### Supplementary Tables

#### Table S1. Baseline contrasts of vision and language

| Visual Processing | Cluster | Peak | MNI |
|-------------------|---------|------|-----|
|                   | $p_{FWE}$ | $k$ | $T$ | $x$ | $y$ | $z$ |
| **Checkerboards** |         |     |     |
| L Calcarine       | <.001   | 12784 | 23.75 | -8 | -90 | 4 |
| R Calcarine       | 22.00 | 10 | -88 | -2 |
| R Lingual         | 21.74 | 16 | -74 | -6 |
| R SPL             | .030   | 351 | 7.96 | 24 | -70 | 44 |
| R SPL/ AG         | 5.87   | 28 | -60 | 52 |
| R SPL             | 3.99   | 22 | -60 | 60 |
| **Houses**        |         |     |     |
| R Occipital Pole  | <.001   | 9744 | 19.69 | 12 | -94 | 12 |
| L Lingual/ oFuG   | 19.06   | -14 | -82 | -12 |
| L Occipital Pole  | 18.51   | -12 | -98 | 12 |
| **Faces**         |         |     |     |
| L Occipital Pole/ Superior Occipital | <.001 | 7639 | 12.60 | -14 | -96 | 16 |
| L IOG/ oFuG       | 12.11   | -42 | -74 | -12 |
| L IOG             | 11.90   | -38 | -82 | 2 |
| **Written Words** |         |     |     |
| L oFuG / IOG      | .007    | 518 | 8.51 | -26 | -92 | -14 |
| L oFuG/ Occipital Pole | 8.11 | -16 | -98 | -8 |
| L IOG             | 6.88    | -22 | -92 | 2 |
| **Auditory Processing** |         |     |     |
| **Spoken Words**  |         |     |     |
| L STG             | < .001 | 1921 | 14.32 | -60 | -10 | 0 |
| L STG/ PT         | 14.15   | -58 | -32 | 8 |
| L STG/ PT/ MTG    | 13.38   | -62 | -24 | 2 |

Results of group-level one-sample $T$-Tests to examine fMRI stimulus conditions against null (baseline contrast). Clusters are presented with a threshold of $p < .001$ (uncorrected), $p_{FWE} < .05$. $xyz = \text{MNI coordinates of cluster center of mass}$, $k = \text{number of voxels}$; $T = \text{T-value of peak activation}$; $R = \text{right hemisphere}$, $L = \text{left hemisphere}$; $SPL = \text{Superior Parietal Lobe}$; $AG = \text{Angular Gyrus}$; $oFuG = \text{Occipital Fusiform Gyrus}$; $IOG = \text{Inferior Occipital Gyrus}$; $STG = \text{Superior Temporal Gyrus}$; $PT = \text{Planum Temporale}$; $MTG = \text{Middle Temporal Gyrus}$. 
Table S2. Differential contrasts for visual stimuli

| Cluster                  | Peak  | MNI       |
|--------------------------|-------|-----------|
|                           | $p_{FWE}$ | $k$ | $T$ | $x$ | $y$ | $z$ |
| **Houses > [Faces, Written Words]** |       |           |     |     |     |
| R Occipital Pole         | <.001  | 10340     | 21.4| 12  | -92 | 12 |
| L Occipital Pole         |        |           | 19.7| -8  | -90 | 4  |
| **Faces > [Houses, Written Words]** |       |           |     |     |     |
| L Cuneus                 | <.001  | 1871      | 9.95| 0   | -82 | 22 |
| R Cuneus                 |        |           | 9.61| 6   | -86 | 26 |
| L Calcarine/ Lingual     |        |           | 7.66| -2  | -76 | 8  |
| BL SMC                   | .002   | 670       | 6.44| 0   | -8  | 48 |
| L SMC                    |        |           | 5.95| -4  | 0   | 48 |
| R SMC                    |        |           | 5.72| 6   | 2   | 48 |
| **Written Words > [Houses, Faces]** |       |           |     |     |     |
| No voxels survived       |        |           |     |     |     |

Results of group-level one-sample $T$-Tests to examine specific response to houses, faces and written words (differential contrasts). Clusters are presented with a threshold of $p < .001$ (uncorrected), $p_{FWE} < .05$. MNI = coordinates of cluster center of mass, $k =$ number of voxels; $T =$ $T$-value of peak activation; R = right hemisphere, L = left hemisphere; BL = bilateral; SMC = Supplementary Motor Cortex.

Table S3. Region of interest analysis of brain-behavior association with rapid automatized naming.

| MNI | Cluster | Peak |
|-----|---------|------|
|     | x       | y    | z    |
|     | k       | $T$  | $p_{corr}$ |
| **Generic Regions** |       |      |      |
| **Faces** (positive association) |       |      |      |
| L Fusiform                | -42   | -48  | -24  |
|                           | 17    | 4.17 | <.001|
| **Faces > [Houses, Words]** (positive association) |       |      |      |
| R Fusiform                | 30    | -58  | -12  |
|                           | 276   | 5.79 | <.001|
| R oFuG                    | 32    | -78  | -6   |
|                           | 26    | -88  | -2   |
| R IOG                     | -42   | -46  | -20  |
|                           | 168   | 4.35 | <.001|
| L Fusiform                | -36   | -66  | -14  |
| L oFuG                    | -46   | -46  | 20   |
|                           | 10    | 3.88 | <.001|
| **Written Words** (negative association) |       |      |      |
| R Fusiform                | 32    | -56  | -14  |
|                           | 78    | 4.29 | <.001|
| L SMG                     | -58   | -48  | 22   |
|                           | 38    | 4.28 | <.001|
| R AG                      | 46    | -44  | 20   |
|                           | 10    | 3.85 | <.001|
| **Written Words > [Houses, Faces]** (negative association) |       |      |      |
| L STG                     | -56   | -46  | 18   |
|                           | 17    | 3.98 | <.001|
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Spoken Words
(negative association)

| Region     | MNI    | Cluster | Peak | T     | p_unc |
|------------|--------|---------|------|-------|-------|
| L Fusiform | -38    | -50     | -10  | 29    | 4.40  | <.0005|

Language Specific Regions

Written Words
(negative association)

| Region     | MNI    | Cluster | Peak | T     | p_unc |
|------------|--------|---------|------|-------|-------|
| L STG      | -56    | -52     | 20   | 71    | 4.76  | <.0005|
| L SMG      | -46    | -48     | 22   | 4.04  | <.0005|
| L Precuneus| -12    | -74     | 40   | 15    | 4.76  | <.0005|

Written Words > [Houses, Faces]
(negative association)

| Region     | MNI    | Cluster | Peak | T     | p_unc |
|------------|--------|---------|------|-------|-------|
| L STG      | -56    | -52     | 20   | 18    | 4.11  | <.0005|

Spoken Words
(negative association)

| Region     | MNI    | Cluster | Peak | T     | p_unc |
|------------|--------|---------|------|-------|-------|
| L Precuneus| -14    | -58     | 46   | 77    | 4.78  | <.0005|
| L SPL      | -16    | -62     | 54   | 3.78  | <.0005|
| L SPL      | -30    | -58     | 56   | 20    | 3.78  | <.0005|
| L Fusiform | -40    | -54     | -16  | 11    | 3.67  | <.0005|

Results of independent ROI analyses on group-level with rapid automatized naming as regressor of interest at p<.001 (uncorrected) and k> 10 for baseline and differential contrasts; results were additionally controlled for the number of regression models at p_corr < .0005. Generic ROIs are bilateral fusiform gyrus, bilateral superior temporal gyrus; language specific ROIs are left inferior occipital gyrus, left ventral occipito-temporal gyrus, bilateral middle temporal gyrus, left superior parietal lobe. Significant activation extending results of the whole brain analysis are marked in light yellow. MNI = coordinates of cluster center of mass, k = number of voxels, T = T-value of peak activation, L = left hemisphere, R = right hemisphere, oFuG = occipital fusiform, IOG = inferior occipital gyrus, STG = superior temporal gyrus, SMG = supramarginal gyrus, AG = angular gyrus, SPL = superior parietal lobe.

Table S4. Region of interest analysis of brain-behavior association with reading fluency.

| Region     | MNI    | Cluster | Peak | T     | p_unc |
|------------|--------|---------|------|-------|-------|
| Faces      |        |         |      |       |       |
| (positive association) | | | | | |
| L STG      | -50    | -20     | 4    | 15    | 4.14  | <.001 |
| L oFuG     | -24    | -76     | -4   | 11    | 3.94  | <.001 |

Results of independent ROI analyses on group-level with rapid automatized naming as regressor of interest at p< .001 (uncorrected) and k> 10. Only the baseline contrast of faces showed significant results. ROIs are bilateral fusiform gyrus and bilateral superior temporal gyrus. Significant activation extending results of the whole brain analysis are marked in light yellow. MNI = coordinates of cluster center of mass, k = number of voxels, T = T-value of peak activation, L = left hemisphere, STG = superior temporal gyrus, oFuG = occipital fusiform.
Supplementary Figures

**Figure S1.** FMRI task design. A) experimental design is shown including information on different levels. B) Exemplary Stimulus presentation is depicted. Each block started with a catch trial (mascot of the project) followed by a fixation cross (ISI = inter-stimulus interval) that was then replaced by the first stimulus of the block. C) Examples of each stimulus condition are given (left box: visual conditions, mid: auditory condition, right box: catch trial image). NE = null-event.

**FIGURE S2.** Anatomically defined regions of interest (ROI) used for the brain-behavior analysis. Exemplary slices are shown (numbers indicate coordinates).
FIGURE S3. Correlation matrix of preliterate (T1) and literacy skills (T2). Red ellipses display positive, blue ellipses negative correlation. The intensity of the color indicates the strength of the relationship (see color legend). Lower values of dyslexia risk points (BISC; Jansen, 2002) indicate higher performance in prereading abilities in kindergarten. BISC: Bielefelder Screening zur Früh-erkennung von Lese-Rechtschreibschwierigkeiten, word reading: Salzburger Lese- und Rechtschreibtest (SLRT), pseudoword reading: SLRT, reading fluency: Salzburger Lese-Screening (SLS), reading comprehension: Ein Leseverständnistest (ELFE), spelling: Deutscher Rechtschreibtest (DERET).