

Can young Children's Media Sign Literacy predict Academic Skills in Primary School?

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Author Note

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Abstract

Typically, young children's future academic skills have been predicted by their level of general intelligence (Neisser et al., 1996). For individual parts of school performance, precursor skills such as phonological awareness for reading have also been used as predictors (Stanovich et al., 1984). Contrary to traditional research literature, intelligence might not be the most prominent measurable skill that should be taken into account. In a longitudinal study on media sign literacy (MSL), it was shown that MSL was able to predict precursors of mathematical, reading, and writing skills in preschool in addition to intelligence (Nieding et al., 2017). MSL, as the ability to understand the symbol systems organizing media, is the most fundamental aspect of media literacy acquired in early childhood (Nieding & Ohler, 2008). This set of rudimentary media literacy skills needs to be fully developed in order to possibly achieve advanced media literacy skills later in childhood and during adolescence (Potter, 1998). Not only media sign literacy but partly also academic skills like reading and calculating are symbolic abilities and therefore require the understanding that a symbol represents something other than itself. To be able to read, for example, children must know that the combination of letters in a word has a specific meaning. This so-called representational insight contributes to a larger symbolic sensitivity (DeLoache, 2000). A higher sensitivity in one symbolic domain also enables the individual to understand new symbol systems, as studies already have shown (e.g. Allen et al., 2014; Troseth et al., 2007). These assumptions are an important prediction of the *common source hypothesis*. It states that all symbolic skills originate from a general symbolic ability (Campbell & Namy, 2003; Namy & Waxman, 1998). On this theoretical background, MSL should not only predict precursors of academically relevant skill sets, but also actual school performances of primary school children. In the longitudinal study presented in this submission, we focussed on the relation between academic skills and media sign literacy as well as their correlations to other cognitive functions developing in early childhood. It was assumed that MSL at preschool age,

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independent from the level of general intelligence, is a significant predictor for academic performance of primary school children. Therefore, N=134 children were tested at two measurement points one year apart from each other. The first data point was scheduled right before entry into primary school. MSL and intelligence were recorded as the main variables at this time. The second data collection took place right after completing first grade. This time, reading comprehension and mathematical abilities were tested. MSL was measured using a self-developed online-test. In this test, an animated tutor asked questions about the symbol systems in different kinds of media. The other variables were measured using common test batteries used in the field. Structural equation modelling was applied to test our hypotheses by using the intercorrelation matrix of all collected variables. The results of this study could play a crucial role regarding a wider appreciation of media education at kindergarten age.

References

- Allen, M. L., Mattock, K., & Silva, M. (2014). Symbolic Understanding of Pictures and Written Words Share a Common Source. *Journal of Cognition and Culture*, *14*(3-4), 187–198. <https://doi.org/10.1163/15685373-12342120>
- Campbell, A. L., & Namy, L. L. (2003). The role of social-referential context in verbal and nonverbal symbol learning. *Child Development*, *74*(2), 549–563. <https://doi.org/10.1111/1467-8624.7402015>
- DeLoache, J. S. (2000). Dual representation and young children's use of scale models. *Child Development*, *71*(2), 329–338. <https://doi.org/10.1111/1467-8624.00148>
- Namy, L. L., & Waxman, S. R. (1998). Words and Gestures: Infants' Interpretations of Different Forms of Symbolic Reference. *Child Development*, *69*(2), 295–308. <https://doi.org/10.1111/j.1467-8624.1998.tb06189.x>
- Neisser, U., Boodoo, G., Bouchard, T. J., Boykin, A. W., Brody, N., Ceci, S. J., Halpern, D. F., Loehlin, J. C., Perloff, R., Sternberg, R. J., & Urbina, S. (1996). Intelligence: Knowns and unknowns. *American Psychologist*, *51*(2), 77–101. <https://doi.org/10.1037/0003-066X.51.2.77>
- Nieding, G., & Ohler, P. (2008). Mediennutzung und Medienwirkung bei Kindern und Jugendlichen. In B. Batinic & M. Appel (Eds.), *Springer-Lehrbuch. Medienpsychologie* (pp. 379–400). Springer Medizin Verlag Heidelberg. https://doi.org/10.1007/978-3-540-46899-8_16
- Nieding, G., Ohler, P., Diergarten, A. K., Möckel, T., Rey, G. D., & Schneider, W. (2017). The Development of Media Sign Literacy—A Longitudinal Study With 4-Year-Old Children. *Media Psychology*, *20*(3), 401–427. <https://doi.org/10.1080/15213269.2016.1202773>

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Potter, W. J. (1998). *Media literacy*. SAGE.

<http://www.loc.gov/catdir/enhancements/fy0656/97033726-d.html>

Stanovich, K. E., Cunningham, A. E., & Feeman, D. J. (1984). Intelligence, Cognitive Skills, and Early Reading Progress. *Reading Research Quarterly*, 19(3), 278–303.

<https://doi.org/10.2307/747822>

Troseth, G. L., Casey, A. M., Lawver, K. A., Walker, J. M. T., & Cole, D. A. (2007).

Naturalistic Experience and the Early Use of Symbolic Artifacts. *Journal of Cognition and Development*, 8(3), 309–331. <https://doi.org/10.1080/15248370701446772>