8 Methods Study II

This exploratory intervention study[59] was based on a pre-posttest design including an intervention group, an intervention control group, and a non-intervention control group.

8.1 Participants

Forty-eight of the Turkish-German DLLs who participated in Study I comprised the participants for this study. Information on recruitment, inclusion criteria, and informed consent can be found in section 4.1 of Study I, respectively.

Based on their Frog Story EINC measures, 30 of the children who had among the lowest narrative complexity scores were randomly assigned to one of the three conditions: Peer Tutoring (PT), Peer Play (PP), or Control Group (CG). Each child in the PT and PP groups was then matched with a child from the same ECEC institution with considerably higher narrative language skills based on their Frog Story EINC and ECEC practitioners' referral[60]. The children with relatively weaker narrative skills were deemed the tutees and children with relatively strong narrative skills were deemed the tutors. ECEC practitioners reported the tutees to be among the weakest narrators and the tutors to be among the strongest spontaneous narrators[61]. Original group assignment led to 20 children in the PT group (i.e., 10 tutee-tutor-dyads), 18 children in the PP group (i.e., 8 tutor-tutee-dyads, two additional tutees), and 10 children in the CG group.

[59] Data collection was funded by a research grant by Niedersächsisches Institut für Frühkindliche Bildung und Entwicklung (nifbe) awarded to Ulrike M. Lüdtke and Ulla Licandro, née Grube (nifbe Az. FP 01-12). The author served as the principal investigator and has no financial or nonfinancial relationships relevant to the content of the study.

[60] ECEC practitioners were involved in the selection process to prevent the pairing of children disliking each other.

[61] Thus, children's narrative skills were considered in relation to his or her peers' skills, that is, their reference-group status (Hanushek, Kain, Markman, & Rivkin, 2003).

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Overall, eight children dropped out over the time course of the study. Two dyads in the PT group dropped out because of high rates of absence (i.e., more than 4 sessions) due to spontaneous extended family holidays (in one case the tutee and in the other case the tutor). Two children who were originally assigned to the PP group participated in the pretest and were identified as tutees, but could not be matched with an appropriate tutor. Two children in the CG group participated in the pretest, but did not participate in the posttest, one because of refusal, and the other one because of absence from ECEC on the days of testing. As a result, 40 children (i.e., 8 tutee-tutor dyads in PT, 8 tutee-tutor dyads in PP, and 8 children in CG) participated in the final study. Summary data describing the characteristics of the children by participant group are given in Tables 11 and 12 and statistical comparisons between the groups are provided in tables 13 and 14 (for all tables, see preliminary analyses, section 9.1).

8.2 Materials

The following sections present information about the standardized test instruments, the narrative assessment material, and the intervention material.

Standardized Test Instruments

As all children, tutees, tutors, and participants in the control condition also participated in study I, information on procedures for measures of home language environment, language assessment, and nonverbal intelligence is provided in section 4.2.

Narrative Assessment Material

The Frog Story (Mayer, 1969, as presented in section 4.3) was used for pre- and post-intervention probes to track narrative microstructure as well as macrostructure and evaluative and literate language use (as assessed by the combined instrument EINC, see section 4.4.2). Different self-developed stories (similar to the intervention material, see section below) were used at pretest, posttest, as well as after the no-intervention period as a maintenance probe, and also analyzed via EINC.

Intervention Material

The intervention in the PT group itself, as well as additional pre- and posttests and generalization probes[62] throughout the intervention period, involved a total of 20 picture stories. Following McGregor's (2000) example, these wordless stories were developed to reflect young children's experiences. While some of the books were modeled after McGregor's (2000, study 3) materials and others were self-developed, they were all digitally designed by an artist. This procedure eliminated the possibility that participants had prior exposure to any particular story and controlled for length and complexity effects on the obtained narratives. Each story was seven pages long and showed animated characters of diverse ethnicity and gender or animal protagonists solving a single problem or encountering events familiar to children (e.g., falling from a tree, searching for a shoe). Each page represented an opportunity for the inclusion of one or more story grammar elements (character, setting, initiating event, action/attempt, complication, consequence). The pictures were printed in color on 13x9 cm cardstock and laminated. Each story was put in an individual box that bore a picture of the main character(s) and the name of the story. Additionally, all stories were on 16x11 cm laminated cardstock so that children also had the opportunity spread their story out on the floor and to tell their story while standing up or while sitting on the floor. Finally, the stories were bound as little story books, displaying one picture per page. An example story is displayed in Appendix A.

8.3 Study Design and Intervention Procedure

As presented in Figure 15, the study was based on a pre-intervention to post-intervention comparison. It involved tracking selected measures of microstructural and narrative complexity (macrostructure and evaluative language features) used in the oral productions of the Frog Story (unfamiliar at pretest and told for the second time at posttest I).

[62] The analysis of the generalization probes collected throughout the intervention process was not analyzed as part of the current study.

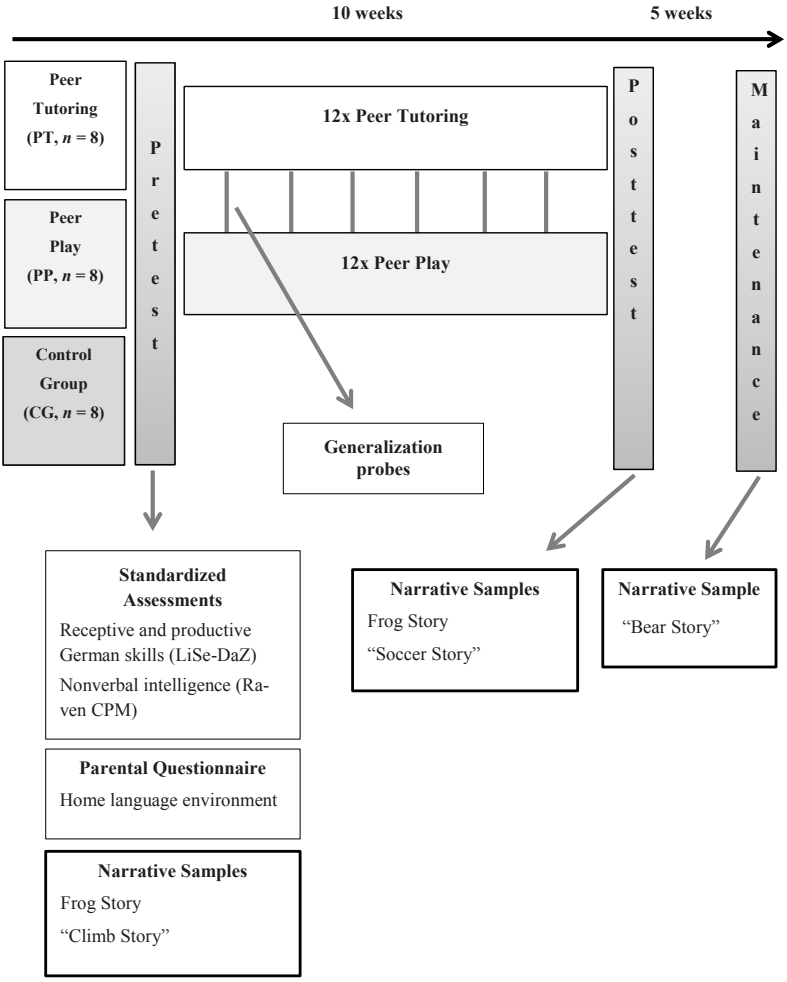

Figure 15. Overview of the Exploratory Intervention Study Design

To supplement the narrative productions, children in all three groups (both tutors and tutees, as well as children in the control group) also produced two narratives based on unfamiliar picture books at pretest, posttest, and after a non-intervention maintenance phase (each time a warm-up story and a story that was used for tracking changes in narrative production). Posttest measures were collected in the same manner as pretest

measures. Five weeks ($M = 32.86$ days, $SD = 6.75$ days) following the posttest, a maintenance probe was collected from all children. As several weeks had passed between the collection of stories at posttest and maintenance probe, the latter included the production of two stories. The first story was treated as a warm up, while the second was seen as the assessment story. The protocol for the collection of the narrative sample was similar to pretest and posttest. No further data was collected at this point. Furthermore, for children in the PT and PP groups, biweekly generalization probes were collected that included the unaided production of two unfamiliar story books (7 pages; see previous section and Appendix A for a sample story). The analysis of the generalization probes was not included in the current study. The intervention procedure as well as tutor-tutee dyads were held constant throughout the intervention, as young children in a peer-learning setting may not only benefit from the familiarity with a task, but also from the familiarity with their assigned peer partner (e.g., Ogden, 2000; Pellegrini et al., 2002).

The study featured one intervention group (Peer Tutoring, PT) and two control groups: the Peer Play (PP) group as well as a no-intervention control group (CG), where children only participated in pre- and posttests to control for naturally occurring growth over time. The procedures for the PT and PP groups took place in a quiet room in the children's ECEC institutions. Detailed descriptions for both procedures are given below.

Peer Tutoring Group (PT)

Before implementing the intervention for the study, it was piloted with a group of children in an ECEC setting, which led to the final intervention plan.

The relational didactic framework for the intervention, drawing on the theoretical background of the relational didactics (see section 7.3.2), was the notion of 'Geschichtendetektive' *[Story Detectives Buddies]*; the children's task was "to discover stories together." To do so, children were told to listen carefully, "just like detectives," when their peer told them a story and pay attention to detail when telling a story them-

selves. Prompted peer models[63] were achieved in the following manner: After selecting a story at random from a selection of three, the tutor told the depicted story to the tutee. The clinician used corrective feedback and elaboration techniques as well as a maximum of four prompts per story, following the tutor's utterances, to elicit narratives rich in structural form and content (for examples of all prompting and feedback methods, see Appendix D). Therefore, prompted peer models represented the narrative reflection of the clinician-supported tutor's performance (cf., McGregor, 2000). Following the tutor's model, the tutee told the same story back to the tutor. The clinician used similar feedback and prompting methods to support narrative elaboration, but never modeled a complete story to the children. Consecutively, this procedure was repeated with another story. For the third story, a different setting was created to facilitate joint narrative co-construction between tutor and tutee. The children were prompted to jointly tell the story as depicted in their book to the clinician. During the part, the clinician remained silent except to demonstrate interest using a selected array of prompts and backchannel responses such as nodding, "yes," "mhm," "anything else?" and "continue."

The 12 sessions each featured on average three stories (for a total of $M = 33.00$, $SD = 2.93$ stories throughout the intervention) and were each carried out for 35-40 minutes ($M = 37.58$, $SD = 3.18$ minutes), including a welcome song and little movement activities in between stories to ensure focused participation, especially in younger children. At the beginning of the intervention period, each child received a 'detective pass' where they received a stamp after the completion of each session. Upon the collection of four stamps (i.e., three times throughout the intervention process), children could collect a small toy or a sticker as a reward.

This setting was not only special in the sense that children were put in tutor-tutee dyads and participated in structured story telling activities, but also because a clinician from outside of the ECEC institution visited and spent time with them in an intimate setting, which is quite unusual in a regular ECEC day. Research found, as previously discussed, that preschool-age children can linguistically benefit from play interactions

[63] This part of the intervention was modelled after McGregor (2000, study 3).

with stronger language peers (e.g., Robertson & Ellis Weismer, 1997, also see section 7.1). For these reasons, the Peer Play group (PP) was created.

Peer Play Group (PP)

The tutee-tutor dyads of the PP group met in a similar fashion to that of the PT dyads. An examiner was present and guided the children through selected activities. In these groups, the notion of peer play was the focus. The overall theme was 'Weltenforscher' *[World Explorers]*. Participating children received a map and were told they would travel to a different land every time (e.g., 'The Land of Ice,' 'The Land of Robots,' etc.). For each world, a crafting activity and/or moving game was prepared to keep the children engaged for around 40 minutes. Again, similar to the PT group, each participating child received a pass, received a stamp for their participation, and had the opportunity to collect a little item upon the completion of three sessions. While there was no specific emphasis on storytelling, children were engaged in joint play and crafting activities.

Children in the PP groups participated in the pretest, posttest, and the maintenance probe. Furthermore, to control for effects due to repeated testing (e.g., familiarization with the process and the examiner, natural growth over time due to repeated unprompted storytelling, etc.), generalization probes were collected along the intervention process in exactly the same manner as in the PT group.

Control Group (CG)

To further control for naturally occurring growth over time, a control group ($n = 8$) only participated in the pre- and posttest as well as in the maintenance probe.

8.4 Treatment Fidelity

To ensure research quality, investigators must provide evidence that "treatment was implemented as intended" (Dollaghan, 2007, p. 72), a concept referred to as *treatment fidelity*. Treatment fidelity for the current study was implemented as follows: All in-

tervention deliverers had a professional background in Speech-Language Pathology[64] and were experienced in interacting with preschool-age children. They were carefully trained for the delivery of the PT intervention and the PP activities in targeted workshops led by the author and followed a detailed, prescriptive treatment protocol to ensure consistency across sessions. Regular team meetings bore the opportunity to monitor delivery of the intervention by discussing experiences, observations, and ideas. Furthermore, for the PT groups, approximately 50% of the sessions were recorded via video (Panasonic HC-V500EG-K camcorder) and the remaining sessions were recorded using a digital voice recorder (Olympus DM-650). An independent examiner trained on the treatment protocol randomly selected 10% of the video-recordings and observed if the examiner adhered to the protocol and followed specific activities as set out in the session plans. No obvious discrepancies were observed. Furthermore, after each session, both examiners of the intervention and control groups completed an intervention log including general procedures, compliance, and personal comments to control for implementation validity.

8.5 Analytic Strategy

The current study addressed the three main research questions relevant to preschool-age DLLs' emerging narrative skills: It explored the effects of a peer-assisted narrative-based language intervention on indices of the oral fictional narrative generations of preschool-age DLLs; it targeted long-term effects of the intervention; and, finally it targeted the intervention effects on tutors. Specific analyses are detailed below.

Because of the group sizes and high inter-individual differences between children, a normal distribution of examined variables could not be assumed. Accordingly, all analyses targeting were carried out using nonparametric testing procedures. As all three research questions included group comparisons, the same analytic approach was chosen to explore differences between study groups at posttest and at maintenance: To detect significant differences between more than two groups, Kruskal-Wallis H tests were applied. In keeping with standard practice, significant differences were followed

[64] I.e., professional training at least equivalent to a BA in Communication Sciences and Disorders

up with the Mann-Whitney U test to identify the origins of these differences with Bonferroni adjustments[65] applied for multiple between-group comparisons. Categorical variables were compared via chi-square-test for independence. Effect sizes were calculated to help to determine whether statistically significant differences were differences of practical concern. In accordance with Cohen (1988), effect sizes between .10 and .29 represented a small association, those between .30 and .49 represented a medium association, and effect sizes above .50 indicated large effects (Cohen, 1988, pp. 77-81).

Potential impacts of the chosen analytic approach on study findings and interpretations are discussed in the results and discussion section (see section 10.2.1 specifically for statistical considerations).

[65] This adjustment of the level of significance was applied to avoid type I errors when running multiple tests, i.e., concluding the presence of a significant difference when it is not.