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Changing (S)expectations: How gender fair job descriptions impact children's perceptions and interest regarding traditionally male occupations ☆

Dries Vervecken *, Bettina Hannover, Ilka Wolter

Department of Educational Science and Psychology, Freie Universität Berlin, Germany

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ABSTRACT

Children's occupational interests and their perceptions of the divergent occupational successes of women and men reflect cultural gender norms. Since language is a vehicle for transporting gender cues and gender norms, we tested the premise that children's perceptions of stereotypically male jobs can be influenced by the linguistic form used to present an occupational title. Three experiments with 809 primary school students suggest that occupations presented in pair form (e.g., Ingenieurinnen und Ingenieure, female and male engineers), compared to descriptions using the generic masculine form (e.g., Ingenieure), generally increase the mental accessibility of female jobholders, promote more gender-balanced perceptions of the success of males and females, and strengthen girls' interest in stereotypically male occupations.

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1. Introduction

Vocational development constitutes a lifelong process starting in childhood and continuing through adolescence, adulthood, and old age (e.g., Gottfredson, 1981; Porfeli, Hartung, & Vondracek, 2008; Super, Savickas, & Super, 1996). In this sequence of stages, middle childhood (aged six to twelve) is assumed to be a very important formative phase during which children begin to develop interest in specific professions as they increasingly discriminate between occupations and activities that they like or dislike (Gottfredson, 1981, 2005; Tyler, 1964). These early vocational interests are supposed to have a lasting impact on future educational and occupational choices (Hartung, Porfeli, & Vondracek, 2008; Magnuson & Starr, 2000; Porfeli et al., 2008). Indirect empirical support for this assumption comes for instance from a study from Seligman, Weinstock, and Heflin (1991) who showed that half of the investigated children aged nine and ten believed they had already made decisions that would impact their future careers. Further empirical support comes from a retrospective interview study by Trice and McClellan (1994) who found that one quarter of the investigated adults aged 40–55 remembered to have decided on assuming their current professions in childhood.

Since gender is one of the utmost salient social categories (e.g., Fiske, 1993), and is part of children's self-concept from very early on (e.g., Leaper & Bigler, 2011; Ruble, Martin, & Berenbaum, 2006), children around age six start to use gender as basic category to judge the desirability of occupations for their personal career. According to Gottfredson's (1981, 2005) theory on career development, at about the age of six children eliminate their interest in occupations which are in conflict with their gender self-concept. Although this filtering process in children aged six to twelve is quite crude and often inaccurate, its influence on vocational development is lasting (e.g., Woods & Hampson, 2010). Hence, interventions that influence children's gendered perceptions about occupations could prevent them from prematurely narrowing their occupational interests or options.

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* Corresponding author at: Karel de Grote Antwerp University College, Brusselstraat 45, 2018 Antwerp, Belgium.
E-mail address: dries.vervecken@kdg.be (D. Vervecken).

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Recently, it has been demonstrated that variations in gender cues in language used to describe occupations are a means to influence men and women's gendered perceptions of occupations (Stahlberg, Braun, Irmen, & Sczesny, 2007, for a review) and women's interest in male occupations (e.g., Bem & Bem, 1973; Born & Taris, 2010; Gaucher, Friesen, & Kay, 2011; Stout & Dasgupta, 2011). In our research, we explore the hypothesis that already during middle childhood variations in language forms (gender fair or inclusive vs. not gender fair or exclusive) used to describe stereotypically male occupations have a differential effect on girls' and boys' gendered perceptions of these occupations and girls' interest toward them. In doing so, our research will also provide empirical evidence relevant to the circumscription process in career development during middle childhood as described in Gottfredson's theory (1981, 2005), as a result of which children are inclined to prefer professions that are consistent with their prescribed gender role.

To foreshadow our argument, we want to suggest that the use of gender fair language in descriptions of stereotypically male jobs generally promotes the mental accessibility of female jobholders in children and thus strengthens girls' interest in stereotypically male occupations. This should be the case since it has been shown before that females' perceptions of women's presence in stereotypically male occupations influence their personal interest in these gender atypical occupational domains (Asgari, Dasgupta, & Stout, 2012; Gaucher et al., 2011; Murphy, Steele, & Gross, 2007; Stout, Dasgupta, Hunsinger, & McManus, 2011; Walton & Cohen, 2007; Weisgram, Bigler, & Liben, 2010). For instance, Stout et al. (2011) demonstrated that female students who were exposed to female experts (e.g., advanced peers, professionals, professors) in stereotypically male fields expressed more interest in pursuing a career in these male domains for themselves, compared to female students who were exposed to male experts. It seems, occupational interest is not inherently connected with the occupation itself but can at least partially be explained by the gender of imagined job holders. Hence females' interest in stereotypically male occupations can be promoted via interventions that highlight the presence of other females successfully partaking in these careers. With regard to our study, we believe that using gender inclusive language (compared to gender exclusive language) to describe stereotypically male occupations fosters mental representations of female jobholders which in turn may promote young girl's interest in these occupations.

1.1. The impact of language on vocational development: gendered perceptions of occupations

While many factors influencing children's gendered perceptions of occupations (see Ruble et al., 2006, for a review) and children's vocational development (see Hartung, Porfeli, & Vondracek, 2005; McMahon & Watson, 2008, for reviews) have already been identified, in this research we focus on the role of language. Only a handful of studies have investigated the power of language in shaping people's gendered perceptions of occupations and occupational interest, and these few studies exclusively used adolescents and adults as their research participants. This is particularly unsatisfying given that language is a key tool through which gender stereotypes are transmitted (Liben, Bigler, & Krogh, 2002): Depending on the linguistic forms used to describe groups, language may either contribute to the maintenance of existing stereotypes, or foster potential change (Maass & Arcuri, 1996).

Roughly two linguistic forms can be distinguished with regard to gender references: gender fair forms (also called gender inclusive because they make explicit reference to both sexes) and gender biased forms (also called gender exclusive because they only make explicit reference to one sex, mostly the male one). Fundamental to gender fair language is the rejection of generic masculine forms, i.e., the use of masculine nouns to refer to both genders in cases of mixed gender groups or of groups whose members' gender is not known or irrelevant. The use of the generic masculine form is customary in the majority of languages, so called *grammatical* gender languages (e.g., German, French, or Spanish), where gender is encoded as a grammatical category. Speakers are therefore grammatically forced to frequently make gender-references when referring to subjects and almost every personal noun has both a male and a female counterpart. In contrast, in *natural* gender languages (e.g., English, Danish, or Norwegian), there is almost no grammatical gender marking of personal nouns. Gender references can be made through personal pronouns such as “his” or “her” which, of course, carry a lexical gender. Hence, in grammatical gender languages the interpretation of masculine role nouns (e.g., occupational titles) is sometimes ambiguous from the receiver's point of view since they can be interpreted as referring to a group of men or to a mixed gender group.

Accordingly, psycholinguistic research has shown that generically intended occupational titles in grammatical gender languages do not lead to gender balanced mental representations in recipients' minds, but are often biased by the grammatical gender tag (i.e., masculine) (e.g., Gygax, Gabriel, Sarrasin, Garnham, & Oakhill, 2008; Irmen & Schumann, 2011). Gygax et al. (2008) investigated the influence of gender stereotypical and grammatical gender information (masculine intended as generic) on the representation of gender in language. They had university students from grammatical gender languages (French and German) work on sentences containing stereotypically male, female, or gender neutral role nouns/occupations (e.g., “*The spies came out…*”, “*The teachers came out…*”), followed by a second sentence containing explicit information about the gender of one or more of the characters (e.g., “*…one of the men…*” or “*… one of the women…*”). Results showed that participants more quickly endorsed the second sentence as a more sensitive continuation of the first one when the explicit gender information (i.e., “*…one of the men…*” instead of “*…one of the women…*”) corresponded to the grammatical gender (i.e., *Spione* [male spies]) of the role noun. This effect occurred regardless of the gender stereotypicality of the noun (e.g., participants also responded more positively and faster when stereotypically female role nouns written in generic masculine form were followed by an explicit reference to males in the second sentence). The authors concluded that for speakers of a grammatical gender language—in cases where a role noun is grammatically marked for gender—mental representations are more strongly based on the grammatical gender tag than on the cultural stereotype about the occupation.

In the context of recent language reform endeavors, many alternative forms for generic masculine forms have been suggested. Pair forms include the presentation of the feminine and the masculine form (e.g., Ingenieurinnen und Ingenieure, male and female engineers) and seem to be particularly effective in promoting gender balanced representations in recipients' cognition

(see Stahlberg et al., 2007, for a review). For instance, Stahlberg and Sczesny (2001) found that their adult German participants named relatively more women when asked to indicate famous representatives of particular occupations (e.g., politicians, writers) when the occupations were presented in pair forms rather than in generic masculine forms. Similar results have been reported by Heise (2000, 2003), Rothmund and Scheele (2004), or Stahlberg and Sczesny (2001). Whereas these studies demonstrate that pair forms—compared to generic masculine forms—facilitate associations with female jobholders, they also suggest that pair forms strengthen the perception of women's success in traditionally male domains. For example, Stahlberg and Sczesny (2001) asked their participants during a parliamentary election in Germany to suggest the most suited candidate for the position of Federal Chancellor. Participants in the pair form condition recommended relatively more female politicians than participants in the generic masculine condition, suggesting that asking to recommend the best candidate in a pair form (i.e., Politikerinnen und Politiker, female and male politicians) not only made it easier for respondents to think of female politicians but also strengthened their belief that some of the female politicians were truly the most suited candidates for the position of Federal Chancellor.

While the abovementioned studies fairly consistently showed that occupations presented in a pair form compared to presentations in a generic masculine form promote more gender-balanced associations in adult speakers of grammatical gender languages, no research has ever examined whether gendered perceptions of occupations in young children are also influenced through language. Indirect support comes from studies on the English language as a natural gender language which tested the impact of alternatives for the generic use of the pronoun "*he*" (e.g., "*he/she*", "*s/he*", "*they*") on children's gendered perceptions. Results point in the same direction as those found for adult speakers of grammatical gender languages like German or French: Alternative linguistic forms with an explicit reference to women, compared to the generic "*he*", triggered more associations with females (e.g., Hyde, 1984; Schau & Scott, 1984).

In our research we aim to investigate whether using different linguistic forms to present occupations can also influence associations with female job holders and perceptions of females' success in stereotypically male occupations in children speaking a grammatical gender language. We predict that the use of different linguistic alternatives (i.e., generic masculine forms versus pair forms) to present stereotypically male occupations shapes different gendered associations and perceptions of women's and men's success in these occupations in children aged six to twelve.

1.2. The impact of language on vocational development: gendered interest towards occupations

Language should not only influence gendered mental representations but also impact occupational interests. Support for this assumption comes from experiments with adults (e.g., Bem & Bem, 1973; Born & Taris, 2010; Gaucher et al., 2011; Stout & Dasgupta, 2011). For example, Bem and Bem (1973) found that generic masculine forms in job ads (e.g., telephone lineman) have a negative influence on women's interest in these occupations. In contrast, job ads with an explicit reference to women (e.g., telephone linewoman) had a positive influence on female students' interest. Similarly, Stout and Dasgupta (2011) who had asked their participants to read job descriptions in which the ideal candidate was either referred to with masculine wordings (e.g., *he*, *him*, *guys*) or with gender fair wordings (e.g., *he or she*, *his or her*, *employees*) found female participants to be more motivated to pursue the job if they had read the gender fair version. In a study by Gaucher et al. (2011), job ads for male-dominated areas (e.g., engineering, plumbing) were varied in their amount of masculine wording (i.e., words associated with maleness such as leader, competitive, or dominant). Female participants found the jobs more appealing the fewer masculine wordings they contained, with this effect being mediated by women's perceptions of belongingness (e.g., "I am similar to the people who work in this career"). While these studies are in line with our prediction that gender fair language may promote females' interest in stereotypically male occupations, they failed to identify the underlying psychological mechanisms. In our research, we suggest that language variations in occupational titles impact the easiness with which children can image female job holders and females succeeding in the job, which in turn should impact girls' but not boys' interest in these occupations.

2. Overview of the studies

In summary, our studies will test the following hypotheses: Pair forms (compared to generic masculine forms) used to describe stereotypically male occupations:

1. Facilitate mental associations with female job holders in children;

2. Strengthen children's expectations that women can succeed in male occupations;

3a. Foster girls' interest in male occupations.

3b. The positive impact of pair form use on girls' interest in stereotypically male occupations is mediated by their expectation that women can succeed in these occupations.

Three experiments with a total of 809 primary school children were conducted to examine the aforementioned issues. We test our hypotheses with primary school children between six and twelve years of age since middle childhood is assumed to be a crucial phase in the development of gender stereotypes and of vocational aspirations. To enhance the generalizability of our findings, we sampled children from two different grammatical gender language backgrounds, German and Dutch. We thus hoped to show that our language manipulation would have similar effects on children regardless of their first language being German or Dutch.

Experiment 1 tested whether the use of pair forms (as opposed to generic masculine forms) when presenting stereotypically male occupations facilitates associations with female jobholders in German and Dutch speaking primary schoolchildren. Experiment 2 explored the influence of pair form use (as opposed to generic masculine forms) on children's perceptions of males' and females' success in traditionally male occupations in a sample of German primary school children. Experiment 3 tested the differential impact of pair forms versus generic masculine forms on children's interest in pursuing traditionally male occupations. In addition, we again measured children's perceptions of males' and females' success in these occupations, allowing for a replication of Experiment 2 in a second independent sample of German and Dutch primary school children and for a test of our mediation hypothesis: language use should impact girls' interest via the perception of female success.

3. General methodology

3.1. Procedure and materials

In all three experiments, existing class constellations were preserved, such that the experimental manipulation (occupational titles in pair forms versus occupational titles in generic masculine forms) was varied on the class level only. Instructions were given by the same teacher in all participating classes within one school. The teacher presented occupational titles with brief descriptions to make sure that all children had the same occupation in mind. These descriptions were held constant across both conditions (e.g., generic masculine condition: "*firemen are people who extinguish fires*"; pair form condition: "*firewomen and firemen are people who extinguish fires*").

In Experiment 1, children received the occupational titles written on the questionnaire. In Experiments 2 and 3, occupational titles were read out loud by the teacher one after another, with the children indicating their responses in a questionnaire immediately afterwards. Occupations were taken from a list of role names pretested according to gender-typicality by speakers of three native languages (Gabriel, Gygax, Sarrasin, Garnham, & Oakhill, 2008; Irmen & Schumann, 2011). Although the main focus was on stereotypically male occupations (>70% men), we also included some stereotypically female (>70% women) and gender neutral occupations as filler items in order to provide children with a broader range of occupational descriptions and to disguise the purpose of the study. Occupations were always presented in a random order.

3.2. Analyses

We applied a standard linear regression model (total regression) with a standard error correction for complex data (Mplus5, Muthén & Muthén, 2007) instead of traditional MANCOVA analyses. Without this correction, standard errors would have been underestimated and significance tests would have been biased, given the complex data structure, with pupils being nested in classes (Bryk & Raudenbush, 1992). We also analyzed our data by means of a multilevel linear analysis which is an alternative method of analyzing nested data. Results proved to be the same irrespective of method of analysis. Intra class correlations varied between ICC = 0.11 and ICC = 0.23, indicating that about 11 to 23% of the variance in the outcome variables was due to pupils being nested in school classes. For the sake of space we will therefore restrict our report to the results of the linear regression analysis with standard error correction. To test our assumption that the linguistic form used in presenting occupations would impact children's associations with female jobholders (Experiment 1), perceptions of males' and females' success (Experiments 2 and 3), as well as their occupational interest (Experiment 3), we conducted multiple regression analyses in which all categorical variables (linguistic form, participant sex, language type) were effect coded (generic masculine form, girls, less grammatical gender language: −1; pair form, boys, strong grammatical gender language: 1) and the continuous variable (age) was grand mean centered (Aiken & West, 1991). All effect coded variables, children's age, and the two-way interaction terms between children's sex and linguistic form and between linguistic form and language type were entered simultaneously. The criterion variables were: associations with female jobholders in stereotypically male occupations (Experiment 1), perception of males' and females' success (Experiments 2 and 3), and strength of interest in pursuing a stereotypically male occupation (Experiment 3). For each of the three kinds of occupations (male,[1] female, neutral), scores were summed and subjected to a regression analysis with correction for standard error.

4. Experiment 1: the effects of gender fair language use on children's associations with female job holders

4.1. Participants

Participants were children ($N = 181$) from public primary schools in Germany ($n = 99$) and Belgium ($n = 82$). German participants' ages ranged from seven to twelve years ($M = 10.0$, $SD = 1.1$). Forty pupils (20 female and 20 male) were assigned to the control group (i.e. generic masculine form) and 59 pupils (30 female and 29 male) to the experimental group (i.e. pair form).

[1] While some of the male occupations were explicitly gender-marked (e.g., Feuerwehrmänner und Feuerwehrfrauen; firemen and firewomen) others were more subtly marked for grammatical gender (e.g., Erfinder und Erfinderinnen; male and female explorers). Due to space limitations, only the results for a score calculated across all male occupations will be reported since separate analyses on the two subtypes of male occupations had revealed analogous effects.

Belgian participants' ages ranged from seven to twelve years ($M = 10.2$, $SD = 1.3$). Forty pupils (17 female and 23 male) were assigned to the experimental group (i.e. pair form) and 42 pupils (28 female and 14 male) to the control group (i.e. generic masculine form).

4.2. Materials

4.2.1. Associations with female jobholders

To measure children's spontaneous gendered perceptions of different occupations, we measured associations with male–female jobholder. Children were asked: "*Suppose you are a film producer. Which first names would you give to the following movie characters?*" Each of a total of seven characters was then described by means of an occupational title, either presented in pair form or in generic masculine form. Occupational titles contained three stereotypically male, two female, and two gender neutral occupations (see Appendix A). Our research participants were asked to write down two first names for each character in an open answer format. Results of the three regression analyses are summarized in Table 1.

5. Results

5.1. Effect of Job title as pair form vs. generic masculine form on gender-related associations about stereotypically male occupations

In line with our hypothesis, a significant main effect of linguistic form was obtained, $b = .84$, $\beta = .53$, $t(173) = 15.56$, $p < .05$: In the pair form condition, children—regardless of their sex or first language—assigned more female first names to movie characters acting in stereotypically male domains than in the generic masculine form condition. Also, a significant main effect for children's sex emerged, $b = -.30$, $\beta = -.07$, $t(173) = -3.08$, $p < .05$: Girls generally assigned more female names than did boys. A significant main effect of language type, $b = -.24$, $\beta = -.17$, $t(173) = -3.86$, $p < .05$, indicated that on average Dutch speaking children mentioned more male names than German speaking children.

5.2. Effect of job title as pair form vs. generic masculines on gender-related associations for stereotypically female and gender neutral occupations

With regard to the stereotypically female occupations, an interaction effect between linguistic form and sex of child was found, $b = .17$, $\beta = .14$, $t(174) = 2.06$, $p < .05$. Post-hoc tests showed that when stereotypically female occupational titles had been presented in pair forms, girls listed a higher number of male names for these occupations, $b = -.37$, $t(176) = 3.69$, $p < .05$, while linguistic form did not impact boys' responses, $b = -.01$, $t(176) = 0.29$, $p =$ n.s. For gender neutral occupations, the only significant effect was an interaction between linguistic form and age, $b = .25$, $\beta = .19$, $t(174) = 5.21$, $p < .05$. Post-hoc tests showed that while younger children provided more male names in the pair form condition than in the generic masculine form condition $b = -.10$, $t(171) = 2.92$, $p < .05$, older children were unaffected by the linguistic form $b = -.03$, $t(171) = 0.85$, $p =$ n.s. All results of regression analysis are detailed in Table 1.

6. Discussion

Supporting our first hypothesis and in line with findings for adults, children's associations with female jobholders increased when stereotypically male occupations were presented in a pair form rather than in generic masculine form. It seems that as

Table 1
Experiment 1: predictors of gendered associations toward stereotypically male, female, and gender neutral occupations.

	Traditionally male (Range 0–6)				Traditionally female (Range 0–4)				Traditionally neutral (Range 0–4)			
	b	SE (*b*)	ß	R^2	*b*	SE (*b*)	ß	R^2	*b*	SE (*b*)	ß	R^2
Intercept	1.335	.034			2.462	.084			1.899	.053		
LF	.849*	.034	.535		−.213*	.084	−.175		.027	.053	.020	
Sex	−.296*	−.070	−.187		−.421*	.080	−.347		−.606*	−.066	−.447	
Age	−.017	.038	−.012		−.051	.058	−.045		−.103*	.047	−.082	
LT	−.292*	.026	−.184		.182*	.085	−.149		−.038	.053	−.028	
LF∗Sex	.038	.070	.024		.171*	.080	.140		.124†	.066	.091	
LF∗LT	−.106	.026	−.067		−.167†	.085	−.137		−.026	.052	−.019	
LF∗Age	−.062	.038	−.050		.080	.058	.069		.250*	.048	.194	
				.357*				.225*				.210*

Notes. Effect codes: LF = Linguistic Form (generic masculine form = −1, pair form = 1), Child's Sex (girl = −1, boy = 1), LT = language type (strong grammatical gender language = −1, weak grammatical gender language = 1), Age is centered grand mean.

* $p < .05$.

† $p < .10$.

early as in primary school, children are sensitive to gender cues in job descriptions. This is an interesting finding since children in this period of life increasingly link certain occupations with men or women (Miller, Lurye, Zosuls, & Ruble, 2009; Ruble et al., 2006) which consequently influences their personal occupational interests (see Gottfredson, 1981, 2005; Weisgram et al., 2010).

Despite that the present study focused on the impact of linguistic forms on gender-related associations of stereotypically male occupations, we also included stereotypically female and gender neutral occupational titles. Findings from Experiment 1 seem to suggest that under certain conditions, pair form presentations also influence gender associations about job holders in stereotypically female and gender neutral occupations. It seems that in those cases, a subgroup of children had a strong tendency to associate an occupation more strongly with women (i.e., girls regarding female occupations) or more strongly with men (i.e., boys and young children regarding neutral occupations) and the use of pair forms supported gender-balanced representations, i.e., children suggesting one male and one female name for the movie characters.

7. Experiment 2: the effects of gender fair language use on children's perceptions toward gender-based success in stereotyped occupations

7.1. Participants

Participants were children ($N = 171$) from 10 classrooms of a public primary school in Germany. Ages ranged from six to thirteen years ($M = 9.2$, $SD = 1.8$). Half of the classes were randomly assigned to the experimental group (i.e. pair form) (91 pupils (46 female and 45 male); mean age = 9.31, $SD = 2.03$) and the other half served as the control group (i.e. generic masculine form) (79 pupils (36 female and 43 male); mean age = 9.11, $SD = 1.44$).

7.2. Materials

7.2.1. Gender-related perceptions of occupations

We chose four stereotypically male, three stereotypically female and three stereotypically gender neutral occupations and supplemented them with a one-sentence description of the professional activity (see Appendix B). Following the verbal presentation by the teacher, children were asked to rate "*Who can succeed in this occupation*?" on a five point scale ranging from (1) "*only men*" to (5) "*only women*". A mean score was calculated on all 4 male job titles ($\alpha = .55$). Results of regression analyses are detailed in Table 2.

8. Results

8.1. The impact of job title presented in pair form vs. generic masculine form on gendered perceptions of success in stereotypically male occupations

In line with our second hypothesis, the multiple regression analysis revealed a significant main effect of the linguistic form, $b = .09$, $\beta = .20$, $t(165) = 2.15$ $p < .05$. When stereotypically male occupations had been presented in pair forms, children of both genders perceived women's and men's success in a more balanced way than if occupational titles had been presented in generic masculine forms. Furthermore, results indicated a marginally significant main effect of children's age, $b = .05$, $\beta = .18$, $t(165) = 1.73$ $p < .10$: The older the children were, the closer they scored to the neutral answering category, expressing that both genders can succeed in these occupations.

Table 2
Experiment 2: predictors of gendered perceptions of stereotypically male, female, and gender neutral occupations.

	Traditionally male				Traditionally female				Traditionally neutral			
	B	*SE* (*b*)	ß	R^2	*b*	*SE* (*b*)	ß	R^2	*b*	*SE* (*b*)	ß	R^2
Intercept	1.913	.039			3.422	.029			3.070	.027		
LF	.081*	.039	.176		.101*	.029	.242		.037	.027	.122	
Sex	−.001	.033	−.003		.029	.030	.059		−.022	.016	−.071	
Age	.062*	.025	.240		−.027†	.017	−.184		−.019	.016	−.112	
LF∗Sex	−.004	.033	.009		−.012	.017	−.039		−.010	.016	−.033	
LF∗Age	−.030	.025	−.096		−.043*	.017	−.180		−.007	.016	.041	
				.084*				.116*				.041

Notes. Value ratings from 1 (*only men*) to 5 (*only women*), Effect codes: LF = Linguistic Form (generic masculine = −1, pair form = 1), Child's Sex (girl = −1, boy = 1), Age is centered grand mean.

* $p < .05$.

† $p < .10$.

8.2. The impact of job title as pair form vs. generic masculine on gendered perceptions of success in stereotypically female and gender neutral occupations

Multiple regression analysis revealed a significant two-way interaction effect between linguistic form and age, $b = -.43$, $\beta = -.180$, $t(165) = -2.04$ $p < .05$. Post-hoc simple slope tests revealed that young children, $b = .14$, $t(168) = 4.13$ $p < .05$, but not older children, $b = -.06$, $t(168) = 1.62$ $p = n.s.$, perceived women as more successful in the pair form than in the generic masculine form condition.

9. Discussion

In line with our second hypothesis and with findings for adults (see Stahlberg et al., 2007), the presentation of stereotypically male occupations in pair forms strengthened children's gender-balanced perceptions of women's and men's success: Boys and girls considered it more likely that women and men are equally successful in stereotypically male occupations if the occupations had been presented in pair form compared to generic masculine form. While the findings of Experiments 1 and 2 were generally in line with our hypotheses, several issues remain unresolved. First, it is conceivable that some of the job titles used to describe female occupations in Experiment 2 were ambiguous as to their content realm (e.g. "sales person" can be employed in the computer vs. the clothing sector). In Experiment 3 we therefore used unequivocally stereotypically female occupations (e.g., beauticians, dental assistants). In Experiment 2, we had used a very limited number of male occupations ($n = 4$) and tested only German speaking children. Experiment 3 aimed to replicate the findings of Experiment 2, using more occupational titles and including a Dutch speaking sample. Experiment 3 additionally included a measure of occupational interest to more explicitly test whether crucial elements of vocational development are affected by linguistic forms and whether it is particularly girls whose interest in male stereotyped occupations can be strengthened through our linguistic intervention.

10. Experiment 3: the effects of gender fair language use on children's gender-related perceptions about occupations and their occupational interest

10.1. Participants

Participants were children ($N = 457$) from 24 different classrooms from two public primary schools in Germany ($N = 225$) and two public primary schools in Belgium ($N = 232$). German participants' ages ranged from six to thirteen years ($M = 9.2$, $SD = 1.7$). Six classes with 114 pupils (60 female and 54 male) were randomly assigned to the experimental group (i.e. pair form) and six classes with 111 pupils (55 female and 56 male) served as the control group (i.e. generic masculine form). Belgian participants' ages ranged from six to thirteen years ($M = 8.9$, $SD = 1.7$). 117 pupils from six classes (64 female and 53 male) were assigned to the experimental group (i.e. pair form) and 115 pupils (65 female and 50 male) were assigned to the control group (i.e. generic masculine form).

10.2. Materials

As in Experiments 1 and 2, occupational titles were selected from Gabriel et al.'s (2008) and Irmen and Schumann's (2011) lists of role names. We chose eight stereotypically male, five stereotypically female, and three gender neutral occupational titles, each accompanied by a one-sentence description (see Appendix C). In an attempt to avoid children aligning their answers for occupational interest with their answers for the gender-related perceptions of the occupations, the list of occupational titles was presented twice: once for the occupational interest questions and once for the gender-related perception questions. In order to reduce time demands on the younger children, first and second graders ($N = 109$, 55 girls and 54 boys, M age $= 6.8$, $SD = 0.7$), who generally need more time to fill in the questionnaires, were only given the questions on gender-related perceptions. Hence, 326 participants (170 girls and 156 boys, M age $= 9.8$, $SD = 1.3$) answered both the scales on occupational interest and gendered perceptions.

10.2.1. Occupational interest

In the first roundest of questions, children were asked "*How much would you like to be…?*" for each occupation. The scales ranged from (1) "*not at all*" to (5) "*very much*". A mean score was calculated for all 8 male job titles ($\alpha = .78$).

10.2.2. Gender-related perceptions toward occupations

In the second roundest of questions, children were asked "*Who can succeed in this occupation?*" for each occupation, with the scales ranging from (1) "*only men*" to (5) "*only women*". A mean score was calculated for all 8 male job titles ($\alpha = .65$). Results of regression analyses are detailed in Tables 3 and 4.

Table 3
Experiment 3: predictors of gendered perceptions of stereotypically male, female, and neutral occupations.

	Traditionally male				Traditionally female				Traditionally neutral			
	b	*SE* (*b*)	ß	R^2	*b*	*SE* (*b*)	ß	R^2	*b*	*SE* (*b*)	ß	R^2
Intercept	1.986	.024			3.824	.037			2.975	.015		
LF	.152*	.024	.357		.016	.037	.035		−.004	.015	−.012	
Sex	−.064*	.017	−.151		−.059*	.019	−.129		−.063*	.022	−.178	
Age	.029*	.012	.116		.018	.018	.068		−.003	.010	.013	
LT	.083*	.026	.195		−.030	.040	−.065		.004	.014	.011	
LF∗Sex	.004	.016	.009		.003	.019	.008		.002	.022	.005	
LF∗LT	.021	.026	.050		−.029	.040	.065		−.008	.010	−.024	
LF∗Age	−.015	.012	−.061		−.012	.018	−.044		−.008	.010	−.041	
				.204*				.032†				.034†

Notes. Value ratings from 1 (*only men*) to 5 (*only women*), Effect codes: LF = Linguistic Form (generic masculine = −1, pair form = 1), Child's Sex (girl = −1, boy = 1), LT = language type (strong grammatical gender language = 1, weak grammatical gender language = −1), Age is centered grand mean.
* $p<.05$.
† $p<.10$.

Table 4
Experiment 3: predictors of occupational interest in traditionally male, female, and neutral occupations.

	Traditionally male				Traditionally female				Traditionally neutral			
	b	*SE* (*b*)	ß	R^2	*b*	*SE* (*b*)	ß	R^2	*b*	*SE* (*b*)	ß	R^2
Intercept	2.393	.038			2.111	.045			3.351	.057		
LF	.059	.038	.076		−.013	.045	−.016		.029	.057	.036	
Sex	.509*	.032	.645		−.438*	.042	−.536		−.202*	.054	−.245	
Age	−.013	.022	−.028		−.077*	.026	−.165		−.055	.036	−.117	
LT	−.010	.032	−.012		−.150*	.039	−.184		−.010	.036	−.012	
LF∗Sex	−.075*	.032	−.096		.013	.042	.016		−.064	.053	−.077	
LF∗LT	.057	.039	.073		.046	.039	.056		.073†	.043	.088	
LF∗Age	−.010	.022	−.023		.040	.026	.085		.006	.036	.014	
				.430*				.387*				.096*

Notes. Value ratings from 1 (*only men*) to 5 (*only women*), Effect codes: LF = Linguistic Form (generic masculine = −1, pair form = 1), Child's Sex (girl = −1, boy = 1), LT = language type (strong grammatical gender language = 1, weak grammatical gender language = −1), Age is centered grand mean.
* $p<.05$.
† $p<.10$.

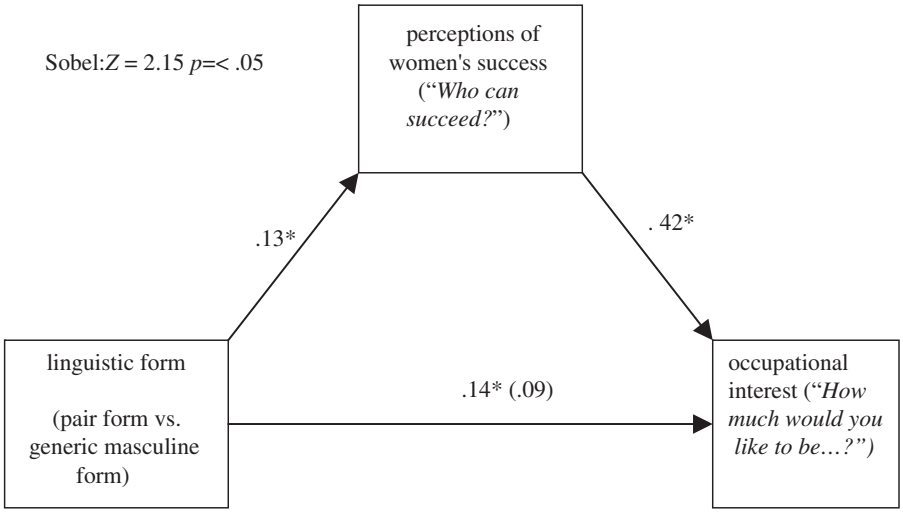
11. Results

11.1. The impact of job titles presented in pair form vs. generic masculine form on gender-related perceptions toward stereotypically male occupations

In support for our second hypothesis, a significant main effect of the linguistic form showed that when stereotypically male occupations were presented in pair form (rather than in its generic masculine form), children of both genders and language type perceived women as more successful, $b = .15$, $\beta = .36$, $t(427) = 6.58$, $p<.05$. Furthermore, a significant main effect for age emerged, $b = .28$, $\beta = .11$, $t(427) = 2.32$, $p<.05$: The older children were, the less gender-stereotyped their perceptions about the success of women in traditionally male occupations. A significant main effect of language type revealed that on average, Dutch speaking children saw men as more successful in traditionally male occupations than German speaking children, $b = .08$, $\beta = .19$, $t(427) = 3.53$, $p<.05$. A significant main effect for children's gender indicated that girls, relative to boys, saw women as relatively more successful in stereotypically male occupations, $b = -.06$, $\beta = -.15$, $t(427) = -4.19$, $p<.05$.

11.2. The impact of job titles in pair form vs. generic masculine form on girls' interest in stereotypically male occupations

Our Hypothesis 3a that girls' interest in stereotypically male occupations should be greater if they are presented in pair forms would be met if the two-way interaction between linguistic form and children's gender was significant, indicating an effect for girls only. Multiple regression analysis confirmed the predicted interaction, $b = -.08$, $\beta = -.10$, $t(320) = -2.09$ $p<.05$. Post-hoc simple slope tests showed that while girls indicated more interest in male occupations presented in pair forms rather than generic masculine forms, $b = .13$, $t(318) = 2.76$ $p<.05$, boys' interest remained unaffected by the linguistic form, $b = -.01$, $t(318) = 0.25$ $p =$ n.s.



Note. Value ratings for gendered perceptions and occupational interest from 1 to 5, effect code: linguistic form (generic masculine = -1, pair form = 1). Unstandardized regression coefficients between linguistic intervention and occupational interest controlling for gendered perceptions in parentheses.
* p < .05.

Fig. 1. Standardized regression coefficients for the relationship between linguistic form and girls' interest in stereotypically male occupations as mediated by perceptions of women's success in stereotypically male occupations. *Note.* Value ratings for gendered perceptions and occupational interest from 1 to 5, effect code: linguistic form (generic masculine = −1, pair form = 1). Unstandardized regression coefficients between linguistic intervention and occupational interest controlling for gendered perceptions in parentheses. * $p<.05$.

11.3. Mediation of the effect of the linguistic form on girls' interest in stereotypically male occupations via girls' perception of women's success ratio in stereotypically male occupations

To test the mediation as suggested in Hypothesis 3b, we followed stepwise procedures proposed by Baron and Kenny (1986). Following recommendations from MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) we performed an unbiased single test of significance for the indirect effect as proposed by Sobel (1982), thus avoiding multiple single tests with a risk of accumulation of alpha errors.

All requirements for confirming a mediational effect were met: The linguistic form was both a significant predictor of girls' perceptions of women's success ratio in stereotypically male occupations, $b = .13$, ß = .38, $t(168) = 3.17$, $p<.05$, and of girls' occupational interest in stereotypically male occupations, $b = .14$, ß = .25, $t(168) = 2.35$, $p<.05$. Furthermore, girls' gendered perceptions of male occupations significantly predicted their interest in male occupations while controlling for the impact of the linguistic form, $b = .32$, ß = .20, $t(168) = 2.53$, $p<.05$. Thus, supporting Hypothesis 3b, the effect of the linguistic form on girls' interest in stereotypically male occupations was in fact mediated by their perception of women's success in stereotypically male occupations. As Fig. 1 illustrates, when taking girls' gendered perceptions into account, the effect of the linguistic form on their occupational interest decreased and became non-significant, $b = .09$, ß = .17, $t(168) = 1.93$, $p =$ n.s. Additionally, the Sobel test $z = 2.15$, $p<.05$ confirmed that the impact of the linguistic intervention on girls' occupational interest was mediated by their perceptions of women's success ratio in male occupations.

11.4. The impact of job titles in pair form vs. generic masculine on gender-related perceptions toward and interest in stereotypically non-male occupations

The linguistic form did not have a significant influence on children's perception of women's and men's success in female stereotyped and gender neutral occupations.

12. Discussion

In line with our second hypothesis, Experiment 3 showed that children of both genders and language types saw women as relatively more successful in stereotypically male occupations when these occupations were presented to them in a pair form compared to a generic masculine form. In addition, as predicted girls showed more interest in stereotypically male occupations presented in pair forms. This latter finding is in line with results that have been reported in samples of adults (e.g., Bem & Bem, 1973; Born & Taris, 2010; Gaucher et al., 2011; Stout & Dasgupta, 2011). Our study additionally supported Hypothesis 3b in that the impact of the linguistic intervention on girls' interest in stereotypically male occupations was mediated via their perceptions of women's success in

stereotypically male occupations. This finding is in line with research with adults showing that women's perceptions of other women's success in stereotypically male occupations strengthen their personal interest in these gender atypical occupational domains (Asgari et al., 2012; Murphy et al., 2007; Stout et al., 2011; Weisgram et al., 2010).

13. General discussion

In this paper we investigated, by means of an experimental intervention, whether the use of varying linguistic forms (pair form versus generic masculine form) when describing stereotypically male occupations to children aged six to twelve differentially influenced their gendered associations (Experiment 1), their perceptions of males' and females' occupational success (Experiments 2 and 3), and girls' interest in male occupations (Experiment 3). Furthermore, to increase the generalizability of our findings, we investigated whether a potential influence of the linguistic form would be valid in different grammatical gender languages and studied children speaking either German or Dutch (Experiments 1 and 3).

Consistent results were obtained with respect to the impact of the linguistic form on children's gendered associations and perceptions of success regarding stereotypically male occupations: In all three experiments it was apparent that the use of pair forms (compared to generic masculine forms) led children to give less gender-stereotyped responses regardless of their own gender or language type. In Experiment 1, pair forms facilitated associations with female job holders in stereotypically male occupations. While previous research in adults has demonstrated that the use of pair forms generally results in more gender-balanced mental representations (Stahlberg et al., 2007, for a review), our study is the first to provide empirical support that this effect also exists in girls and boys in middle childhood. Experiments 2 and 3 additionally showed that the use of pair forms strengthened children's gender balanced perceptions of success for women and men in stereotypically male occupations.

Complementing previous research on factors impacting children's gendered perceptions of vocations (Blakemore, Berenbaum, & Liben, 2009; Ruble et al., 2006, for reviews), results from our three experiments show that grammatical gender cues in language influence the way in which girls and boys in middle childhood perceive traditionally male occupations. Our finding that German and Dutch speaking children's gendered associations and perceptions of success were influenced by the linguistic forms used to describe occupations fits into cognitive perspectives on gender development which suggest that children actively seek out gender cues in their environment in order to make sense of their social world (Ruble et al., 2006): children seem to use gender cues embedded in job descriptions to categorize occupations along gender lines. Hence, the current practice in grammatical gender languages to use the generic masculine form when describing stereotypically male occupations may contribute to the maintenance of occupational gender stereotypes (cf. Maass & Arcuri, 1996).

Our findings have practical relevance in that gendered associations and perceptions of success guide children's educational and occupational aspirations as they search for “gender appropriate” options (e.g., Gottfredson, 1981, 2005; Liben, Bigler, & Krogh, 2001; Ruble et al., 2006; Weisgram et al., 2010). During middle childhood, the percentage of occupations that children differentially associate with either males or females becomes larger and larger (e.g., Liben et al., 2001; Miller et al., 2009; Ruble et al., 2006). Our findings imply that the use of generic masculine forms when describing stereotypically male occupations by teachers, media, school, etc., may attenuate young girls' interest for these occupations, thus contributing to the maintenance of a gender segregated labor market. Fortunately, our findings also imply that the use of pair forms to describe occupations can promote girls' interest in pursuing an academic or professional career in a gender-atypical occupation.

Direct evidence supporting the idea that girls' vocational development can be influenced by linguistic forms was gathered in Experiment 3: Girls were more interested in male occupations described in pair forms rather than generic masculine forms, while boys' interest remained unchanged, irrespective of language form. It seems that when linguistic forms explicitly including both males and females are used in occupational titles, boys and girls feel equally strongly addressed and can imagine themselves pursuing a stereotypically male occupation. In line with theories on gender development (e.g., Ruble et al., 2006), job attraction (Rynes, 1991), and occupational development (Gottfredson, 1981, 2005), stereotypically male occupations seem to appear more suited for girls once they are described by reference to both male and female job holders.

Indeed, our results confirmed that girls' perceptions of more successful women in male occupations mediated the effect of the linguistic intervention on their occupational interest, supporting Gottfredson's (1981, 2005) theory: girls considered pursuing a male gender-typed profession once it was described to them in pair form, rather than immediately rejecting that option as gender inappropriate. This is an important finding given that girls tend to feel more restricted than boys in the range of occupations they perceive to be “within reach” and “appropriate” for them (e.g., Dorr & Lesser, 1980; McMahon & Patton, 1997) and since vocational aspirations established during middle childhood are assumed to be relevant predictors of subsequent academic and professional choices (e.g., Hartung et al., 2008; Magnuson & Starr, 2000; Porfeli et al., 2008; Trice & McClellan, 1993). By presenting stereotypically male occupations in a pair form, teachers might encourage girls to consider a broader range of academic and professional options. While previous investigations have already demonstrated similar effects in college students and samples of employed persons (e.g., Bem & Bem, 1973; Born & Taris, 2010; Gaucher et al., 2011; Stout & Dasgupta, 2011), our results are the first that directly attest to the influence of different linguistic forms (pair form versus generic masculine form) when describing occupations on children's gendered associations and perceptions of stereotypically male occupations as well as on girls' interest in stereotypically male occupations.

In order to enhance the generalizability of our findings, we have included samples of children speaking two different languages, Dutch and German. These two languages vary in the degree to which grammatical gender is encoded in their linguistic system (cf. Prewitt-Freilino, Caswell, & Laakso, 2012). While in the German language, as a strong grammatical gender language, almost all personal nouns and satellite words (e.g., personal pronouns) are marked for gender, the Dutch language holds an

intermediate position between grammatical gender and natural gender languages: it makes more grammatical distinctions between genders (e.g., in personal nouns) than English, but less than German (Kooij, 1987). Speakers of languages with rather weak grammatical gender systems tend to rely on general knowledge (i.e., stereotypes) when making gender-related inferences while speakers of strong grammatical gender languages rely on grammatical gender cues when making inferences (e.g., Gygax et al., 2008; see Hellinger & Bußmann, 2003; Stahlberg et al., 2007, for in-depth discussions).

Results from Experiments 1 and 3 indicated that Dutch speaking children's perceptions were generally more strongly gender-stereotyped than German speaking children's perceptions. Whether these differences were due to variations in the language's linguistic systems or in other elements of culture cannot be disentangled in this work. Importantly, results from our experiments suggest that even children speaking a weaker grammatical gender language (i.e. Dutch) who are not used to making gender inferences based on grammatical gender cues, adjusted their gendered associations, perceptions, and (in the case of girls) their interest in occupations after being confronted with pair form descriptions of stereotypically male occupations. Thus, the use of pair forms seems to be a recommendable practice in both strong (e.g., German, French, Spanish) and weaker (e.g., Dutch) grammatical gender languages as it includes an explicit reference to both gender on a grammatical and on a stereotypical level.

In line with the literature on gender stereotyping, children throughout our three experiments showed tendencies toward in-group favoritism (cf. Tajfel, 1982): they associated more occupations with and perceived relatively more success in job holders of their own gender than in members of the other gender group, irrespective of the gender-typicality of the occupations.

14. General conclusion

Altogether, the findings from the current experiments demonstrate that children are sensitive to gender information in occupational titles and use this information to make gendered inferences about the occupations. Moreover, our findings are consistent with the notion that language use of teachers, parents, or the media partly shapes children's gender-related stereotypes about occupations. It seems that the generic use of masculine plural forms when describing occupations is likely to lead children to restrictive, male only associations and perceptions about stereotypically male occupations. This is an especially important finding since young children are still developing their gender concepts and once they have established them, it may be difficult to change them (e.g., Liben & Signorella, 1993). Our results suggest that the use of pair forms, for instance in educational contexts or in the media, can contribute to shaping more gender balanced perceptions about traditionally male occupations in boys and girls during middle childhood. They also suggest that pair form use may prevent girls from prematurely circumscribing occupational options to vocations stereotypically associated with the female gender (cf. Gottfredson, 1981, 2005) by influencing their (s)expectations about traditionally male occupations.

Appendix A. Occupational titles in Experiment 1

	German	Dutch	English translation
Stereotypically male:	Astronauten (und Astronautes)	astronauten (en astronautes)	Male (and female) astronauts
	Geschäftsmänner (und Geschäftsfrauen)	zakemannen (en zakenvrouwen)	Male (and female) businessmen
	(Erfinder und Erfinderinnen)	uitvinders (en uitvindsters)	Male (and female) inventors
Stereotypically female:	Zahnartzhelfer (und Zahnartzhelferinnen)	tandartsassisten (en tandartsassistentes)	Male (and female) dental assistants
	Kosmetiker (und Kosmetikerinnen)	schoonheidsspecialisten (en schoonheidsspecialitstes)	Male (and female) beauticians
Stereotypically gender neutral:	Sänger (und Sängerinnen)	zangers en zangeressen	Male (and female) singers
	Schriftsteller (und Schriftstellerinnen)	schrijvers en schrijfsters	Male (and female) writers

Appendix B. Occupational titles in Experiment 2

	German	English translation
Stereotypically male:	Piloten (und Pilotinnen)	Male (and female) pilots
	Feuerwehrmänner (und Feuerwehrfrauen)	Male (and female) firefighters
	Automechaniker (und Automechanikerinnen)	Male (and female) car mechanics
	Hausmeister (und Hausmeisterinnen)	Male (and female) janitors
Stereotypically female:	Frisören (und Frisörinnen)	Male (and female) hair dresser
	Tänzer (und Tänzerinnen)	Male (and female) dancers
	Verkäufer (und Verkäuferinnen)	Male (and female) sales assistants
Stereotypically gender neutral:	Sänger (und Sängerinnen)	Male (and female) singers
	Schriftsteller (und Schriftstellerinnen)	Male (and female) athletes
	Musiker (und Musikerinnen)	Male (and female) musicians

Appendix C. Occupational titles in Experiment 3

	German	Dutch	English translation
Stereotypically male:	Astronauten (und Astronautinnen)	astronauten en astronautes	Male (and female) astronauts
	Lastwagenfahrer (und Lastwagenfahrerinnen)	vrachtwagencahuffeurs en vrachtwagenchauffueses	Male (and female) truck drivers
	Geschäftsmänner (und Geschäftsfrauen)	zakemannen en zakenvrouwen	Businessmen and businesswomen
	Erfinder (und Erfinderinnen)	uitvinders en uitvindsters	Male (and female) inventors
	Bürgermeister (und Bürgermeisterinnen)	burgemeesters en burgemeesteressen	Male (and female) mayors
	Maurer (und Maurerinnen)	metselaars en metselaarsters	Male (and female) bricklayers
	Feuerwehrmänner (und Feuerwehrfrauen)	brandweermannen en brandweervrouwen	Firemen and firewomen
	Automechaniker (und Automechanikerinnen)	automonteerders en automonteersters	Male (and female) car mechanics
Stereotypically female:	Blumenverkäuferinnen und Blumenverkäufer	bloemenverkopers (en bloemenverkoopsters)	Male (and female) flower sellers
	Babysitterinnen und Babysitter	kinderoppassers en kinderoppasseressen	Male (and female) babysitters
	Zahnartzhelfer und Zahnartzhelferinnen	tandartsassisten (en tandartsassistentes)	Male (and female) dental assistants
	Raumpflegerinnen und Raumpfleger	schoonmakers (en schoonmaksters)	Male (and female) cleaners
	Kosmetiker und Kosmetikerinnen	schoonheidsspecialisten (en schoonheidsspecialitstes)	Male (and female) beauticians
Stereotypically gender neutral:	Sänger (und Sängerinnen)	zangers (en zangeressen)	Male (and female) singers
	Sportler (und Sportlerinnen)	sporters (en sportsters)	Male (and female) athletes
	Schriftsteller (und Schriftstellerinnen)	schrijvers (en schrijfsters)	Male (and female) writers

References

Aiken, L., & West, S. (1991). *Multiple regression: Testing and interpreting interactions.* Newbury Park, London: Sage.

Asgari, S., Dasgupta, N., & Stout, J. G. (2012). When do counterstereotypic ingroup members inspire vs. deflate? The effect of successful professional women on women's leadership self-concept. *Personality and Social Psychology Bulletin*, *38*, 370–383.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.

Bem, S. L., & Bem, D. J. (1973). Does sex-biased job advertising "aid and abet" sex discrimination? *Journal of Applied Social Psychology*, *1*, 6–18.

Blakemore, J. E. O., Berenbaum, S. A., & Liben, L. S. (2009). *Gender development.* New York: Taylor & Francis.

Born, M. P., & Taris, T. W. (2010). The impact of the wording of employment advertisements on students' inclination to apply for a job. *The Journal of Social Psychology*, *150*, 485–502.

Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models in social and behavioral research: Applications and data analysis methods.* Newbury Park, CA: Sage.

Dorr, A., & Lesser, G. (1980). Career awareness in young children. *Communication Research and Broadcasting*, *3*, 36–75.

Fiske, S. T. (1993). Social cognition and social perceptions. *Annual Review of Psychology*, *44*, 155–194.

Gabriel, U., Gygax, P., Sarrasin, O., Garnham, A., & Oakhill, J. (2008). Au-pairs are rarely male: Role names' gender stereotype information across three languages. *Behavior Research Methods, Instruments, & Computers*, *40*, 206–212.

Gaucher, D., Friesen, J., & Kay, A. C. (2011). Evidence that gendered wording in job advertisements exists and sustains gender inequality. *Journal of Personality and Social Psychology*, *101*, 109–128.

Gottfredson, L. S. (1981). Circumscription and compromise: A developmental theory of occupational aspirations. *Journal of Counseling Psychology*, *28*, 545–579.

Gottfredson, L. S. (2005). Using Gottfredson's theory of circumscription and compromise in career guidance and counseling. In S. D. Brown, & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (pp. 71–100). New York: Wiley.

Gygax, P., Gabriel, U., Sarrasin, O., Garnham, A., & Oakhill, J. (2008). There is no generic masculine in French and German: When beauticians, musicians and mechanics are all men. *Language & Cognitive Processes*, *23*, 464–485.

Hartung, P. J., Porfeli, E. J., & Vondracek, F. W. (2005). Child vocational development: A review and reconsideration. *Journal of Vocational Behavior*, *66*, 385–419.

Hartung, P. J., Porfeli, E. J., & Vondracek, F. W. (2008). Career adaptability in childhood. *The Career Development Quarterly*, *57*, 63–74.

Heise, E. (2000). Sind Frauen mitgemeint? Eine empirische Untersuchung zum Verständnis des generischen Maskulinums und seiner Alternativen [Are women included? An empirical study of the generic masculine and its alternatives]. *Zeitschrift für Sprache und Kognition*, *19*, 3–13.

Heise, E. (2003). Auch einfühlsame Studenten sind Männer: Das generische Maskulinum und die mentale Repräsentation von Personen [Sensitive students are men too: The generic masculine and the mental representation of persons]. *Verhaltenstherapie und Psychosoziale Praxis*, *35*, 285–291.

Hellinger, M., & Bußmann, H. (2003). *Gender across languages. The linguistic representation of women and men, vol. 3.* Amsterdam: Benjamins.

Hyde, J. S. (1984). Children's understanding of sexist language. *Developmental Psychology*, *20*, 697–706.

Irmen, L., & Schumann, E. (2011). Processing grammatical gender of role nouns: Further evidence from eye-movements. *Journal of Cognitive Psychology*, *23*, 998–1014.

Kooij, J. G. (1987). Dutch. In B. Comrie (Ed.), *The world's major languages* (pp. 139–156). New York: Oxford University Press.

Leaper, C., & Bigler, R. S. (2011). Gender as a context for social development. In M. Underwood, & L. H. Rosen (Eds.), *Social development*. New York: Guilford Press.

Liben, L. S., Bigler, R. S., & Krogh, H. R. (2001). Pink and blue collar jobs: Children's judgements of job status and job aspirations in relation to sex of worker. *Journal of Experimental Child Psychology*, *79*, 346–363.

Liben, L. S., Bigler, R. S., & Krogh, H. R. (2002). Language at work: Children's gendered interpretations of occupational titles. *Child Development*, *73*, 810–828.

Liben, L. S., & Signorella, M. L. (1993). Gender-schematic processing in children: The role of initial interpretations of stimuli. *Developmental Psychology*, *29*, 141–149.

Maass, A., & Arcuri, L. (1996). Language and stereotyping. In N. Macrae, M. Hewstone, & C. Stangor (Eds.), *The foundations of stereotypes and stereotyping* (pp. 193–226). New York: Guilford.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, *7*, 83–104.

Magnuson, C. S., & Starr, M. F. (2000). How early is too early to begin life career planning? The importance of the elementary school years. *Journal of Career Development*, *27*, 89–101.

McMahon, M., & Patton, W. (1997). Gender differences in children and adolescents' perceptions of influences on their career development. *School Counselor*, *44*, 368–376.
McMahon, M., & Watson, M. B. (2008). Children's career development: Status quo and future directions. *The Career Development Quarterly*, *57*, 4–6.
Miller, C. F., Lurye, L. E., Zosuls, K. M., & Ruble, D. N. (2009). Accessibility of gender stereotype domains: Developmental and gender differences in children. *Sex Roles*, *60*, 870–881.
Murphy, M. C., Steele, C. M., & Gross, J. J. (2007). Signaling threat: How situational cues affect women in math, science, and engineering settings. *Psychological Science*, *18*, 879–885.
Muthén, L. K., & Muthén, B. O. (2007). *Mplus user's guide.* Los Angeles, CA: Muthén & Muthén.
Porfeli, E. J., Hartung, P. J., & Vondracek, F. W. (2008). Children's vocational development: A research rationale. *The Career Development Quarterly*, *57*, 25–37.
Prewitt-Freilino, J. L., Caswell, T. A., & Laakso, E. K. (2012). The gendering of language: A comparison of gender equality in countries with gendered, natural gender, and genderless languages. *Sex Roles*, *66*, 268–281.
Rothmund, J., & Scheele, B. (2004). Personenbezeichnungsmodelle auf dem Prüfstand. Lösungsmöglichkeiten für das Genus-Sexus-Problem auf Textebene [Putting gender neutral reference terms to the test: Constructive solutions to the problem of grammatical vs. referential gender on the textual level]. *Zeitschrift für Psychologie*, *212*, 40–54.
Ruble, D. N., Martin, C., & Berenbaum, S. (2006). Gender development. In N. Eisenberg (Ed.), *Handbook of child psychology: Vol. 3, personality and social development* (pp. 858–932). New York: Wiley.
Rynes, S. L. (1991). Recruitment, job choice, and post-hire consequences. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 399–444). Palo Alto, CA: Consulting Psychologists Press.
Schau, C. G., & Scott, K. P. (1984). Review of 21 cause and effect studies. *Psychological Documents*, *76*, 183–193.
Seligman, L., Weinstock, L., & Heflin, E. (1991). The career development of 10 year olds. *Elementary School Guidance and Counseling*, *25*, 172–181.
Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology* (pp. 290–312). Washington DC: American Sociological Association.
Stahlberg, D., Braun, F., Irmen, L., & Sczesny, S. (2007). Representation of the sexes in language. In K. Fiedler (Ed.), *Social communication. Frontiers of Social Psychology*. (pp. 163–187). New York: Psychology Press.
Stahlberg, D., & Sczesny, S. (2001). Effekte des generischen Maskulinums und alternativer Sprachformen auf den gedanklichen Einbezug von Frauen [Effects of masculine generics and alternative forms of speech on the cognitive inclusion of women]. *Psychologische Rundschau*, *52*, 131–140.
Stout, J. G., & Dasgupta, N. (2011). When he doesn't mean you: Gender-exclusive language as ostracism for women. *Personality and Social Psychology Bulletin*, *37*, 757–769.
Stout, J. G., Dasgupta, N., Hunsinger, M., & McManus, M. (2011). STEMing the tide: Using ingroup experts to inoculate women's self-concept and professional goals in science, technology, engineering, and mathematics (STEM). *Journal of Personality and Social Psychology*, *100*, 255–270.
Super, D. E., Savickas, M. L., & Super, C. M. (1996). The life-span, life-space approach to careers. In D. Brown, & L. Brooks (Eds.), *Career choice and development* (pp. 121–178). San Francisco, CA: Jossey-Bass.
Tajfel, H. (1982). Social psychology of intergroup relations. *Annual Review of Psychology*, *33*, 1–39.
Trice, A., & McClellan, N. (1993). Do children's career aspirations predict adult occupations? An answer from a secondary analysis of a longitudinal study. *Psychological Reports*, *72*, 368–370.
Trice, A., & McClellan, N. (1994). Does childhood matter? A rationale for the inclusion of childhood in theories of career decision. *California Association for Counseling and Development Journal*, *14*, 35–44.
Tyler, L. E. (1964). The antecedents of two varieties of vocational interests. *Genetic Psychology Monographs*, *70*, 177–227.
Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, *92*, 82–96.
Weisgram, E. S., Bigler, R. S., & Liben, L. S. (2010). Gender, values, and occupational interests among children, adolescents, and adults. *Child Development*, *81*, 757–777.
Woods, S. A., & Hampson, S. E. (2010). Predicting adult occupational environments from gender and childhood personality traits. *Journal of Applied Psychology*, *95*, 1045–1057.