b>	0.007	0.000	0.000	0.006	0.001	0.002	0.000	0.001
<b>Northern regions</b>								
<b>School feeding</b>	-0.323 (2.459)	-0.023 (0.025)	-0.122 (0.479)	-0.044 (0.032)	1.476 (0.918)	0.860 (1.644)	-0.078 (0.088)	-0.026 (0.064)
<b>Constant</b>	102.577*** (2.031)	0.552*** (0.017)	7.202*** (0.341)	0.940*** (0.020)	36.093*** (0.623)	9.591*** (1.242)	0.498*** (0.066)	0.770*** (0.042)
<b>Observations</b>	1,462	1,462	1,462	1,462	1,414	1,360	1,462	1,462
<b>R-squared</b>	0.000	0.001	0.000	0.006	0.006	0.002	0.006	0.001

<b>Panel B. Balance of endline characteristics for longitudinal sample</b>								
	<b>Child age in months</b>	<b>Male</b>	<b>House- hold size</b>	<b>Head of the house- hold is male</b>	<b>Mother's age</b>	<b>Wealth index</b>	<b>Has sold any produce in the past year</b>	<b>Livestock</b>
<b>All children</b>								
<b>School feeding</b>	1.644 (1.425)	-0.011 (0.020)	-0.151 (0.338)	-0.036 (0.038)	0.803 (0.786)	-0.763 (3.252)	-0.004 (0.054)	-0.029 (0.040)
<b>Constant</b>	130.809*** (1.038)	0.540*** (0.016)	7.501*** (0.236)	0.821*** (0.027)	40.534*** (0.579)	30.070*** (2.414)	0.320*** (0.038)	0.748*** (0.025)
<b>Observations</b>	2,542	2,573	3,170	3,168	3,014	3,168	3,167	3,167
<b>R-squared</b>	0.001	0.000	0.001	0.002	0.001	0.001	0.000	0.001
<b>Girls</b>								
<b>School feeding</b>	0.734 (1.876)	0.000 (0.000)	-0.100 (0.372)	-0.006 (0.045)	1.332 (0.888)	-2.069 (3.400)	0.001 (0.058)	0.010 (0.046)
<b>Constant</b>	129.561*** (1.365)	0.000 (0.000)	7.361*** (0.238)	0.804*** (0.035)	40.403*** (0.720)	30.857*** (2.601)	0.316*** (0.042)	0.727*** (0.034)
<b>Observations</b>	1,179	1,198	1,198	1,198	1,158	1,198	1,197	1,197
<b>R-squared</b>	0.000		0.000	0.000	0.004	0.004	0.000	0.000
<b>Below poverty line</b>								
<b>School feeding</b>	7.802*** (2.933)	0.030 (0.040)	-0.114 (0.560)	-0.084 (0.054)	-0.527 (1.499)	0.258 (2.836)	-0.005 (0.084)	-0.084 (0.059)
<b>Constant</b>	128.869*** (2.122)	0.514*** (0.029)	7.800*** (0.390)	0.855*** (0.034)	42.006*** (1.116)	24.241*** (2.023)	0.351*** (0.055)	0.829*** (0.041)
<b>Observations</b>	595	602	721	721	689	721	721	721
<b>R-squared</b>	0.016	0.001	0.000	0.011	0.001	0.000	0.000	0.011
<b>Northern regions</b>								
<b>School feeding</b>	2.254 (2.040)	0.000 (0.026)	0.068 (0.552)	-0.054 (0.044)	1.161 (1.040)	2.095 (1.512)	-0.025 (0.076)	-0.016 (0.042)
<b>Constant</b>	129.107*** (1.510)	0.541*** (0.020)	7.685*** (0.351)	0.901*** (0.026)	39.417*** (0.720)	16.090*** (1.100)	0.299*** (0.063)	0.830*** (0.019)
<b>Observations</b>	1,208	1,222	1,462	1,462	1,410	1,462	1,462	1,462
<b>R-squared</b>	0.001	0.000	0.000	0.006	0.003	0.018	0.001	0.000

Notes: Panels A and B report balance in child and household baseline and endline covariates respectively, by treatment assignment for the full longitudinal sample and for the longitudinal sample stratified by gender, poverty status and northern regions. For each covariate, the coefficient for treatment was obtained through an OLS regression in which each covariate was the outcome and assignment to school feeding was the main regressor. Standard errors were clustered at the community level. The estimated school feeding coefficient provides the difference between the school feeding and control group in a child's backgrounds and its standard errors for the full longitudinal sample, in order to ascertain whether there were systematic biases induced by attrition.

Online Appendix 3.

Predictors of endline program uptake in treatment communities

	(1)	(2)	(3)	(4)
Child age in months	-0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.002*** (0.001)
Child aged 5-11 years at baseline	0.170*** (0.044)	0.174*** (0.042)	0.173*** (0.042)	0.017 (0.043)
Male	0.025 (0.024)	0.011 (0.027)	0.011 (0.027)	0.018 (0.028)
Below poverty line	0.144*** (0.035)	0.108*** (0.032)	0.107*** (0.032)	0.026 (0.029)
Northern regions	0.197** (0.077)	0.175** (0.072)	0.179** (0.075)	0.006 (0.066)
Math standardized scores at baseline		-0.050** (0.023)	-0.049** (0.023)	-0.024 (0.016)
Literacy standardized scores at baseline		-0.093*** (0.024)	-0.092*** (0.024)	-0.026 (0.017)
GSFP program (HGSF is baseline)			0.022 (0.075)	
Child is currently enrolled in primary school				0.294*** (0.049)
Grade at baseline				0.007 (0.013)
Private school				-0.638*** (0.068)
Child's HAZ at baseline				-0.018* (0.010)
Child has fallen sick in the past week				-0.014 (0.049)
Age of household head				-0.001 (0.002)
Mother's age				-0.001 (0.002)
Household size				0.006 (0.005)
Household sold produce in the past year				0.043 (0.035)
Wealth index				-0.006** (0.002)
Constant	0.423*** (0.119)	0.478*** (0.115)	0.465*** (0.122)	0.889*** (0.144)
Observations	1,333	1,247	1,247	997
R-squared	0.077	0.118	0.118	0.415

Notes: This table presents results from linear probability models examining predictors of school feeding uptake at endline for children in the treatment arm. We regress uptake on a set of variables, including key predictors of heterogeneity (Col.1); baseline scores in the various competencies (col. 2); modality of school feeding (col.3) and child- and household-level characteristics. All models clustered the standard errors at the community level.

## Online Appendix 4.

### Balance of raw test scores for baseline sample prior to attrition

	Balance by treatment assignment and attrition			
	Math	Literacy	Math	Literacy
School feeding	0.073 (0.146)	0.106 (0.211)	0.141 (0.252)	0.049 (0.282)
Child in longitudinal sample			0.265 (0.177)	0.342 (0.228)
School feeding * Longitudinal sample			-0.070 (0.273)	0.068 (0.303)
Constant	-1.492*** (0.165)	-1.304*** (0.209)	-1.734*** (0.199)	-1.618*** (0.264)
Obs.	3,262	3,262	3,262	3,262
R-squared	0.204	0.144	0.205	0.146
Baseline control	1.54 (2.01)	1.78 (2.40)		
Baseline treatment	1.67 (2.05)	1.93 (2.51)		
Baseline control - lost to follow-up			1.13 (1.51)	1.28 (1.88)
Baseline control - longitudinal sample			1.57 (2.04)	1.81 (2.43)
Baseline treatment - lost to follow-up			1.68 (2.07)	1.97 (2.56)
Baseline treatment - longitudinal sample			1.51 (1.85)	1.58 (1.83)

Notes: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Columns 1-4 test whether there were differences in raw scores by treatment arm prior to attrition. This is achieved through an OLS regression in which each child test score at baseline is regressed on a treatment dummy. Columns 1-4 add a dummy if the child was in the longitudinal sample and an interaction between longitudinal sample and treatment in order to investigate survey attrition bias. All models include child age in months and standard errors are clustered at the community level. Raw test scores appeared balanced by treatment arm prior to attrition, and there is no evidence of differential attrition by treatment being associated with raw test scores.

Online Appendix 5.

Descriptive statistics of raw test scores at baseline and endline, by child gender, household poverty status, and Northern regions

	<b>Panel A. Gender</b>									
	<b>Baseline</b>					<b>Endline</b>				
	<b>Girls</b>		<b>Boys</b>			<b>Girls</b>		<b>Boys</b>		
	<b>N</b>	<b>Mean/SE</b>	<b>N</b>	<b>Mean/S</b>	<b>Difference</b>	<b>N</b>	<b>Mean/SE</b>	<b>N</b>	<b>Mean/SE</b>	<b>Differenc</b>
<b>E</b>										
Math	1,433	1.585	1,580	1.675	-0.09	1,185	3.882	1,372	3.805	0.076
		[0.053]		[0.053]			[0.101]		[0.090]	
Literacy	1,433	1.884	1,580	1.903	-0.019	1,185	4.136	1,372	4.106	0.029
		[0.065]		[0.064]			[0.102]		[0.097]	
	<b>Panel B. Poverty</b>									
	<b>Baseline</b>					<b>Endline</b>				
	<b>Non-Poor</b>		<b>Poor</b>			<b>Non-Poor</b>		<b>Poor</b>		
	<b>N</b>	<b>Mean/SE</b>	<b>N</b>	<b>Mean/S</b>	<b>Difference</b>	<b>N</b>	<b>Mean/SE</b>	<b>N</b>	<b>Mean/SE</b>	<b>Differenc</b>
<b>E</b>										
Math	2,324	1.66	688	1.541	0.12	1,953	3.906	604	3.631	0.275*
		[0.043]		[0.078]			[0.077]		[0.136]	
Literacy	2,324	1.974	688	1.626	0.348***	1,953	4.225	604	3.78	0.445***
		[0.054]		[0.083]			[0.082]		[0.136]	
	<b>Panel C. Region of residence</b>									
	<b>Baseline</b>					<b>Endline</b>				
	<b>Southern regions</b>		<b>Northern regions</b>			<b>Southern regions</b>		<b>Northern regions</b>		
	<b>N</b>	<b>Mean/SE</b>	<b>N</b>	<b>Mean/S</b>	<b>Difference</b>	<b>N</b>	<b>Mean/SE</b>	<b>N</b>	<b>Mean/SE</b>	<b>Differenc</b>
<b>E</b>										
Math	1,626	1.918	1,387	1.298	0.620***	1,326	3.769	1,231	3.918	-0.149
		[0.055]		[0.048]			[0.089]		[0.102]	
Literacy	1,626	2.351	1,387	1.358	0.993***	1,326	4.241	1,231	3.99	0.250*
		[0.069]		[0.053]			[0.101]		[0.097]	

Notes: The value displayed for t-tests are the differences in the means across the groups. \*\*\*, \*\*, and \* indicate significance at the 1, 5, and 10 percent critical level. Household poverty is a dichotomous indicator having the value of one if the household had baseline per capita consumption levels falling below the national consumption poverty line in 2013. Northern regions include Upper West, Upper East, and Northern region. Southern regions include Western, Central, Greater Accra, Volta, Eastern, Asanti, Brong Ahafo.

Online Appendix 6.

Treatment effects of school feeding on child learning, by child age group at baseline

	Math	Literacy	Composite: math and literacy
<b>Panel A. Children 5-11 years at baseline</b>			
School feeding	0.161** (0.078)	0.132* (0.076)	0.177** (0.086)
Observations	2,011	2,006	2,045
R-squared	0.061	0.124	0.135
<b>Panel B. Children 12-15 years at baseline</b>			
School feeding	0.040 (0.126)	0.123 (0.108)	0.096 (0.128)
Observations	267	268	269
R-squared	0.167	0.201	0.185

Notes: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The table above illustrates intent-to-treat effects on each outcome estimated through ANCOVA for different age cohorts. All models were estimated through OLS and standard errors in parentheses were clustered at the community level. For each outcome, the model controls for the baseline value of the outcome, and region dummies. Math and literacy scores are age-standardized. Composite indices were computed as averages of the standardized scores and then they were standardized to the control group within each round.



Online Appendix 7.

Heterogeneity in treatment effects by length of program exposure

	(1)	(2)	(3)
	<b>Maths</b>	<b>Literacy</b>	<b>Composite: math and literacy</b>
School feeding	-0.0110 (0.147)	-0.0393 (0.153)	-0.0242 (0.167)
Two years of exposure	-0.0775 (0.104)	-0.166 (0.131)	-0.136 (0.129)
School feeding * Two years of exposure	0.177 (0.136)	0.201 (0.149)	0.224 (0.154)
Observations	2,278	2,276	2,290
R-squared	0.069	0.132	0.122

Notes: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The table above illustrates intent-to-treat effects on each outcome estimated through ANCOVA. Both models were estimated through OLS and standard errors in parentheses were clustered at the community level. For each outcome, the model controls for the baseline value of the outcome, and region dummies. Math and literacy scores are age-standardized. Composite indices were computed as averages of the standardized scores and then they were standardized to the control group within each round. Two years of exposure is a dummy equal to zero if the child was above below 5 years or was in grade 5 at baseline.

Online Appendix 8.

Descriptive statistics of intermediate outcomes, full sample

	Baseline					Endline				
	Control		School feeding			Control		School feeding		
	N	Mean (SE)	N	Mean (SE)	Diff.	N	Mean (SE)	N	Mean (SE)	Diff.
Child is enrolled	1,353	0.988 [0.003]	1,604	0.981 [0.003]	0.007	1,195	0.884 [0.009]	1,377	0.932 [0.007]	-0.049***
Days attended over past week	1,291	4.881 [0.018]	1,508	4.828 [0.019]	0.052**	1,056	4.665 [0.030]	1,284	4.685 [0.026]	-0.02
Grade	1,368	2.336 [0.039]	1,589	2.436 [0.037]	-0.100*	1,049	4.269 [0.061]	1,278	4.496 [0.055]	-0.227***
Digit span (raw)	1404	4.123 [0.059]	1579	4.365 [0.056]	0.242***	1186	4.173 [0.072]	1343	4.381 [0.068]	-0.208**
SPM (raw)	1404	3.819 [0.070]	1579	3.967 [0.065]	-0.148	1186	2.993 [0.057]	1343	3.243 [0.055]	0.249***
Digit span (age-standardized)	1398	-0.063 [0.026]	1565	0.011 [0.024]	-0.074**	1147	-0.035 [0.028]	1284	0.099 [0.028]	0.134***
SPM (age-standardized)	1395	-0.065 [0.026]	1569	-0.010 [0.024]	-0.056	1150	-0.033 [0.029]	1288	0.119 [0.028]	0.152***
Height-for-age z-scores	1354	-1.112 [0.037]	1540	-1.054 [0.033]	-0.058	1020	-1.211 [0.039]	1165	-1.123 [0.036]	-0.088*
BMI-for-age z-scores	1374	-0.676 [0.025]	1551	-0.657 [0.023]	-0.019	1012	-0.869 [0.034]	1148	-0.803 [0.031]	-0.066

Notes: The value displayed for t-tests are the differences in the means across the groups. \*\*\*, \*\*, and \* indicate significance at the 1, 5, and 10 percent critical level. Enrolment is a dichotomous variable indicating whether the child is enrolled school, respectively; attendance is an indicator counting the number of days the child attended by the child in the past school week (conditional on enrolment). The indicator ranges from 0 to 5 days. Grade provides the educational grade (in years) the child is currently enrolled in. SPM stands for standardized progressive matrices.

Online Appendix 9.

Treatment effects of school feeding on child probability of no having breakfast before school, number of meals consumed and dietary diversity

	<b>No breakfast</b>		<b>Number of meals</b>		<b>Dietary diversity</b>	
<b>Panel A. All children</b>						
School feeding	-0.003 (0.019)		0.066 (0.081)		-0.027 (0.147)	
Observations	3,139		2,529		2,471	
R-squared	0.110		0.070		0.010	
<b>Panel B. Gender</b>						
	Girls	Boys	Girls	Boys	Girls	Boys
School feeding	0.005 (0.025)	-0.006 (0.026)	0.129 (0.086)	0.017 (0.093)	-0.124 (0.198)	0.066 (0.205)
Observations	1,184	1,361	1,173	1,356	1,143	1,328
R-squared	0.199	0.141	0.074	0.079	0.020	0.013
<b>Panel C. Household poverty at baseline</b>						
	Poor	Nonpoor	Poor	Nonpoor	Poor	Nonpoor
School feeding	0.036 (0.035)	-0.016 (0.023)	0.074 (0.101)	0.072 (0.092)	-0.342 (0.263)	0.040 (0.159)
Observations	712	2,426	591	1,938	576	1,895
R-squared	0.170	0.109	0.109	0.065	0.016	0.011
<b>Panel D. Geographical area</b>						
	North	South	North	South	North	South
School feeding	0.010 (0.020)	-0.016 (0.031)	0.068 (0.123)	0.063 (0.108)	-0.045 (0.232)	-0.008 (0.187)
Observations	1,449	1,690	1,203	1,326	1,176	1,295
R-squared	0.009	0.060	0.101	0.047	0.010	0.010

Notes: The table above illustrates intent-to-treat effects on each outcome estimated for the full sample and for the subgroups through a basic OLS regression of each outcome over school feeding arm and controlling for region dummies. We note that number of meals and dietary diversity were only collected at endline, therefore we could control for the baseline value of the outcome as in the case of no breakfast. No breakfast is an indicator variable of whether the child has had breakfast before going to school in the previous day. Number of meals is the total number of meals, including snacks, consumed by the child in the previous day. Dietary diversity is the sum of the following nine food groups consumed by the child in the previous day: cereals, roots and tubers; vitamin-A rich fruits and vegetables; other fruits and vegetables; meat and fish; eggs; legumes; dairy; oil.

## Online Appendix 10.

### Heterogeneity of impact by treatment modality

The analysis plan did not include the comparison in treatment effects by school feeding implementation modality. This is because, by design, the comparison between the standard GSFP and the HGSF modality was geared only toward assessing the impact of HGSF on small-holder farmers income and production (see Gelli et al. 2016, for further discussion). However, different implementation modalities may affect program impact on child learning through variation in frequency of delivery of the meal, nutrition content, type of meal, timing of delivery (e.g., breakfast *viz* lunch), etc. The HGSF, through its emphasis on improving the quality of the meal, may, theoretically, lead to better cognition and learning as compared to standard GSFP through enhanced child health (Belot and James 2011).

Table 10.1 provides ITT estimates of child learning outcomes by considering GSFP, HGSF, and control as three separate arms. For both ANCOVA and difference-in-differences estimates, the last row in each respective panel includes an F-test that assesses the equality of the treatment effect coefficients related to GSFP and HGSF. In the case of ANCOVA, assignment to the HGSF arm led to significant increases in literacy, SPM, and the three composite indicators, as compared to control. However, in either set of estimates, we were never able to reject the null hypothesis of equality of the treatment effect coefficients between HGSF and GSFP, thus suggesting lack of heterogeneity in impact by program modality. This may be either attributable to insufficient power to detect significant differences (as by design this comparison was not initially pursued) and/or to challenges in the implementation. We tend to lean toward the second explanation, also in light of similar coefficient sizes for both modalities in most cases. We hypothesize that delayed reimbursements to caterers for the costs incurred in supplying the meals may have diluted differences between the menus of the two arms (e.g., monitoring visits highlighted substantial deviations from the guidelines related to food fortification, which was initially supposed to happen in HGSF). Thus, the nutritional differences of the meals between the two modalities may have been too limited to have heterogenous impacts on children's academic achievements through the health and cognitive channels. A similar lack of heterogeneity by modality was evident in the group-disaggregated estimates (available upon request).

Table 10.1.

Treatment effects of school feeding on child learning, by school feeding modality

	<b>Math</b>	<b>Literacy</b>	<b>Composite: math and literacy</b>
GSFP	0.159* (0.085)	0.121 (0.084)	0.166* (0.094)
HGSF	0.136 (0.087)	0.143 (0.089)	0.169* (0.100)
Constant	-0.229** (0.104)	-0.291* (0.154)	-0.339** (0.151)
Observations	2,278	2,274	2,314
R-squared	0.068	0.130	0.139
P(GSFP=HGSF)	0.782	0.823	0.983

Notes: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The table above illustrates intent-to-treat effects on each outcome for the two school feeding modalities. GSFP is a dichotomous variable related to randomized assignment to the standard Ghana school feeding program, HGSF is a dichotomous related to assignment to “home-grown” school feeding pilot, endline is a dummy variable indicating the 2016 survey. Both models were estimated through OLS and standard errors were clustered at the community level. For each outcome, the model controls for the baseline value of the outcome, a dichotomous variable related to the randomized assignment to school feeding, and region dummies. The last row presents the p-values of a F-test assessing the equality of coefficients between the intent-to-treat effect related to GSFP and HGSF.