The effects of gendered information in stories on preschool children's development of gender stereotypes

Maximilian Seitz[1]*[†] (ID), Jan Lenhart[2][†] and Nina Rübsam[2]

[1]Leibniz-Institute for Educational Trajectories, Bamberg, Germany
[2]Department of Psychology IV, Julius-Maximilians-University Würzburg, Germany

Social-cognitive theory posits that children learn gender stereotypes through gendered information. The present study examined whether children learn new gender stereotypes from stories when unknown words are linked to a gendered protagonist or context information. In Experiment 1, 40 3- to 6-year-old preschoolers were read stories with either a gendered protagonist embedded within a non-gendered context, or a non-gendered protagonist embedded within a gendered context. In Experiment 2, the same sample of children were read stories with the protagonist and the context displaying congruent or incongruent gender information. Each story featured an unknown activity linked with the stereotypical content. Both experiments indicate that the children rated the activity according to both the gender of the context and of the protagonist; however, the effect of the latter was stronger. In addition, children showed higher interest in the unknown activity if the protagonist's gender matched their own sex. Thus, gender information in stories influences how children perceive unknown words.

Statement of contribution

What is already known on this subject?
- Stories convey gender labels and tell what is acceptable for the male or female gender.
- Gender labels influence children in the way they perceive colours, professions, and toys.
- Stories can activate or facilitate previous gender knowledge.

What does this study add?
- The study shows that children use gender information in stories to label unknown words.
- There is a differential effect between the protagonist's gender versus general stereotypic content.
- Gender information differs qualitatively in how children's gender development is influenced.

Background

Gender stereotypes, which represent normative 'assumptions about traits and behaviors that people in the labeled [gender] categories are thought to possess' (Kite, Deaux, &

*Corresponding should be addressed to Maximilian Seitz, Leibniz-Institute for Educational Trajectories, Wilhelmsplatz 3, 96049 Bamberg, Germany (email: maximilian.seitz@lifbi.de).
[†]Shared first authorship.

Haines, 2008, p. 206), are learned mainly through social interaction (Bussey & Bandura, 1999) and represent cognitive schema of traits associated with the label *gender* that are stored in long-term memory (Schneider, 2004). One example for an early and seemingly innocuous influence is children's books because they play an important role for imparting a society's cultural heritage as well as socially desired traits and actions (McCabe, Fairchild, Grauerholz, Pescosolido, & Tope, 2011). Besides being an important means to foster language development (e.g., Allor & McCathren, 2003), children's books provide information about the behaviour and characteristics of female and male characters across a wide range of different fictional and non-fictional contexts. Unfortunately, analyses of children's books show that also recent ones convey a large amount of traditional gender roles and still lack female main characters (Jürgens & Jäger, 2010). Both children and adults are often portrayed in stereotypical ways (Steyer, 2014). These portrayals include but are not limited to physical appearances, such as women being described as pretty and graceful and men as athletic and strong, or personality traits, such as women being seen as emotional and artistic and men as having great cognitive abilities and being assertive (Kite *et al.*, 2008).

As storybooks play an important role in socializing children form an early age on (McCabe *et al.*, 2011), they might also reinforce or change existing gender stereotypes (Abad & Pruden, 2013). In addition, as children rely on gender stereotypes they already know to make assumptions about other gender-stereotypic traits that might be associated with the gender label (Martin, Wood, & Little, 1990), children might form completely new gender-stereotypic associations, if unknown words are presented in texts in association with other kinds of gender information.

The influence of children's books on children's gender stereotypes, interest, and behaviour

Social-cognitive theory (Bussey & Bandura, 1999) discusses three major modes of how gender-specific information may be learned. The first mode is through modelling, the second mode is enactive experience, and the third mode is direct tuition. Storybooks influence children mainly through modelling because they provide pervasive examples for typically masculine or feminine contexts and typically male or female character traits (Steyer, 2014). Equal representation has not yet been achieved (Hamilton, Anderson, Broaddus, & Young, 2006) and the quality of these representations (i.e., stereotypical or egalitarian) might influence children. For example, when children read stories about clever boys, but not about clever girls, this could result in the children assuming that high cognitive ability is typically male (Bian, Leslie, & Cimpian, 2017). Aside from knowledge about what is conventionally held as acceptable for both genders, social-cognitive theory also considers the motivation to act on that knowledge, arguing that the mere knowledge of a stereotype is not necessarily a motivating factor for pursuing a certain type of behaviour (Bandura, 1986; Bussey & Bandura, 1999). Consequently, Signorella, Bigler, and Liben (1993) distinguish between children's knowledge, their attitudes, and what actions they choose to pursue.

For the most part, empirical research has focused on the effects of counter-stereotypical children's books on already existing gender stereotypes. Here, studies often find that gender stereotypes become more flexible after exposition to gender incongruent information. For instance, after reading gender-fair schoolbooks, first graders held more previously gendered activities appropriate for both boys and girls (Karniol & Gal-Disegni, 2009). Such attitude changes were also shown regarding children's toys (Green, Bigler, &

Catherwood, 2004), personality traits that are associated with gender (Karniol & Gal-Disegni, 2009), and occupational choices (Sagone, Caroli, Coco, & Perciavalle, 2018). In addition, other studies indicated behavioural changes. One study, for example, found within-individual change in gender-typed play behaviour after an intervention with gender-neutral stories (Green *et al.*, 2004) – and although the findings were only consistent for the female subsample, the study still showed the possibility that stories influence how children behave, thus, linking environmental stimuli and behaviour in preschool children.

In contrast, demonstrating effects of gendered information on children's attitudes towards novel objects has received relatively less attention in research so far. In a recent study, for example, Chinese preschoolers were shown various gender-neutral colours with explicit gender labels (Yeung & Wong, 2018). After the gender label (i.e., 'this is for boys' or 'this is for girls') had been made salient, children actively changed their expressed preferences according to traditionally gender-stereotypic appropriate choices. In addition, Martin, Eisenbud, and Rose (1995; Study 3) showed that children's preferences for previously unknown toys and judgements regarding other children's preferences for those toys were influenced by gender labels. Even if an attractive toy was presented, children liked the toy less if it was labelled as being for the other sex and expected other same-sex children to do the same. This pattern of results was recently replicated by Weisgram, Fulcher, and Dinella (2014; Study 2). Interestingly, however, they found that the effect of gender labels was also modified by the properties of the toys, with pink toys that were labelled 'for boys' being much more of interest to girls than equally labelled blue toys. Thus, context information for which children have already acquired gender associations seems to serve as additional gender cues beyond the explicit gender labelling that was provided by the experimenter.

For the most part, however, stories do not use such clear labels for gender-appropriate objects or behaviour. Instead, they impart gender information in a less apparent way, for example by providing gender information about the protagonists such as using male or female names or by highlighting their typically masculine or feminine characteristics. In this context, gender-stereotypic information is assumed to be learned like any other type of information, with children linking certain objects, attributes, or activities such as playing with dolls or trucks to the categories *female* or *male*. By doing so, children build a bidirectional network between a person's gender and those objects, attributes, and activities (Martin *et al.*, 1990). The occurrence of gendered information can activate an associative network that links gender-associated properties across different content areas, with salient gender information providing stronger activations (Bauer, Liebl, & Stennes, 1998). For example, when children hear a word like *lipstick* that is presented in a narrative, which features a feminine context (i.e., a traditionally female setting) and/or female characters, the female gender label is probably activated. Although both the protagonist and the context might influence that children associate a new word with the respective gender category, the modelling influence of characters should be stronger. On the one hand, children might identify more with a story's protagonist than with the general setting (Bussey & Bandura, 1999); on the other hand, the protagonist's name might be more strongly linked to the respective gender category (Martin *et al.*, 1990). Thus, children should associate a word they have not learned yet (e.g., *lipstick*) with *femininity* when the protagonist is female – and to a lesser extent when the context is typically feminine. Of course, the same should be true for male protagonists and masculine contexts.

The findings by Weisgram et al., 2014; Study 2) that show that the explicit gender label of a toy was moderated by gendered context information, namely the colour of the toy,

provide some empirical evidence for that line of argument. First, both the explicit gender label and the gendered context information had an influence on children's attitudes towards novel object. Second, the explicit label had a stronger impact than the context information. However, it is unclear if this finding can be applied to books, in which novel word occurrences are less salient and gender information is more indirectly embedded within the context.

The current study

The goal of the current study was to examine the effects of gendered information on unknown words in children's books. Although explicitly labelling neutral or novel objects as 'for boys' or 'for girls' influences children's judgements and preferences (Martin *et al.*, 1995; Weisgram *et al.*, 2014; Yeung & Wong, 2018), it is unclear whether a less apparent exposure to gender information in storybooks might be sufficient to establish incidentally a stereotypic association and to influence children's behavioural intentions. In particular, we were interested in the effects of the gendered context, in contrast to gender information provided by a male/female protagonist on gender association of unknown words. To do so, we conducted two experiments. In the first experiment, we examined the effects of protagonists' gender and gendered context information, when the respective other source of information was ambiguous. In the second experiment, we directly contrasted the effects of both sources of gender information by providing congruent versus incongruent gender information.

Hereby, we examined the following research questions: First, as proposed by social-cognitive theory (Bussey & Bandura, 1999) as well as cognitive theories (Martin & Ruble, 2004), we examined if children associate words with a certain gender based on information provided by a story. To do so, we presented previously unknown pseudowords within the stories in thematic and contextual proximity to gender-stereotypic activities or in combination with a male or female protagonist. We expected that in both cases children would link the novel word to a specific gender (Hypothesis I). Second, in line with Bussey and Bandura's (1999) distinction between gender knowledge and the motivation to act on that knowledge, we examined children's behavioural intention to interact with the novel object or to pursue the novel activity. We expected that children's intention to interact with unknown objects presented in the stories depended on the congruence between their sex and gender information provided by the protagonist or context (Martin *et al.*, 1995; Weisgram *et al.*, 2014; Yeung & Wong, 2018; Hypothesis II). Finally, we compared the effects of protagonist and context on the association of novel words with gender and on the behavioural intention to interact with unknown objects or pursue unknown activities. Although contextual information such as properties of the objects provide relevant gender information (Weisgram *et al.*, 2014; Study 2), we expected protagonists to be stronger gender cues than contexts (Bleakley, Westerberg, & Hopkins, 1988) and therefore to result in stronger gender associations and stronger behavioural intentions (Hypothesis III).

EXPERIMENT 1

In Experiment 1, we examined the effects of protagonists' gender and contextual information, when the respective other source of gender information was held ambiguous. Thus, the design of the study was a 2×2 within-subjects design, with

gender information (male vs. female) and type of presentation (protagonist vs. context) as within-subjects factors. The four conditions were as follows: (1) ambiguously gendered protagonist and masculine context, (2) ambiguously gendered protagonist and feminine context, (3) male protagonist and non-gendered context, and (4) female protagonist and non-gendered context.

Method

Participants

Children were recruited from three kindergartens of a city in Southern Germany. For all subjects, informed consent was obtained and the privacy rights of the children, as well as of the parents were always observed. The final sample consisted of 40 three- to six-year-old children (60% female; M = 55.7 months; SD = 10.11 months; Min = 39 months; Max = 75 months). Although the age range was broad, it was to be expected that all children would identify and discriminate between gender labels (Fagot et al., 1992). Furthermore, even basic knowledge on gender may lead to developing gender stereotypes at age 2 (Martin & Ruble, 2010). Migration background in our sample was comparable to that of children under six years in Germany (Böttcher, Krieger, & Kolvenbach, 2010). As an indicator of socioeconomic status, the highest educational level of the parents was used, with about 8% having received a lower-level degree, about 22% a secondary school certificate, about 23% a high school diploma, and 47% a university degree. Consequently, the parents' highest level of education in our sample was above average, especially parents with a university degree were overrepresented (Statistisches Bundesamt, 2018). In our sample, boys (n = 16) and girls (n = 24) did not differ regarding age, $t(38)$ = 1.21, p = .233, migration background (mother's country of birth: p = .491, father's country of birth: p = .720, child's country of birth: p > .99; Fisher's exact test), and socioeconomic status (mother's educational level: LR(3) = 0.43, p = .934, father's educational level: LR(3) = 1.43, p = .698).

Materials

Stories

The children were presented 28 stories and two trial stories about everyday situations (see Appendix B for an example). To provide comparable results considering the manipulation of gender-stereotypic contexts and protagonists, seven story templates were written. Each template appeared in four different experimental versions, resulting in a total of 28 stories (M = 118.86 words; SD = 11.83 words; Min = 103 words; Max = 137 words). All stories were assigned in a random order to each child. The stories were comparable in length, setting, use of characters, and featured only vocabulary suitable for preschool children. For experimental control, no additional materials such as pictures were used.

Manipulation of the context

To create gender-stereotypical or non-gendered contexts, we used a list of attributes and activities from a previous pilot study. In the pilot study, a sample of 54 4- to 6-year-old children (44% female) rated a larger number of attributes and activities that were derived from studies of gender stereotypes in children's books and experimental studies targeting gender stereotypes (e.g., Green *et al.*, 2004) regarding their association with male or

female gender (for a similar approach: Leinbach, Hort, & Fagot, 1997). Twelve stereotypically masculine attributes and activities, 11 stereotypically feminine attributes and activities, and nine non-gendered attributes and activities were used to create gender-neutral, masculine, and feminine contexts (see Appendix A). The stories with an ambiguously gendered protagonist featured two items of either the masculine or feminine list. The stories with a gendered protagonist featured two non-gendered attributes or activities. In each story, the objects, attributes, or activities were mentioned two times.

Manipulation of the protagonist

All the experimental stories featured a child character as the main protagonist. In the stories with the male or female protagonist, popular and unambiguous German names were used. In the conditions with an ambiguously gendered protagonist, pseudowords were chosen, so that there would be no previous gender bias in the children. A list of 16 pseudonames was created by random variations of two syllables – no pseudoname exists in one of the languages familiar to the children (e.g., 'Zure' or 'Toti'). Because name endings can have an influence on gendered associations (Cassidy, Kelly, & Sharoni, 1999), endings were chosen that have no specific associations with one gender in the languages familiar to the children, namely *-e* or *-i*. All gendered names and pseudonames were assigned randomly to the stories.

Non-gendered pseudowords

Thirty non-gendered pseudowords were created to be included in connection with the gender-specific content (e.g., 'bilago' or 'mimoja'). The pseudowords were randomly inserted three times in each story as an additional activity or object in the stories. As the pseudowords were unknown to the children and do not exist in any language known to the children, it is probable that the children had no definite gender bias to begin with.

Instruments

Parental questionnaire

A questionnaire for parents contained questions about migration background, family circumstances, educational level, home literacy environment, and other socio-demographic data.

Dependent variables

Association of unknown pseudowords with gender

First, after each story we asked the children whether the pseudoword activity or object was for boys, girls, or whether it was non-gendered (association of pseudoword). The children could point to picture cards of a boy (*male*), to one of a girl (*female*), or to a picture displaying both a boy and a girl (*gender-neutral*) – for a comparable approach, see Bian et al. (2017). To ensure that the children understood the rating procedure, we previously asked, for example, which character(s) had two legs. Here, the children were reminded that they should point towards the picture with both children in it, if that seemed appropriate to them.

Behavioural intention regarding the unknown pseudowords
We asked the children if they would like to pursue the unknown activity or interact with the unknown object (behavioural intention). Here, the children had to answer 'yes' or 'no' (for a similar approach: Martin *et al.*, 1995; Weisgram *et al.*, 2014). Cronbach's α was .97.

Implementation check of the gender manipulation

Implementation check of the protagonist manipulation
After the two questions on gender association and behavioural intention, we also asked the children whether the protagonist was a boy, a girl, or whether it could be both a boy and a girl (gender labelling). Overall, the conventional male and female names that we used to create the masculine and feminine conditions were distinctly labelled by the children ($d = 1.59$), but they did not result in perfect gender identification, probably because the children reasoned that these characters were also from another country (see instruction). Cronbach's α was .78 for both female and male protagonists.

Implementation check of the context manipulation
In addition to being rated as typically masculine, feminine, or non-gendered in a previous pilot study, the current sample also rated the attributes and activities that we used to manipulate the stories' contexts at the end of the study. We asked the children whether a specific activity was typically for boys (1) for girls (-1), or whether it was for both boys and girls (0). The children's ratings indicated that the context items were meaningfully gender-specific or non-gendered, respectively (masculine: $M = 0.64$, $SD = 0.28$; feminine: $M = -0.47$, $SD = 0.39$; non-gendered $M = -0.03$, $SD = 0.33$; $d_{\text{masculine–feminine}} = 2.18$, $d_{\text{masculine–neutral}} = 1.64$, $d_{\text{feminine–neutral}} = -1.36$). Cronbach's α was .64 for masculine context words and .73 for feminine context words.

Procedure
The 28 experimental stories were read individually over the course of three sessions, each session lasting between 25 and 30 min and covering 8 to 10 stories. The order of the experimental stories was randomly assigned to each child. The instruction of the stories was standardized. The children were told that some but not all children in the stories came from foreign countries, their names being therefore not recognizable as either male or female. After each story, the children were asked (1) whether the neutral pseudoword was something for boys, girls, or for both, (2) whether they would like to pursue the activity, and (3) whether the character of the stories was male or female. As a manipulation check, at the end of the third session, the children were required to rate all the context words that were used in the current study. The children received two small storybooks for their participation.

Data preparation and analysis
Data preparation and analysis were conducted with IBM SPSS 23 and R (version 3.6.0; R Core Team 2019). We used mixed-effects modelling to analyse children's gender ratings and behavioural intentions regarding the unknown pseudowords. Following recommendations from recent research (Baayen, Davidson, & Bates, 2008; Jaeger, 2008; Quené &

van den Bergh 2008), we modelled participants and items as Subject × Item crossed random effects. Prior to analyses, categorical independent variables were effect-coded (Cohen, Cohen, West, & Aiken, 2003). As the behavioural intention ratings resulted in binary outcomes, namely 0 ('no') or 1 ('yes') point per item, we used the *glmer*-function of the R package *lme4* (version 1.1-21; Bates, Mächler, Bolker, & Walker, 2015). For the analyses of gender labelling, the unknown pseudowords that resulted in scores of −1, 0, and 1, we used the *lmer*-function of the same package. Contrasts comparing individual conditions were computed using the R package *emmeans* (version 1.3.5; Lenth, 2019).

As our goal was confirmatory hypothesis testing, in a first step, we included all random slopes for all fixed effects that varied within subjects or items, thereby specifying a maximal random structure (Barr, 2013; Barr, Levy, Scheepers, & Tily, 2013). However, due to the high number of parameters, these models are often overparameterized (Bates, Kliegl, Vasishth, & Baayen, 2015; Hoffman & Rovine, 2007; Linck & Cunnings, 2015). Consequently, in our analyses, we followed guidelines provided by Bates, Kliegl, *et al.* (2015). In a first step, we used principal component analysis of the random effect structure (provided in the *RePsychLing* package; Baayen, Bates, Kliegl, & Vasishth, 2015) to identify the number of variance components supported by the data. In a second step, we compared the goodness of fit of nested models with likelihood ratio tests and AIC values, starting with dropping the highest order interaction term and models that displayed convergence problems. The resulting parsimonious models were taken as the optimal linear mixed models for the data (Bates, Kliegl, *et al.*, 2015).

Missing data

The amount of missing data was small, ranging between 1.61% for gender association ratings and 2.41% for behavioural intentions regarding the unknown pseudowords. Due to the random ordering over three sessions, there was only intermittent missing data at random. Thus, the loss of precision was negligible, and no bias was to be expected. As mixed models are generally robust against small proportions of missing data (Quené & van den Bergh 2008), missing ratings were excluded from analysis and we did not use any data imputation.

Results

Association of unknown pseudowords with gender

To test our hypotheses that children associate gender (male vs. female) with an unknown pseudoword based on the protagonist's name (within a non-gendered context) or based on a gendered context (with a non-gendered pseudoname; Hypothesis I), and that this effect is stronger for gender information provided by protagonists (Hypothesis III), we calculated a mixed model with gender information (male vs. female) and type of presentation (protagonist vs. context) as fixed effects and subject and item as crossed random effects. Analysis of the random structure indicated that a model including a random intercept and a gender information slope for subject was appropriate.

Results of Model 1.1 (see Table 1; see Figure 1) showed that gender information had a significant effect on the association of an unknown pseudoword with gender. Female gender information provided by the protagonist or the context led to a judgement regarding the pseudoword in the female direction, whereas male gender information led to a judgement in the male direction. This main effect was modified through a two-way-

Table 1. Results of the mixed models examining the influence of gender information, type of presentation, and children's sex on the association of pseudowords with gender (Model 1.1) and on behavioural intentions regarding pseudowords (Model 1.2)

	Model 1.1 Gender association				Model 1.2 Behavioural intention			
	B (95% CI)	SE	t	p	OR (95% CI)	SE	z	p
Fixed effects								
(Intercept)	−0.05 (−0.14 to 0.04)	0.04	−1.12	.271	0.90 (0.26–3.04)	0.62	−0.18	.861
Gender information (male)	0.17 (0.12 to 0.22)	0.03	6.65	<.001***	0.95 (0.79–.14)	0.09	−0.58	.561
Type of presentation (protagonist)	0.00 (−0.04 to 0.04)	0.02	0.03	.973	1.06 (0.88–1.27)	0.09	0.62	.535
Children's sex (male)					1.99 (0.58–6.77)	0.62	1.10	.271
Gender information × Type of presentation	0.08 (0.04 to 0.13)	0.02	3.97	<.001***	1.03 (0.86–1.23)	0.09	0.35	.727
Gender information × Children's sex					1.32 (1.10–1.58)	0.09	3.01	.003**
Type of presentation × Children's sex					0.99 (0.83–1.19)	0.09	−0.08	.937
Gender information × Type of presentation × Children's sex					1.06 (0.89–1.27)	0.09	0.67	.503
Random Effects								
Intercept variance$_{Subject}$	0.059				13.190			
Slope variance Gender Information$_{Subject}$	0.009							
Residual variance	0.490				3.290			
ICC					.80			
N$_{Subjects}$	40				40			
Observations	1,102				1,093			
Marginal R^2/ Conditional R^2	.061/ 0.176				.031/ 0.807			

Note. The linear mixed model (Models 1.1) was fitted by REML. The generalized linear mixed model (Model 1.2) was fitted by ML (Laplace approximation). t-Tests of predictors use Satterthwaite approximations to degrees of freedom. All predictors were effect-coded (−1;1). B = unstandardized regression coefficient; CI = confidence interval; SE = standard error; t = t-value; p = p-value; OR = odds ratio; z = z-value; ICC = intra-class correlation. ICCs are only calculated for models without random slopes.***p ≤ .001; **p ≤ .01; *p ≤ .05.
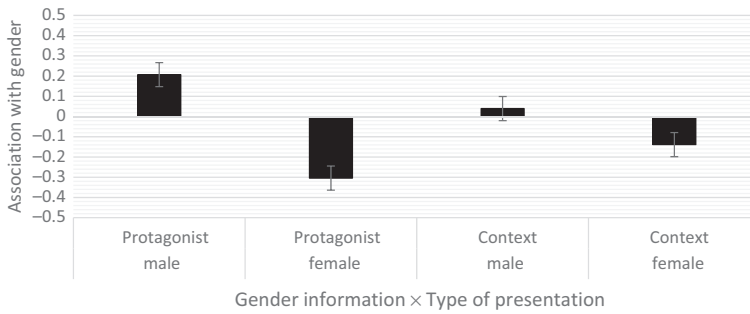
Figure 1. Gender association of pseudowords for boys and girls across conditions of Experiment 1. *Note.* Values range from −1 to +1. Negative values depict female associations; positive values depict male associations. Bars represent standard errors.

interaction effect between gender information and type of presentation, indicating that the protagonist's gender had a stronger influence on the association of a specific gender with the pseudoword. The mean difference in gender ratings of pseudowords between stories with male and female protagonists was $M_{\text{male–female}} = 0.51$, $t(107) = 7.67$, $p < .001$, whereas the mean difference between stories with female and male gendered contexts was only $M_{\text{male–female}} = 0.18$, $t(106) = 2.62$, $p = .010$. In line with this, male as well as female protagonists resulted in higher gender ratings than their respective gendered contexts $M_{\text{male protagonist-context}} = 0.17$, $t(1,022) = 2.84$, $p = .005$, $M_{\text{female protagonist-context}} = -0.17$, $t(1,022) = -2.78$, $p = .006$. Consequently, the results support our hypotheses that both the gendered protagonists as well as the gendered contexts provide information to connect previously unknown words with a gender label (Hypothesis I), but that protagonists have a stronger impact relative to mere context information (Hypothesis III).

Behavioural intentions regarding the unknown pseudowords

To test out hypothesis whether gender labelling also influenced the behavioural intention regarding the pseudoword activity/object (Hypothesis II) and that his effect was stronger for protagonists' gender than for context information (Hypothesis III), we calculated a mixed model with gender information (male vs. female), type of presentation (protagonist vs. context), and children's sex (boys vs. girls) as fixed effects and subject and item as crossed random effects. Analysis of the random structure indicated that a model including only a random intercept for subject was appropriate.

As predicted, results of the Model 1.2 (see Table 1; see Figure 2) show that children preferred to conduct an unknown activity or to use an unknown object if it was presented in a gendered context or with a protagonist matching their own sex ($OR = 1.32$). Although this generally supports Hypothesis II, post hoc contrasts indicated that boys displayed only a descriptive tendency in favour of pseudowords in masculine stories in contrast to feminine stories, $M_{\text{masculine–feminine}} = 0.01$, $z = 1.42$, $p = .156$. Girls, however, made a statistically significant differentiation in their behavioural intentions regarding pseudowords of feminine and masculine stories, $M_{\text{masculine–feminine}} = -0.14$, $z = -2.30$, $p = .022$. Finally, contrary to our hypothesis, the behavioural intention ratings for gender-appropriate objects or activities were not affected by the type of presentation
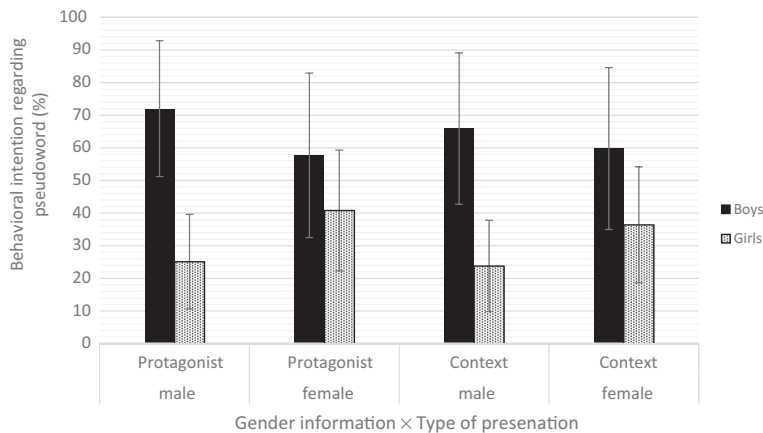
Figure 2. Behavioral intentions ratings regarding pseudowords for boys and girls in all four conditions of Experiment 1. *Note.* Higher values represent a stronger willingness to use the unknown object. Bars represent standard errors.

(OR = 1.06), with gender information provided by the protagonist or the context showing similar effects.

Discussion

Consistent with Hypothesis I, we found that a feminine context or female protagonist led to female ratings, whereas a masculine context or male protagonist led to male ratings. Thus, in line with Bussey and Bandura's (1999) social-cognitive theory, stories may provide attractive models that facilitate the acquisition of new gender stereotypes. Although both the context and the gender of the protagonist influenced the children's judgements, the latter had a stronger influence. This was also in line with Hypothesis III that the protagonist's gender is a stronger gender cue than the contextual information alone.

Additionally, we examined whether children were likely to pursue an unknown activity or to use an unknown object if said activity or object was associated with a gendered context or with a gendered protagonist that matches their own sex (Hypothesis II). Although boys generally stated higher behavioural intentions, only girls showed a significant differentiation between situations where the object/activity was presented in a context or with a protagonist that matched their own gender and masculine stories, showing that gender information provided in children's books may also impact behavioural choices. However, contrary to our expectations and against Hypothesis III, effects were not stronger for stories in which gender information was provided by a female or male protagonist than for those in which a gendered context was presented.

EXPERIMENT 2

As the first experiment did not allow contrasting the effects of protagonists versus contextual information directly, we conducted a second experiment, in which we included both sources of gender information simultaneously, providing congruent versus

incongruent gender information. Thus, the design of the study was a 2 × 2 within-subjects design, with protagonist's gender (male vs. female) and congruency (congruent vs. incongruent) as within-subjects factors. The four conditions were as follows: (1) male protagonist and masculine context, (2) male protagonist and feminine context, (3) female protagonist and feminine context, and (4) female protagonist and male context. In addition, extending the first experiment, we used a finer-grained assessment of word associations by employing a five-tier scale (Signorella *et al.*, 1993). Moreover, we added a third dependent variable, namely a five-tier smiley scale to capture the influence of gender information on children's interest in the pseudoword to capture children's attitudes towards the novel words. This approach was chosen because the interaction between the children's gender and the protagonist' gender has also been shown to influence the children's interest in the story (Anderson, 1984). In line with the first experiment, we expected protagonists to have a dominant impact on word associations (Hypothesis IV), interest ratings (Hypothesis V), behavioural intentions (Hypothesis VI), and we expected that congruently and incongruently gendered context information strengthens or weakens these associations, intentions, and ratings (Hypothesis VII).

Method

As Experiments 1 and 2 were planned as complementary studies, we used the sample from Experiment 1, six of the seven story templates from Experiment 1 (M = 116.25 words; SD = 10.77 words; Min = 103 words; Max = 134 words), and generally a near-identical procedure. To avoid memory effects, Experiment 2 was conducted approximately 4 months after the first experiment. Testing the same sample two times was not only an efficient and economic approach, but also allowed for a better comparison of the results.

The manipulation of the context and protagonist was again achieved through previously validated stereotypic word lists (see Appendix A). However, for our dependent variables (association of unknown pseudowords with gender and interest in the unknown pseudoword), we chose a five-tier scale to obtain a finer-grained assessment. The children could point to the picture of only boys (*absolutely masculine*), three boys and a girl (*predominantly masculine*), two boys and two girls (*gender-neutral*), three girls and a boy (*predominantly feminine*), or only girls (*absolutely feminine*). Cronbach's α was .81 and .94. Behavioural intention regarding the unknown pseudowords was again measured dichotomously – Cronbach's α was .95.

The overall procedure and the instruction of Experiment 2 were similar to Experiment 1. After each story, the children were asked (1) whether the neutral pseudoword was something for boys, girls, or for both; (2) whether they thought that interacting with the pseudoword would be fun; and (3) whether they would like to pursue the pseudoword activity. Similar to Experiment 1, we used mixed-effects modelling to analyse children's gender ratings of pseudowords, their interest in the stories, and behavioural intentions regarding the unknown pseudowords. As the amount of missing data was again small (<2%), and at random, we chose the same procedure as in Experiment 1.

Results

Association of unknown pseudowords with gender

To test our hypotheses, namely that children associate gender (male vs. female) with an unknown pseudoword based on the protagonist's name (Hypothesis IV) but also to a

lesser degree based on a gendered context (Hypothesis VII), we calculated a mixed model with protagonist's gender (male vs. female) and congruency of gender information (congruent vs. incongruent) as fixed effects and subject and item as crossed random effects. An analysis of the random structure indicated that a model including a random intercept and a random slope for protagonist's gender for subject was appropriate.

Model 2.1 (see Table 2) shows that the protagonist's gender had an effect on gender association of pseudowords, with male protagonists resulting in male gender ratings and female protagonists in female gender ratings. In addition, this main effect was modified by a significant interaction with the congruency of gender information (see Figure 3). Incongruent contextual gender information significantly reduced gender association ratings of pseudowords for male protagonists, $M_{\text{congruent–incongruent}} = 0.50$, $t(862.6) = 4.75$, $p < .001$, as well as for female protagonists, $M_{\text{congruent–incongruent}} = -0.66$, $t(862.7) = -6.22$, $p < .001$. Thus, in line with our hypotheses, protagonists' gender had the dominant influence on gender ascription to the pseudowords (Hypothesis IV), but this influence was moderated by contextual gender information (Hypothesis VII).

Interest in the pseudoword

To test our hypotheses that children show greater interest in words that match their own sex with the protagonists' gender having the dominant impact (Hypothesis V) and that this effect is additionally moderated by contextual gender information (Hypothesis VII), we calculated a mixed model with protagonist's gender (male vs. female), congruency of gender information (congruent vs. incongruent), and children's sex (male vs. female) as fixed effects and subject and item as crossed random effects. An analysis of the random structure indicated that a model including only a random intercept for subject was appropriate.

Model 2.2 (see Table 2) shows a significant interaction between protagonist's gender and children's sex, indicating that children liked pseudowords best when the gender of the protagonist matched their own sex. Although this generally supports Hypothesis V, post hoc contrasts indicated that this was only the case for the girls, $M_{\text{male–female}} = -0.37$, $t(895) = -3.72$, $p < .001$, but not for the boys, $M_{\text{male–female}} = 0.16$, $t(896) = 1.15$, $p = .252$. Moreover, the three-way interaction between protagonist's gender, children's sex, and congruency of gender information just missed the significance threshold ($p = .075$). Thus, as can be seen from Figure 4, congruence between gender information provided by protagonist's name and context information influenced children's interest ratings descriptively, but this trend was statistically not significant. Thus, partly supporting our Hypothesis V, gender information had – at least in the case of girls – an influence on children's interest. However, against Hypothesis VII, there was only a descriptive tendency for contextual information to moderate the effect of gender information provided by the protagonist.

Behavioural intentions regarding the unknown pseudowords

To test our hypotheses that children show behavioural intentions if gender information provided by the protagonist matches their own sex (Hypothesis VI) and that this effect is further influenced by a gendered context (Hypothesis VII), we calculated a mixed model with gender information (male vs. female), type of presentation (protagonist vs. context), and children's sex (male vs. female) as fixed effects and subject and item as crossed

Table 2. Results of the final mixed models examining the influence of protagonist's gender, congruency of gender information, and children's sex on the association of pseudowords with gender (Model 2.1), on the interest in the pseudowords (Model 2.2), and on the behavioural intentions regarding the pseudowords (Model 2.3).

	Model 2.1 Gender association				Model 2.2 Interest				Model 2.3 Behavioural intention			
	B (95% CI)	SE	t	p	B (95% CI)	SE	t	p	OR (95% CI)	SE	z	p
Fixed Effects												
(Intercept)	−0.08 (−0.22–0.05)	0.07	−1.24	.222	0.33 (0.05–0.61)	0.14	2.29	.027*	1.53 (0.68–3.45)	0.41	1.03	.301
Protagonist's gender (male)	0.52 (0.38–0.65)	0.07	7.55	<.001***	−0.05 (−0.14–0.03)	0.04	−1.23	.218	0.87 (0.68–1.11)	0.13	−1.13	.259
Congruency of gender information (congruent)	−0.04 (−0.11–0.03)	0.04	−1.05	.296	−0.03 (−0.11–0.06)	0.04	−0.64	.519	0.94 (0.78–1.12)	0.09	−0.70	.483
Children's sex					−0.14 (−0.42–0.15)	0.14	−0.95	.346	1.47 (0.65–3.30)	0.41	0.92	.356
Protagonists's gender × Congruency of gender information	0.29 (0.22–0.36)	0.04	7.76	<.001***	0.00 (−0.08–0.09)	0.04	0.04	.964	0.97 (0.80–1.16)	0.09	−0.36	.717
Protagonists's gender × Children's Sex					0.13 (0.05–0.21)	0.04	3.10	.002**	1.45 (1.13–1.87)	0.13	2.88	.004**
Congruency of gender information × Children's Sex					−0.00 (−0.08–0.08)	0.04	−0.04	.967	1.11 (0.92–1.33)	0.09	1.08	.281
Protagonists's gender × Congruency of gender information × Children's Sex					0.08 (−0.01–0.16)	0.04	1.78	.075	1.20 (1.00–1.44)	0.09	1.94	.052
Random effects												
Intercept variance_Subject	0.127				0.690				5.625			
Slope variance Protagonists' gender_Subject	0.132								0.186			
Residual variance	1.31				1.518				3.290			
ICC					.31							
N_Subject	40				40				40			
Observations	944				941				944			
Marginal R²/Conditional R²	.184/.319				.021/.327				.040/.653			

Note. Linear mixed models (Models 2.1 and 2.2) were fitted by REML. The generalized linear mixed model (Model 2.3) was fitted by ML (Laplace approximation). *t*-Tests of predictors use Satterthwaite approximations to degrees of freedom. All predictors were effect-coded (−1;1). B = unstandardized regression coefficient; CI = confidence interval; SE = standard error; *t* = *t*-value; *p* = *p*-value; OR = odds ratio; z = z-value; ICC = intra-class correlation. ICCs are only calculated for models without random slopes. ***p ≤ .001; **p ≤ .01; *p ≤ .05.
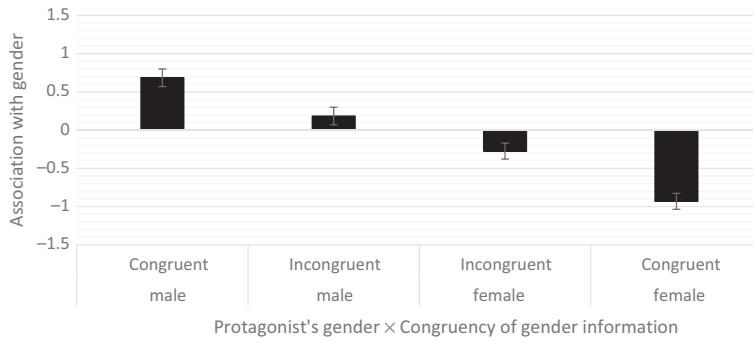
Figure 3. Gender association of pseudowords for boys and girls across conditions of Experiment 2. *Note.* Values range from −2 to +2. Negative values depict female associations; positive values depict male associations. Bars represent standard errors.
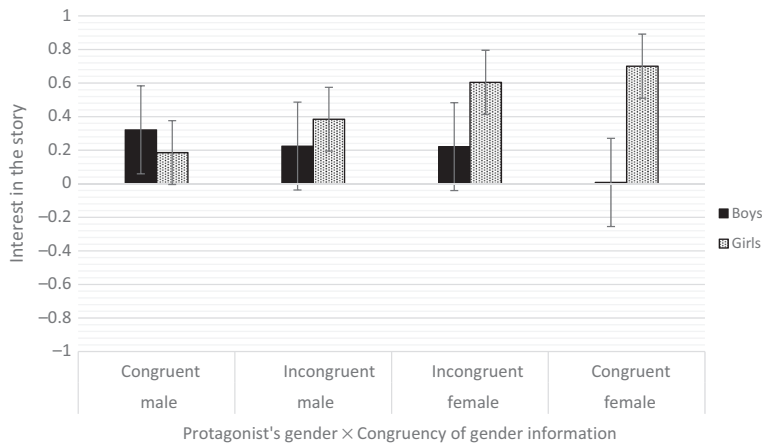

Figure 4. Interest ratings for boys and girls across conditions of Experiment 2. *Note.* Values range from −2 to +2. Negative values depict dislike; positive values depict liking. Bars represent standard errors.

random effects. An analysis of the random structure indicated that a model including a random intercept and a random slope for protagonist's gender for subject was appropriate.

Model 2.3 (see Table 2) shows a significant interaction between protagonist's gender and children's sex, indicating that children preferred to conduct the unknown pseudoword activity when the gender of the protagonist matched their own sex ($OR = 1.45$). However, post hoc analyses revealed that statistically this was only the case for girls, $M_{\text{male–female}} = -0.25, z = -3.75, p < .001$, but not for boys, $M_{\text{male–female}} = 0.10$, $z = 1.02, p = .308$. Moreover, the three-way interaction between protagonist's gender, children's sex, and congruency of gender information showed that descriptively but not statistically significantly context information influenced behavioural intentions beyond the information provided by the protagonist ($p = .052$; see Figure 5). Thus, only partly supporting Hypothesis VI, gender information had – at least for girls – an influence on behavioural intention ratings. However, against Hypothesis VII there was a descriptive but not a statistically significant additional influence of context information.
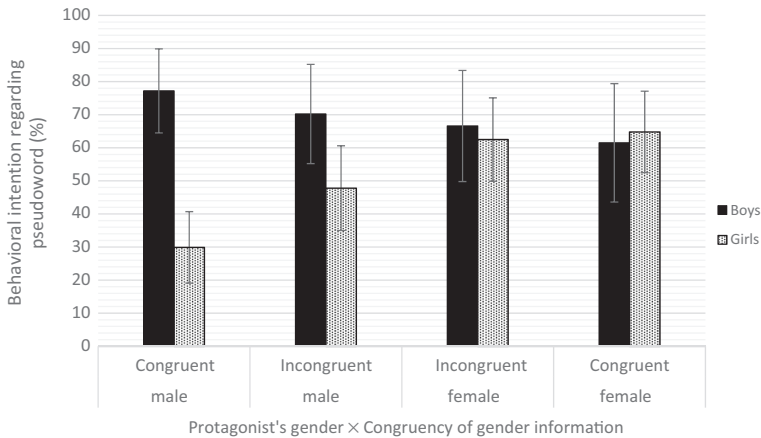
Figure 5. Behavioural intentions ratings regarding pseudowords for boys and girls in all four conditions of Experiment 2. *Note.* Higher values represent a stronger willingness to use the unknown object. Bars represent standard errors

Discussion

Experiment 2 expanded on the findings of Experiment 1, as we included conditions with congruent and incongruent gender-stereotypic information. This way, we could contrast the effect of protagonist and gendered context directly. Experiment 2 reaffirmed that children used the gendered information in the stories for gender labelling the pseudoword. We could also show directly that the protagonist's gender is more influential than gendered contextual information but that it can be modified by context information.

In line with Experiment 1, there was a general tendency for the children to show more behavioural intention and greater interest ratings when the pseudoword was presented with gender information matching their own gender – again, this effect was only for girls statistically significant, whereas for boys there were descriptive trends. This is surprising and needs to be further evaluated, as previous studies have found a stronger effect for boys (e.g., Anderson, 1984; Shutts, Banaji, & Spelke, 2010). Finally, in contrast to results for word associations, context information did not statistically influence the ratings based on the protagonist's gender. As there was a strong descriptive trend and both times the significance threshold was missed only barely ($p = .052$ and $.075$), this result should be interpreted with caution.

GENERAL DISCUSSION

The main goal of the present studies was to examine whether children use gendered information in stories to acquire new gender stereotypes. In both experiments, we investigated whether unknown words presented in stories with a male or female protagonist and/or featuring a masculine or feminine context were associated with male or female gender. In Experiment 1, we manipulated stories to feature either a gender-stereotypic context with an ambiguously gendered protagonist or a gendered protagonist within a non-stereotypical context. For Experiment 2, we created gender congruent (male protagonist and masculine context; female protagonist and feminine context) and gender

incongruent stories (male protagonist and feminine context; female protagonist and masculine context). Each story contained a pseudoword representing an unknown object or activity that was mentioned in combination with the main protagonist. After each story, the children were asked to rate the pseudoword (male, female, or gender-neutral) and whether they were willing to pursue the unknown activity or to use the unknown object. In Experiment 2, we additionally asked the children to state their interest in the unknown pseudoword.

First, we hypothesized that children would associate the pseudoword with the gender prompted by the story context or by the protagonist, respectively. Consistent with our hypotheses, we found in both experiments that a feminine context or a female protagonist led to female ratings, whereas a masculine context or a male protagonist led to male ratings. Thus, in line with Bussey and Bandura's (1999) social-cognitive theory, stories may provide attractive models that facilitate the acquisition of new gender-stereotypic associations. This finding also extends studies that used a more direct labelling approach (e.g., Martin *et al.*, 1995; Weisgram *et al.*, 2014) and shows that non-obtrusive gender information that is common in many stories and books can affect children's perception of gender-appropriate objects and behaviour.

Second, we examined whether children were likely to pursue an unknown activity or to use an unknown object if said activity or object was associated with a gendered context or with a gendered protagonist. Generally, children did show a higher behavioural intention for an unknown activity or object if it was presented in a context or with a protagonist that matched their own gender. However, in Experiments 1 and 2, this effect was mainly driven by the girls, who used the gender information to distinguish between feminine and masculine conditions, whereas boys showed only descriptive preferences for pseudowords in the masculine conditions. Moreover, in Experiment 2, this effect was also apparent in the interest ratings regarding the unknown pseudoword. Despite this similarity, interest and behavioural intention ratings seem to capture different facets. Although both showed a similar interaction pattern with children's sex, boys were generally more willing to interact with the novel objects whereas girls stated higher interest. Consequently, our overall results concord with findings from studies that use more direct labelling approaches ('for boys', 'for girls') showing that children at this age are also influenced by more indirectly presented gender information in their attitudes and behavioural choices (Martin *et al.*, 1995; Yeung & Wong, 2018).

Third, we compared the effects of protagonists' gender and gendered context information. Regarding the association of words with gender, we emphasize that both the context and the gender of the protagonist influenced the children's judgements, but that the latter had a stronger influence when no other information was provided (Experiment 1) or when information was incongruent (Experiment 2). Concerning differential effects for interest and behavioural intention, the results are less clear than for the gender word associations. In Experiment 1, protagonists' gender had a slightly higher descriptive influence. In Experiment 2, context descriptively influenced the interest and behavioural intention ratings, but protagonists' gender was the dominant source for children's ratings. Taken together, that implies that both protagonists and context information have an influence, but that protagonists' influence might be stronger, and that congruent or incongruent context information might strengthen or weaken protagonists' effects. However, in both experiments, the corresponding three-way-interactions were not significant – which is, however, most probably a consequence of too low power for the three-way-interactions (see limitations section). Therefore, these results should be interpreted with appropriate caution and clearly need further examination.

In conclusion, as with the aforementioned example *lipstick,* children really seem to associate unknown words with a gender label, especially if the protagonist's gender is apparent. Gendered information also influences children's interest and willingness to pursue these activities or to interact with these objects – children probably feel that it could be appropriate for their gender to interact with objects typically associated with their gender. Therefore, stories can influence how children learn new gender stereotypes through typically masculine or feminine contexts and through the gender label of the protagonist.

Limitations

Although the current study represents a well-controlled experimental design, some limitations need to be discussed. First, none of the pseudowords we used (i.e., unknown activities/objects and in Experiment 1 also the neutral protagonists' names) were pretested because we deemed it discouraging for the children to judge a larger set of unknown words in advance of the study. Although we do not think that this was a substantial drawback, as we made sure that the neutral protagonist's names in Experiment 1 did not have word endings typically associated with a gender in German (i.e., *-o* or *-a*), we did not control the word endings of the pseudoword activities/objects the same way.

Second, because only artificial pseudowords and short story templates were used, one could criticize that the experimental setting lacked ecological validity. However, children's stories usually have a simple structure and are often clearly labelled for either boys or girls, making the experimental stories comparable to published storybooks for children. In addition, our instruction referred to protagonists from foreign countries which is not an uncommon theme in children's books anymore (O'Sullivan, 2005). Hence, the experimental stories match conventional children's storybooks regarding important aspects of structure and content.

Third, there was a possible drawback with regard to how behavioural intention and interest were assessed. The present design cannot rule out an influence of the ordering of the questions we asked the children. In Experiment 1, first, we asked about the pseudoword, then about the protagonist, and finally about the children's behavioural intention. In Experiment 2, gender association of the pseudoword was assessed before the behavioural intention and the interest ratings. Thus, we cannot rule out the possibility that the gender association questions activated a gender stereotype, which influenced children's behavioural intention and interest ratings. However, somewhat inconsistent with this possibility there was an overall tendency for boys to show higher ratings of behavioural intention and for girls to display higher interest ratings, which would be incongruent to a strong priming effect through the gender association questions. However, future studies should investigate whether there might be ordering effects of the questions.

Fourth, there could be a possible confounding effect regarding the contextualization of the pseudowords. Some stories were about watching TV, while others were about a school project. This range in activities could possibly influence the behavioural attention ratings. In addition, in some stories the gendered context and the pseudowords were thematically more closely linked than in other stories. However, as the same story vignettes were used for all conditions and the items did not display meaningful variation, which resulted in dropping the random factors for item in the final models, such story differences should not represent a problem in the present study.

Lastly, as already indicated in the discussion of the behavioural intention and interest ratings, the small sample size and unequal distribution of boys and girls (16 to 24) were

probably the cause, why the three-way-interactions for these variables just missed the significance threshold in Experiment 2. Although a power analysis showed that the within-design of the studies, which included 6–7 replicates per condition, allowed to test three-way-interactions including children's sex (cell sizes 16 and 24) with $1\text{-}\beta > .80$ for effect sizes larger than $d = 0.32$ (PANGEA v0.2; Westfall, 2016), this only applies to interval-scaled outcomes such as the interest ratings or gender association ratings, but probably overestimates power for binomial outcomes such as the behavioural intention ratings. Therefore, the test of three-way-interactions for the behavioural intention ratings was most probably underpowered in the present study.

Implications and directions for future research

The experimental manipulation shows that gendered information in children's books, namely gender labelling of protagonists but also mere gender-specific contextual information, influences how children perceive novel words. Reading about 'powerful boys and pretty girls' could lead to a biased belief about what is appropriate for one gender, and whether certain activities are appropriate to pursue. Moreover, even when the gender of the protagonist is not explicitly stated and cannot be deduced from his/her name, mere gender-specific contextual information seem to be sufficient to build stereotypical associations. The findings imply that teachers and parents need to be careful when selecting literature for young children. Avoiding books with an uneven gender distribution, which is often recommended by content analyses (e.g., Hamilton *et al.*, 2006), does not seem to be enough to achieve egalitarian views in children. In stories featuring an animal as protagonist, for example, children may use already gender-associated activities and attributes of the animal for choosing a gender label (Karniol et al., 2000) and associate novel words that they learn from the stories accordingly. Thus, it is necessary to provide more examples of girls that display attributes that are typically associated with male (such as strong and intelligent) as well as boys that show the characteristics which are commonly associated with female (such as weak and caring).

Furthermore, as shown in both our experiments and previous studies (e.g., Martin *et al.*, 1995; Weisgram *et al.*, 2014) children are more interested in pursuing unknown activities or use unknown objects if they are associated with gendered information matching their own gender. If, for example, a story focuses on a male scientist introducing his professional duties at the laboratory, boys might be more willing to pursue these activities, as opposed to when these professional duties are presented by a female scientist – whereas the opposite holds true for girls. This could help to explain the gender gap in many traditionally male occupations (Leslie, Cimpian, Meyer, & Freeland, 2015) probably because children rely on gender information when looking for role models. This highlights the importance of characters in gender non-traditional settings to broaden the perspective of possible activities for young children. However, further research still needs to address the question, whether stories facilitate behavioural change through behavioural intentions and interest. This could also help clarify the relation between self-reported interests or behavioural intention and the children's actual behaviour (Bussey & Bandura, 1999). Boys, for example, could report interest in a feminine gendered activity but might not engage in the activity in a social setting in which it represents a gender norm violation (Martin & Ruble, 2010). If high interest and high behavioural intention lead to a change in, for example, play behaviour (cp. McArthur & Eisen, 1976), a direct link between attitudinal changes and behavioural aspects could be established.

Finally, our results point towards possible differential effects for boys and girls, as girls consistently showed more interest in and behavioural intention regarding same-gendered activities than for boys' activities, whereas for boys the effects were less strong. However, given that we had no hypothesis on gender differences for the acquisition of novel gender stereotypes and that gender showed no consistent effect for the development of gender stereotypes (Martin & Ruble, 2010; Trautner, Ruble, Cyphers, Kirsten, Behrendt, & Hartmann, 2005), it is too early to draw far-reaching conclusions based on this finding. Yet, building on the present study, future research that includes larger subsamples of boys and girls could address this differential effect and examine whether this pattern extends to actual behaviour.

Author contributions

Maximilian Seitz (Investigation; Conceptualization; Methodology; Writing – original draft; Writing – review & editing) Jan Lenhart (Data curation; Project administration; Writing – review & editing; Writing - original draft Experiment 2; Formal analysis) Nina Rübsam (Investigation; Validation).

Conflicts of interest

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

References

Abad, C., & Pruden, S. M. (2013). Do storybooks really break children's gender stereotypes? *Frontiers in Psychology*, *4*, 986. https://doi.org/10.3389/fpsyg.2013.00986

Allor, J. H., & McCathren, R. B. (2003). Developing emergent literacy skills through storybook reading. *Intervention in School and Clinic*, *39*(2), 72–79. https://doi.org/10.1177/10534512030390020201

Anderson, R. C. (1984). *Interestingness of children's reading material*. University of Illinois at Urbana-Champaign, Center for the Study of Reading. Retrieved from https://www.ideals.illinois.edu/bitstream/handle/2142/18051/ctrstreadtechrepv01984i00323_opt.pdf?sequence=1

Baayen, H., Bates, D., Kliegl, R., & Vasishth, S. (2015). *Data sets from psychology and linguistics experiments. R package version 0.0.4*. Retrieved from https://github.com/dmbates/RePsychLing

Baayen, R. H., Davidson, D. J., & Bates, D. M. (2008). Mixed-effects modeling with crossed random effects for subjects and items. *Journal of Memory and Language*, *59*, 390–412. https://doi.org/10.1016/j.jml.2007.12.005

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Barr, D. J. (2013). Random effects structure for testing interactions in linear mixed-effects models. *Frontiers in Psychology*, *4*, 328. https://doi.org/10.3389/fpsyg.2013.00328.

Barr, D. J., Levy, R., Scheepers, C., & Tily, H. J. (2013). Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory and Language*, *68*, 255–278. https://doi.org/10.1016/j.jml.2012.11.001

Bates, D., Kliegl, R., Vasishth, S., & Baayen, H. (2015). *Parsimonious mixed models*. Retrieved from https://arxiv.org/abs/1506.04967v1

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, *67*(1), 1–48. https://doi.org/10.18637/jss.v067.i01

Bauer, P. J., Liebl, M., & Stennes, L. (1998). Pretty is to dress as brave is to suitcoat: Gender-based property-to-property inferences by 4-½-year-old children. *Merrill-Palmer Quarterly*, *44*, 355–377. https://doi.org/10.3102/00028312025001145

Bian, L., Leslie, S. J., & Cimpian, A. (2017). Gender stereotypes about intellectual ability emerge early and influence children's interests. *Science*, *355*, 389–391. https://doi.org/10.1126/science.aah6524

Bleakley, M. E., Westerberg, V., & Hopkins, K. D. (1988). The effect of character sex on story interest and comprehension in children. *American Educational Research Journal*, *25*(1), 145–155.

Böttcher, A., Krieger, S., & Kolvenbach, F. J. (2010). Kinder mit Migrationshintergrund in Kindertagesbetreuung [= Children with migrational background in day care]. *Wirtschaft und Statistik*, *2*, 158–164.

Statistisches Bundesamt (2018). *Bildungsstand der Bevölkerung–Ergebnisse des Mikrozensus 2016 [The level of education in society–Results of micro census data 2016]*. Retrieved from https://www.destatis.de/GPStatistik/servlets/MCRFileNodeServlet/DEHeft_derivate_00031074/5210002167004_korr03042017.pdf

Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. *Psychological Review*, *106*, 676–713. https://doi.org/10.1037/0033-295X.106.4.676

Cassidy, K. W., Kelly, M. H., & Sharoni, L. A. J. (1999). Inferring gender from name phonology. *Journal of Experimental Psychology: General*, *128*, 362–381. https://doi.org/10.1037/0096-3445.128.3.362

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). New York, NY: Routledge. https://doi.org/10.4324/9780203774441

R Core Team (2019). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from https://www.R-project.org/

Fagot, B. I., Leinbach, M. D., & O'Boyle, C. (1992). Gender labeling, gender stereotyping, and parenting behaviors. *Developmental Psychology*, *28*, 225–230. https://doi.org/10.1037/0012-1649.28.2.225

Green, V. A., Bigler, R., & Catherwood, D. (2004). The variability and flexibility of gender-typed toy play: A close look at children's behavioural responses to counterstereotypic models. *Sex Roles*, *51*, 371–386. https://doi.org/10.1023/B:SERS.0000049227.05170.aa.

Hamilton, M. C., Anderson, D., Broaddus, M., & Young, K. (2006). Gender stereotyping and under-representation of female characters in 200 popular children's picture books: A twenty-first century update. *Sex Roles*, *55*, 757–765. https://doi.org/10.1007/s11199-006-9128-6

Hoffman, L., & Rovine, M. J. (2007). Multilevel models for the experimental psychologist: Foundations and illustrative examples. *Behaviour Research Methods*, *39*(1), 101–117. https://doi.org/10.3758/BF03192848

Jaeger, T. F. (2008). Categorical data analysis: Away from ANOVAs (transformation or not) and towards logit mixed models. *Journal of Memory and Language*, *59*, 434–446. https://doi.org/10.1016/j.jml.2007.11.007

Jürgens, E., & Jäger, R. (2010). Auf der Suche nach männlich und weiblich–Welche Informationen finden Vorschulkinder heute im Bilderbuch? [Searching for masculine and feminine–What kind of information do preschool children find in books today?] *Verhaltenstherapie und Psychosoziale Praxis*, *42*, 1045–1059.

Karniol, R., & Gal-Disegni, M. (2009). The impact of gender-fair versus gender-stereotyped basal readers on 1st-grade children's gender stereotypes: A natural experiment. *Journal of Research in Childhood Education*, *23*, 411–420. https://doi.org/10.1080/02568540909594670

Karniol, R., Reichman, S., & Fund, L. (2000). Children's gender orientation and perceptions of female, male, and gender-ambiguous animal characters. *Sex Roles*, *43*, 377–393. https://doi.org/10.1023/A:1026651427146

Kite, M. E., Deaux, K., & Haines, E. L. (2008). Gender stereotypes. In F. L. Denmark & M. A. Paludi (Eds.), *Psychology of women: A handbook of issues and theories* (pp. 205–236). Westport, CT: Praeger.

Leinbach, M. D., Hort, B. E., & Fagot, B. I. (1997). Bears are for boys: Metaphorical associations in young children's gender stereotypes. *Cognitive Development*, *12*(1), 107–130. https://doi.org/10.1016/S0885-2014(97)90032-0

Lenth, R. (2019). *Emmeans: Estimated marginal means, aka least-squares means. R package version 1.3.5*. https://CRAN.R-project.org/package=emmeans

Leslie, S. J., Cimpian, A., Meyer, M., & Freeland, E. (2015). Expectations of brilliance underlie gender distributions across academic disciplines. *Science*, *347*, 262–265. https://doi.org/10.1126/science.1261375

Linck, J. A., & Cunnings, I. (2015). The utility and application of mixed-effects models in second language research. *Language Learning*, *65*(S1), 185–207. https://doi.org/10.1111/lang.12117

Martin, C. L., Eisenbud, L., & Rose, H. (1995). Children's gender-based reasoning about toys. *Child Development*, *66*, 1453–1471. https://doi.org/10.1111/j.1467-8624.1995.tb00945.x

Martin, C. L., & Ruble, D. (2004). Children's search for gender cues: Cognitive perspectives on gender development. *Current Directions in Psychological Science*, *13*(2), 67–70. https://doi.org/10.1111/j.0963-7214.2004.00276.x.

Martin, C. L., & Ruble, D. N. (2010). Patterns of gender development. *Annual Review of Psychology*, *61*, 353–381. https://doi.org/10.1146/annurev.psych.093008.100511

Martin, C. L., Wood, C. H., & Little, J. K. (1990). The development of gender stereotype components. *Child Development*, *61*, 1891–1904. https://doi.org/10.1111/j.1467-8624.1990.tb03573.x

McArthur, L. Z., & Eisen, S. V. (1976). Achievements of male and female storybook characters as determinants of achievement behavior by boys and girls. *Journal of Personality and Social Psychology*, *33*, 467–473. https://doi.org/10.1037/0022-3514.33.4.467

McCabe, J., Fairchild, E., Grauerholz, L., Pescosolido, B. A., & Tope, D. (2011). Gender in twentieth-century children's books: Patterns of disparity in titles and central characters. *Gender & Society*, *25*, 197–226. https://doi.org/10.1177/0891243211398358

O'Sullivan, E. (2005). *Comparative children's literature*. London, UK: Routledge. https://doi.org/10.4324/9780203508664

Quené, H., & van den Bergh, H. (2008). Examples of mixed-effects modeling with crossed random effects and with binomial data. *Journal of Memory and Language*, *59*, 413–425. https://doi.org/10.1016/j.jml.2008.02.002.

Sagone, E., De Caroli, M. E., Coco, R. F. M., & Perciavalle, V. (2018). Flexibility of gender stereotypes: Italian study on comparative gender-consistent and gender-inconsistent information. *Educational Psychology*, *24*(2), 93–98. https://doi.org/10.5093/psed2018a14

Schneider, D. J. (2004). *The psychology of stereotyping*. New York, NY: The Guilford Press.

Shutts, K., Banaji, M. R., & Spelke, E. S. (2010). Social categories guide young children's preferences for novel objects. *Developmental Science*, *13*, 599–610. https://doi.org/10.1111/j.1467-7687.2009.00913.x

Signorella, M. L., Bigler, R. S., & Liben, L. S. (1993). Developmental differences in children's gender schemata about others: A meta-analytic review. *Developmental Review*, *13*, 147–183. https://doi.org/10.1006/drev.1993.1007

Steyer, I. (2014). Gender representations in children's media and their influence. *Campus-Wide Information Systems*, *31*, 171–180. https://doi.org/10.1108/CWIS-11-2013-0065

Trautner, H. M., Ruble, D. N., Cyphers, L., Kirsten, B., Behrendt, R., & Hartmann, P. (2005). Rigidity and flexibility of gender stereotypes in childhood: Developmental or differential? *Infant and Child Development: An International Journal of Research and Practice*, *14*, 365–381. https://doi.org/10.1002/icd.399

Weisgram, E. S., Fulcher, M., & Dinella, L. M. (2014). Pink gives girls permission: Exploring the roles of explicit gender labels and gender-typed colors on preschool children's toy preferences. *Journal of Applied Developmental Psychology*, 35, 401–409. https://doi.org/10.1016/j.appdev.2014.06.004

Westfall, J. (2016). *PANGEA: Power analysis for general anova designs*. University of Texas at Austin: Working paper. Retrieved from http://jakewestfall.org/publications/pangea.pdf

Yeung, S. P., & Wong, W. I. (2018). Gender labels on gender-neutral colours: Do they affect children's colour preferences and play performance? *Sex Roles*, 79(5–6), 1–13. https://doi.org/10.1007/s11199-017-0875-3

Appendix A

Word lists

Table A1. List of masculine words and phrases used in Experiment 1

Masculine words and phrases (German)	Masculine words and phrases (translated)
Fußballspielen	Playing soccer
Schwere Steine heben	Lifting heavy rocks
Auf einer Baustelle arbeiten	Working at a construction site
Autos reparieren	Fixing cars
LEGO spielen	Playing with LEGOs
Rennwagen fahren	Driving racing cars
Mit einer Rakete in den Weltraum fliegen	Flying to space in a rocket ship
Bei der Polizei arbeiten	Working at a police station
Bei der Feuerwehr arbeiten und Feuer löschen	Working at the fire department and extinguish fires
Kraftvoll	Powerful
Versuchen im Sport zu gewinnen	Being competitive at sporting challenges
Bei Olympia Sport machen	Doing sports at the Olympics

Table A2. List of feminine words and phrases used in Experiment 1

Feminine words and phrases (German)	Feminine words and phrases (translated)
Mit Puppen spielen	Playing with dolls
Sich um kleine Kinder kümmern	Taking care of young children
Nähen	Sewing
Blumen pflücken	Picking flowers
Bügeln	Iron (clothes)
Liebesgeschichten lesen	Reading love stories
Kuchen backen	Baking a cake
Kichern	Chuckle
Sanft	Gentle
Gutaussehend	Pretty

Table A3. List of non-gendered words and phrases used in Experiment 1

Non-gendered words and phrases (German)	Non-gendered words and phrases (translated)
In einem Labor forschen	Doing research at the laboratory
Fahrradfahren	Riding a bike
Fernsehschauen	Watching TV
Tiere verarzten	Curing animals
Im Haushalt helfen	Helping with household chores
Im Supermarkt an der Kasse arbeiten	Working as a cashier at a supermarket
Neugierig	Curious
Bücher lesen	Reading books
Bilder malen	Drawing pictures

Table A4. List of masculine words and phrases used in Experiment 2

Masculine words and phrases (German)	Masculine words and phrases (translated)
Fußball (spielen)	(Playing) soccer
Schwere Steine heben	Lifting heavy rocks
Auf Baustelle arbeiten	Working at a construction site
(Spiel-)Autos reparieren	Fixing (toy) cars
Boxen	Boxing
LEGO spielen	Playing with LEGOs
Rennwagen fahren	Driving racing cars
Mit Rakete in den Weltraum	Flying a space shuttle
Bei Polizei arbeiten	Working at a police station
Mit Hammer hämmern	Using a hammer
Feuer löschen	Fighting fires
Kraftvoll	Powerful
Im Sport gewinnen	Winning at sporting challenges
Haus bauen	Building a house

Table A5. List of feminine words and phrases used in Experiment 2

Feminine words and phrases (German)	Feminine words and phrases (translated)
Mit Puppen spielen	Playing with dolls
Um kleine Kinder kümmern	Taking care of young children
Babys füttern	Feeding babies
Nähen	Sewing
Blumen pflücken	Picking flowers
(Kleider) bügeln	Ironing (clothes)
Liebesgeschichten lesen	Reading love stories
Kuchen backen	Baking a cake
Süß	Cute
Sanft	Soft
Zart	Gentle
Kleine Kinder füttern	Feeding small children
Gutaussehend	Pretty

Appendix B:

Story examples used in Experiment 1 (German)

Story 5 ('Watching TV'; ambiguously gendered protagonist, masculine context)

Wali möchte gerne fernsehen – am liebsten eine Sendung, bei der es um *kraftvolle Leute* geht, die *versuchen im Sport zu gewinnen*, weil **Wali** das selber gerne tut. Oder vielleicht kommt die neue Sendung ‚mimoja', denn auf ‚mimoja' hatte sich **Wali** schon länger gefreut. Leider sitzen immer **Walis** Eltern vor dem Fernsehgerät und schauen langweilige Nachrichten an. Aber **Wali** hatte eine tolle Idee: **Wali** hat heute Vormittag den Kaffee der Eltern versteckt und deswegen sind sie den ganzen Tag schon sehr müde. Vorsichtig ins Wohnzimmer geschaut und tatsächlich sitzen dort beide Eltern und schnarchen gemütlich vor sich hin. **Wali** freut sich auf die nächste Sendung – und tatsächlich kommt ‚mimoja'. (108 words)

Story 6 ('Watching TV'; ambiguously gendered protagonist, feminine context)

Niti möchte gerne fernsehen – am liebsten eine Sendung, bei der es um *gutaussehende Leute* geht, die *Kuchen backen*, weil **Niti** das selber gerne tut. Oder vielleicht kommt die neue Sendung ‚fipana', denn auf ‚fipana' hatte sich **Niti** schon länger gefreut. Leider sitzen immer **Nitis** Eltern vor dem Fernsehgerät und schauen langweilige Nachrichten an. Aber **Niti** hatte eine tolle Idee: **Niti** hat heute Vormittag den Kaffee der Eltern versteckt und deswegen sind sie den ganzen Tag schon sehr müde. Vorsichtig ins Wohnzimmer geschaut und tatsächlich sitzen dort beide Eltern und schnarchen gemütlich vor sich hin. **Niti** freut sich auf die nächste Sendung – und tatsächlich kommt ‚fipana'. (105 words)

Story 7 ('Watching TV'; male protagonist, non-gendered context)

Tim möchte gerne fernsehen – am liebsten eine Sendung, bei der es um wilde Tiere aus fernen Ländern geht, weil Tim *neugierig* ist und gerne *forscht*. Oder vielleicht kommt die neue Sendung malimu, denn auf malimu hatte sich **Tim** schon länger gefreut. Leider sitzen immer **Tims** Eltern vor dem Fernsehgerät und schauen langweilige Nachrichten an. Aber **Tim** hatte eine tolle Idee: **er** hat heute Vormittag den Kaffee der Eltern versteckt und deswegen sind sie den ganzen Tag schon sehr müde. Vorsichtig ins Wohnzimmer geschaut und tatsächlich sitzen dort beide Eltern und schnarchen gemütlich vor sich hin. **Tim** freut sich auf die nächste Sendung – und tatsächlich kommt malimu. (106 words)

Story 8 ('Watching TV'; female protagonist, non-gendered context)

Julia möchte gerne fernsehen – am liebsten eine Sendung, bei der es um wilde Tiere aus fernen Ländern geht, weil Julia *neugierig* ist und gerne *forscht*. Oder vielleicht kommt die neue Sendung biloni, denn auf biloni hatte sich **Julia** schon länger gefreut. Leider sitzen immer **Julias** Eltern vor dem Fernsehgerät und schauen langweilige Nachrichten an. Aber **Julia** hatte eine tolle Idee: **sie** hat heute Vormittag den Kaffee der Eltern versteckt und deswegen sind sie den ganzen Tag schon sehr müde. Vorsichtig ins Wohnzimmer geschaut und tatsächlich sitzen dort beide Eltern und schnarchen gemütlich vor sich hin. **Julia** freut sich auf die nächste Sendung – und tatsächlich kommt biloni. (106 words)

Story examples used in Experiment 1 (translated)

Story 5 ('Watching TV'; ambiguously gendered protagonist, masculine context)
Wali likes watching TV, especially shows about ***strong people participating in sporting challenges*** because that's what **Wali** likes to do. Maybe the new show 'mimoja' is on because **Wali** has wanted to watch the show 'mimoja' for quite some time. However, usually **Wali's** parents sit in front of the TV and watch boring news broadcasts. But **Wali** had had a great idea: This morning, **Wali** hid the parents' coffee, which is why they both have been extremely tired all day. Carefully, **Wali** peeks into the living room, and yes, both fell asleep and are even snoring. **Wali** is delighted because the next show is really 'mimoja'. (107 words)

Story 6 ('Watching TV'; ambiguously gendered protagonist, feminine context)
Niti likes watching TV, especially shows about ***pretty people baking cakes*** because that's what **Niti** likes to do. Maybe the new show 'fipana' is on because **Niti** has wanted to watch the show 'fipana' for quite some time. However, usually **Niti's** parents sit in front of the TV and watch boring news broadcasts. But **Niti** had had a great idea: This morning, **Niti** hid the parents' coffee, which is why they both have been extremely tired all day. Carefully, **Niti** peeks into the living room, and yes, both fell asleep and are even snoring. **Niti** is delighted because the next show is really 'fipana'. (105 words)

Story 7 ('Watching TV'; male protagonist, non-gendered context)
Tim likes watching TV, especially shows about wild animals from foreign country because **Tim** is ***curious*** and likes to ***do research***. Maybe the new show 'malimu' is on because **Tim** has wanted to watch the show 'malimu' for quite some time. However, usually **Tim's** parents sit in front of the TV and watch boring news broadcasts. But **Tim** had had a great idea: This morning, **Tim** hid the parents' coffee, which is why they both have been extremely tired all day. Carefully, **Tim** peeks into the living room, and yes, both fell asleep and are even snoring. **Tim** is delighted because the next show is really 'malimu'. (107 words)

Story 8 ('Watching TV'; female protagonist, non-gendered context)
Julia likes watching TV, especially shows about wild animals from foreign country because **Julia** is ***curious*** and likes to ***do research***. Maybe the new show 'biloni' is on because **Julia** has wanted to watch the show 'biloni' for quite some time. However, usually **Julia's** parents sit in front of the TV and watch boring news broadcasts. But **Julia** had had a great idea: This morning, **Julia** hid the parents' coffee, which is why they both have been extremely tired all day. Carefully, **Julia** peeks into the living room, and yes, both fell asleep and are even snoring. **Julia** is delighted because the next show is really 'biloni'. (107 words).

Appendix C:

Story examples used in Experiment 2 (German)

Story 1 ('Watching TV'; male protagonist, masculine context)

Lukas möchte gerne fernsehen – am liebsten eine Sendung, bei der es um *kraftvolle* Leute geht, die *versuchen im Sport zu gewinnen*, weil **Lukas** das selber gerne tut. Oder vielleicht kommt die neue Sendung ‚mimoja‘, denn auf ‚mimoja‘ hatte sich **Lukas** schon länger gefreut. Leider sitzen immer **Lukas** Eltern vor dem Fernsehgerät und schauen langweilige Nachrichten an. Aber **Lukas** hatte eine tolle Idee: **Lukas** hat heute Vormittag den Kaffee der Eltern versteckt und deswegen sind sie den ganzen Tag schon sehr müde. Vorsichtig ins Wohnzimmer geschaut und tatsächlich sitzen dort beide Eltern und schnarchen gemütlich vor sich hin. **Lukas** freut sich auf die nächste Sendung – und tatsächlich kommt ‚mimoja‘. (108 Wörter)

Story 2 ('Watching TV'; female protagonist, feminine context)

Hannah möchte gerne fernsehen – am liebsten eine Sendung, bei der es um *gutaussehende* Leute geht, die *Kuchen backen*, weil **Hannah** das selber gerne tut. Oder vielleicht kommt die neue Sendung ‚fipana‘, denn auf ‚fipana‘ hatte sich **Hannah** schon länger gefreut. Leider sitzen immer **Hannahs** Eltern vor dem Fernsehgerät und schauen langweilige Nachrichten an. Aber **Hannah** hatte eine tolle Idee: **Hannah** hat heute Vormittag den Kaffee der Eltern versteckt und deswegen sind sie den ganzen Tag schon sehr müde. Vorsichtig ins Wohnzimmer geschaut und tatsächlich sitzen dort beide Eltern und schnarchen gemütlich vor sich hin. **Hannah** freut sich auf die nächste Sendung – und tatsächlich kommt ‚fipana‘. (105 Wörter)

Story 3 ('Watching TV'; male protagonist, feminine context)

Tim möchte gerne fernsehen – am liebsten eine Sendung, bei der es um Tierbabys geht, weil er selbst auch *süß* und *zart* ist. Oder vielleicht kommt die neue Sendung ‚malimu‘, denn auf ‚malimu‘ hatte sich **Tim** schon länger gefreut. Leider sitzen immer **Tims** Eltern vor dem Fernsehgerät und schauen langweilige Nachrichten an. Aber **Tim** hatte eine tolle Idee: **er** hat heute Vormittag den Kaffee der Eltern versteckt und deswegen sind sie den ganzen Tag schon sehr müde. Vorsichtig ins Wohnzimmer geschaut und tatsächlich sitzen dort beide Eltern und schnarchen gemütlich vor sich hin. **Tim** freut sich auf die nächste Sendung – und tatsächlich kommt ‚malimu‘. (103 Wörter)

Story 4 ('Watching TV'; female protagonist, masculine context)

Julia möchte gerne fernsehen – am liebsten eine Sendung, bei der es um *Fußball* geht oder darum wie man mit einer *Rakete in den Weltraum fliegt*. Oder vielleicht kommt die neue Sendung ‚biloni‘, denn auf ‚biloni‘ hatte sich **Julia** schon länger gefreut. Leider sitzen immer **Julias** Eltern vor dem Fernsehgerät und schauen langweilige Nachrichten an. Aber **Julia** hatte eine tolle Idee: **sie** hat heute Vormittag den Kaffee der Eltern versteckt und deswegen sind sie den ganzen Tag schon sehr müde. Vorsichtig ins Wohnzimmer geschaut und tatsächlich sitzen dort beide Eltern und schnarchen gemütlich vor sich hin. **Julia** freut sich auf die nächste Sendung – und tatsächlich kommt ‚biloni‘. (106 Wörter)

Story examples used in Experiment 2 (translated)

Story 1 ('Watching TV'; male protagonist, masculine context)
Lukas likes watching TV, especially shows about ***strong people participating in sporting challenges*** because that's what **Lukas** likes to do. Maybe the new show 'mimoja' is on because **Lukas** has wanted to watch the show 'mimoja' for quite some time. However, usually **Lukas'** parents sit in front of the TV and watch boring news broadcasts. But **Lukas** had had a great idea: This morning, **Lukas** hid the parents' coffee, which is why they both have been extremely tired all day. Carefully, **Lukas** peeks into the living room, and yes, both fell asleep and are even snoring. **Lukas** is delighted because the next show is really 'mimoja'. (106 words)

Story 2 ('Watching TV'; female protagonist, feminine context)
Hannah likes watching TV, especially shows about ***pretty people baking cakes*** because that's what **Hannah** likes to do. Maybe the new show 'fipana' is on because **Hannah** has wanted to watch the show 'fipana' for quite some time. However, usually **Hannah's** parents sit in front of the TV and watch boring news broadcasts. But **Hannah** had had a great idea: This morning, **Hannah** hid the parents' coffee, which is why they both have been extremely tired all day. Carefully, **Hannah** peeks into the living room, and yes, both fell asleep and are even snoring. **Hannah** is delighted because the next show is really 'fipana'. (105 words)

Story 3 ('Watching TV'; male protagonist, feminine context)
Tim likes watching TV, especially shows about ***baby animals*** because he himself is ***cute*** and ***gentle***. Maybe the new show 'malimu' is on because **Tim** has wanted to watch the show 'malimu' for quite some time. However, usually **Tim's** parents sit in front of the TV and watch boring news broadcasts. But **Tim** had had a great idea: This morning, **Tim** hid the parents' coffee, which is why they both have been extremely tired all day. Carefully, **Tim** peeks into the living room, and yes, both fell asleep and are even snoring. **Tim** is delighted because the next show is really 'malimu'. (103 words)

Story 4 ('Watching TV'; female protagonist, masculine context)
Julia likes watching TV, especially shows about ***soccer*** or about ***flying a space shuttle***. Maybe the new show 'biloni' is on because **Julia** has wanted to watch the show 'biloni' for quite some time. However, usually **Julia's** parents sit in front of the TV and watch boring news broadcasts. But **Julia** had had a great idea: This morning, **Julia** hid the parents' coffee, which is why they both have been extremely tired all day. Carefully, **Julia** peeks into the living room, and yes, both fell asleep and are even snoring. **Julia** is delighted because the next show is really 'biloni'. (105 words).