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The Impact of Gender Fair Language Use on Children's Gendered Occupational Beliefs and Listeners' Perceptions of Speakers

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Abstract

In recent years the use of gender fair language (e.g., pair forms: explicitly stating both sexes to refer to mixed gender groups or groups whose sex composition is unknown –"Ingenieure und Ingenieurinnen", [male and female] engineers) has been strongly promoted as the alternative for generic masculine forms (i.e., using the masculine form generically to refer to mixed gender groups or to groups whose sex composition is unknown or irrelevant: "Ingenieure", [male] engineers). This language reform reflects the belief that language not only echoes the social world but also has the power to influence people's perception of reality and subsequent behavior. Since language is said to be a tool to 1) represent reality, 2) appeal listeners, 3) express the sender's personality, this thesis examined how the outcomes of these three functions of language are affected when pair forms are used rather than generic masculine forms. Results from a series of experiments with primary school children aged 6 to 12 showed that pair forms (compared to generic masculine forms) significantly influenced children's 1) mental representations (gender-related associations, status- and success-perception) and 2) motivation (self-efficacy beliefs and occupational interest) towards traditionally male occupations. In a separate line of research with university students it could further be shown that 3) the expressive function was influenced: speakers of gender fair langue were perceived differently (on dimensions of sexism, warmth and competence) than speakers of traditional language. Altogether, the findings gathered in this thesis support the notion that gender fair language is both an expression of a person's commitment to gender equality and an effective tool actively contributing to more gender balanced perceptions and motivation towards gender-stereotyped domains.

1

Introduction

Introduction

Gender fair language as the new norm

According to a leading source for German Grammaticism, "… *masculine forms can be used in those contexts where male and female persons are involved, in which it does not appear necessary to explicitly state the sex of the named persons or in those contexts where male and female persons are equally meant*" (translated by the author) (Duden 4th ed., 1984, pp. 200f). Recently, this convention has been deleted and Duden now suggest to: "*...reject generic masculine forms, i.e., the use of masculine personal nouns [e.g., Ingenieure] to refer to both sexes"* (translated and example added by the author) (Duden 6th ed., 2006). Alternatively, Duden recommends to: "…*make both sexes linguistically visible [Ingernieurinnen und Ingenieure], hence, when females are involved they should also be mentioned explicitly"* (translated and example added by the author) (Duden 6th ed., 2006).

Recently, this norm of gender fair language has been adopted by a number of professional organizations, publishing companies, and even governmental organizations. Increased activities to promote gender fair language are noticeable: a growing number of guidelines on the "why" and "how" of gender fair language have been published in the past decade (APA, 2009; Duden, 2006; EU, 2008). EU parliament recently decided to banish "sexist formulations" from their publications. As a guideline for the creation of "gender fair expressions", EU parliament published a sixteen paged leaflet for their employees (Gender fair language use in the European Parliament, 2008). Analogous guidelines have been developed in many European countries (e.g., for Belgium, for France, for Italy, and The Netherlands). For the German language, several guidelines can be found (e.g. Unesco, Duden, Schweizer Kanzlei) with a popular perception that the use of gender fair language is a new norm in the official German language (Mucchia-Faina, 2005).

This language reform reflects the idea that gender fair language use is not only an expression of a society's commitment to the norm of gender equality but that language is also a tool which influences thought (Hardin & Banaji, 1993; Semin, 2004; Whorf, 1956), actively shapes gender stereotypes (Maass & Arcuri, 1996), and thus contributes to gender equality (Guentherodt, Hellinger, Pusch & Tömel-Plötz, 1980; Schoenthal, 1989; Trömel-Plotz, 1982). Research on the link between language and reality was sparked by the Sapir-Whorf hypothesis first articulated in 1956. In a nutshell it states that the structure (e.g., grammar, vocabulary) of a language influences the way speakers and recipients perceive reality (i.e., linguistic relativism). Recently, this notion has been tied to gender in language and people's gender-related perceptions (e.g., Boroditsky, Schmidt, & Phillips, 2003; 2009; Deutscher,

2010; Maass & Arcuri, 1996). One assumption advanced from this line of reasoning is that grammatical gender in language plays a role in how people organize their thoughts about gender.

Although the relation between gender in language and gender equality in the respective language community has been suggested for many years by feminist proponents (e.g., Guentherodt et al., 1980; Schoenthal, 1989; Trömel-Plotz, 1982) empirical support is scarce, and the underlying mechanisms are not well understood. This thesis aims to enhance our understanding of whether or not gender fair language contributes to more gender equality; if yes, through which channels. First, by examining variations between languages this thesis demonstrates that it is grammatical gender which is related to more or less gender equality between the respective linguistic communities. Second, using the German language as an example this thesis highlights the linguistic alternatives to avoid generic masculine forms and to communicate in a gender fair way within a given language.

In the Introduction of this publication-based thesis, Bühler's (1934) communication model on the functions of language is used as an integrative framework to describe the channels via which gender fair language may contribute to a linguistic community's gender equality. The scarce relevant empirical evidence will be described to form hypotheses on how gender fair language might influence the outcomes of the functions of language and thus contribute to gender equality. It will then be explained which of the research hypotheses were tested in each of the journal articles constituting the bulk of the thesis. After briefly describing the experiments contained in the individual papers, the three manuscripts are presented: (1: Changing (S)expectations: How Gender Fair Job Descriptions Impact Children's Perceptions and Interest regarding Traditionally Male Occupations. *Journal of Vocational Behavior, 82,* 208-220. 2: A Double Edged Sword: Teachers' Use of Gender Fair Job Descriptions and Children's Perceptions of Occupational Status and their Vocational Self-Efficacy Beliefs. Manuscript submitted to *Journal of Experimental Social Psychology*. 3: Ambassadors of Gender Equality? How Use of Pair Forms versus Masculines as Generics Impacts Perception of the Speaker. *European Journal of Social Psychology, 42,* 754-762.). The concluding "General Discussion" summarizes the findings as they relate to Bühler's (1934) communication model and discusses their implications with respect to how to promote gender equality via gender fair language use.

Gender in language and its relation to gender equality: a between language perspective

Although all languages include some kind of lexical expressions of gender, the linguistic devices to communicate gender-related messages are numerous and differ substantially between languages (see Hellinger & Bußmann, 2001; 2002; 2003). In the context of this thesis, we are especially interested in grammatical gender tags in word-formation (i.e., personal nouns). Word-formation is an area particularly sensitive to the communication of gender. The necessity and frequency with which different languages express gender references through personal nouns depends largely on how gender is encoded in the grammatical structure of a language. Roughly, three types of languages can be distinguished: grammatical gender, natural gender, and genderless languages.

In *grammatical* gender languages (e.g., German, French, or Spanish), gender is encoded as a grammatical category. Therefore one is grammatically forced to frequently make gender-references when referring to subjects. For instance, when referring to a group of astronauts in German, the role noun is always grammatically marked for gender which is noticeable at the noun-ending: "Astronauten", male astronauts, or "Astronautinnen", female astronauts. In grammatical gender languages, almost every personal noun has both a male and a female counterpart. Consequently, satellite words (e.g., personal pronouns) are marked for gender as well and personal nouns carry lexical gender (i.e., cultural gender stereotype).

In *natural* gender languages (e.g., English, Danish, or Norwegian), there is almost no grammatical gender marking of personal nouns. Although there are some exceptions such as in "actors and actresses" the majority of personal nouns such as "engineers" have no feminine counterpart and are used for both females and males. Gender references can be made through personal pronouns such as "his" or "her" which, of course, carry a lexical gender.

In *genderless* languages (e.g., Turkish, Finnish, or Chinese), there is no grammatical gender marking at all, neither for personal nouns nor pronouns which can be used to refer to both males and females. However, personal nouns may carry lexical gender.

Furthermore, there are languages which hold an intermediate position between grammatical gender and natural gender languages (e.g., Dutch). Dutch makes more grammatical distinctions between genders (e.g., in personal nouns) than English, but less than German (Kooij, 1987).

Indirect/first support for the idea that gender in language is related to aspects of gender equality comes from investigations linking linguistic variations (devices to communicate gender-related messages) between languages with variations in personal characteristics of the

speakers of these different languages– such as their gender-related beliefs, attitudes, and behavioral practices– as they relate to role and status of men and women.

For instance Wasserman and Weseley (2009) showed in a series of experiments with secondary school students age fourteen to eighteen that reading a text in a grammatical gender language (i.e., French, Spanish) increased sexist attitudes compared to reading the same text in a natural gender language (i.e., English). In a first experiment, participants (all from the same cultural environment, New York City, US) had to read a passage from Harry Potter either in a language which almost completely lacks grammatical gender (i.e., English) or a language with a strong grammatical gender system (i.e., French or Spanish). Directly afterwards, they were asked to fill out a questionnaire measuring their sexist attitudes. It was apparent from results that those participants who read the passage in the natural gender language (i.e., English) expressed lower degrees of sexism compared to participants who read the passage in a language which is strongly marked for grammatical gender (i.e., French or Spanish). Another experiment replicated these findings with bilingual participants, suggesting that even the same person can endorse more or less sexist attitudes depending on the languages he or she happens to use. The authors concluded that languages with grammatical gender activate sexist attitudes in individuals.

Also, evidence has been put forward that grammatical gender in languages comes along with more gender inequality on a societal level. Prewitt-Freilino, Caswell, and Laakso (2012) investigated 111 countries worldwide. They divided all countries into three language types: (gendered, natural genderless) and related these categories to scores of these countries on the Global Gender Gap index (World Economic Forum, 2009). This report provides scores for each country in the form of a composite rating to represent the country's overall gender gap, as well as individual scores for each of the four sub-indices that are used to calculate the un-weighted average composite rating (economic participation and opportunity, educational attainment, political empowerment, and health and survival), with scores for both the overall index and sub-indices ranging from 0 to 1 (higher scores representing greater gender equality). They found that countries in which people speak a gendered rather than a natural or genderless language have achieved less gender equality than countries in which people speak languages which largely lack grammatical gender. These differences were apparent in the Global Gender Gap index - especially in terms of gender differences in economic participation and women's greater access to political empowerment - even when other factors that could influence variations in gender equality (e.g., religious tradition, system of government) were taken into account.

In sum, research seems to support the general notion that gender in language influences gender-related attitudes, perceptions, and behavior. More specifically, the research presented above shows that variations in grammatical gender between languages are related to the degree of sexist attitudes activated in individuals (Wassermann & Weseley, 2009), and the degree of societal gender equality (Prewitt-Freilino et al., 2012). These findings support the notion of linguistic relativism (cf. Whorf, 1956) by illustrating that the grammatical gender in language influences gender-related thoughts and behavior. It seems that: "when thinking in a language with grammatical gender people have to differentiate constantly between the masculine and feminine, which may make them more aware of the differences between males and females and, in turn, cause them to express more sexist attitudes" (Wasserman & Weseley, 2009, p. 641).

Gender in language and its relation to gender equality: a within language perspective

It is a widely shared assumption that grammatical gender languages promote sexism because they grammatically accentuate sex distinctions and consequently prompt their speakers to make sex distinctions in thought and behavior (e.g., Labrosse, 1999; Wasserman & Weseley, 2009). However, this underlying process has never been empirically investigated. What is more, it is unclear whether expressing or concealing sex in language is in fact sexist or non-sexist in and of itself. Rather, it might be decisive whether references to sex occur in an asymmetrical and biased, or in a symmetrical and gender fair way (Stahlberg et al., 2007). Indeed, the German language (among other grammatical gender languages) is often used in a very asymmetrical way: most speakers use generic masculine forms in their spontaneous language use (e.g., Moser, Hubacher, Sczesny, & Irmen, 2010; Vervecken, Moser, Sczesny, & Hannover, 2010) and generic masculine forms are also widespread in schoolbooks (e.g., Moser & Hannover, 2012).

The generic masculine form is extremely asymmetrical since it uses the masculine form to refer to mixed gender groups or to groups whose gender composition is unknown or irrelevant. Although the use of generic masculine forms has long been prescribed in Germany's leading sources for grammaticism (e.g., Duden, 1984, 2005) recently many efforts have been made to enable symmetric use: Echoing both, societal changes in which it becomes increasingly accepted that more women enter traditionally male occupations (see Diekman & Eagly, 2000) and gender fairness having become an undisputable norm, many new grammatical female forms complementing male personal nouns (e.g. Politiker; a male politician; Politikerin, a female politician) emerged, enabling the construction of symmetrical

pair forms (e.g., Ingenieurinnen und Ingenieure, female engineers and male engineers). Because of this language reform, there are currently many alternative forms to refer to groups of people within the German language.

Gender fair language

As already explained above, the two main principles regarding gender fair language are (e.g., Duden, 2006):

1) making biological sex of referents linguistically visible (i.e., in cases where females are involved, the adequate feminine form should be used to refer to them)

2) symmetry (i.e., in cases where females and males are involved, the adequate form to refer to both genders should be used).

Fundamental for gender fair language is the rejection of generic masculine forms (the use of masculine forms to refer to both sexes). Grammatical gender languages offer different linguistic forms for formulating a role noun. The most commonly used ones are pair forms and neutral forms (cf. Duden, 2006). Pair forms include the use of both masculine and feminine noun (e.g., Ingenieurinnen und Ingenieure, female and male engineers) and is the most unambiguous form out of all gender fair variants. For the sake of linguistic brevity, several shortened alternatives to the pair form were established: the slash form, e.g., Ingenieurinnen/Ingenieure, use of brackets, e.g., Ingenieur(inn)e(n), use of capital I, e.g., IngenieurInnen. There are no formal rules for how to construct the neutral forms; they are context dependent and dependent on the user's creativity (e.g., Lernende [grammatically neutral learners] instead of Lerner [male learners]). However, it is not possible to construct a neutral form for every noun.

Whether or not, and through which channels gender fair language contributes to gender equality on the individual and the societal level is largely unknown and empirical tests remain sparse. This thesis aims to close this research gap.

Functions of language

The thesis at hand borrows from Bühler's communication model (1934) to systematize existing evidence according to the functions of language and to describe the channels via which gender fair language may contribute to a linguistic community's gender equality. Bühler understands language as an Organum (Greek for tool; Plato introduced this term to refer to language) which serves the communication between people. Linguistic signs (S) like words are the instruments for communication between a sender and a receiver about reality

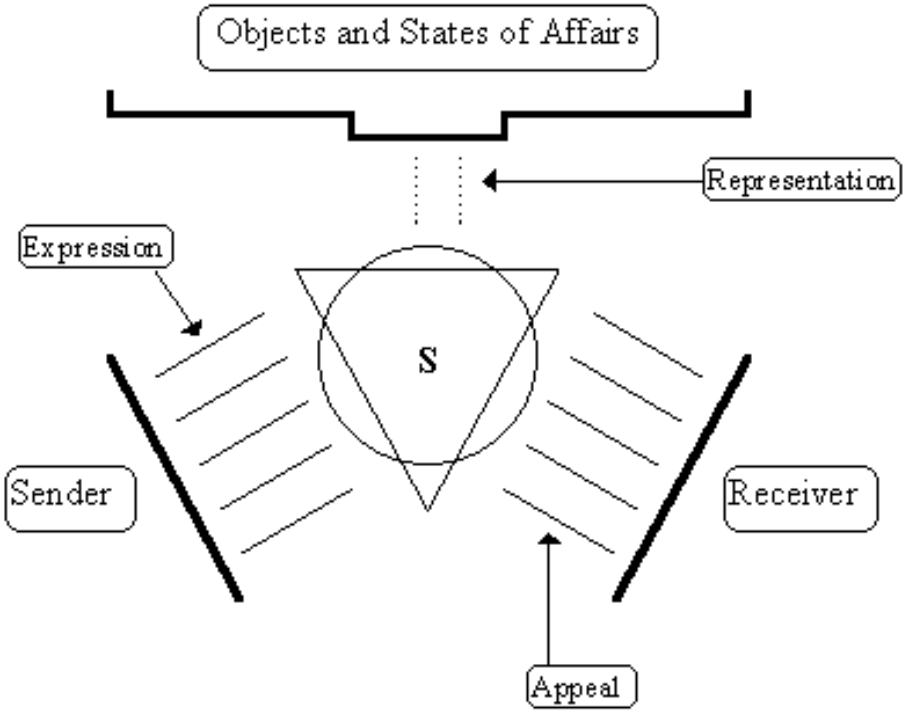
(e.g., objects/states of affair). According to this model, language performs a trinity of functions which are labeled 1) *representation*, 2) *expression,* and 3) *appeal*. According to Bühler, the *representation function* turns a linguistic sign into a *symbol*, the *appeal function* into a *signal* and the *expression function* into a *symptom*.

Applied to the issue of gender fair language, I theorize that what Bühler calls linguistic signs are, for instance, occupational titles in a pair form or in a generic masculine form. With regard to Bühler's functions of language, his *symbols* are mental representations (=*representation)* that may be more or less gender balanced representations of the world of work. The *signals* are like hints which may inspire (=*appeal*) people to listen to one's occupational aptitudes and interest, and feel less restricted by occupational gender stereotyping. The *symptoms* are indicators for listeners to perceive speakers as more or less gender fair (=*expression*).

Examining the model in Figure 1, it is apparent that language is placed in the middle surrounded by a circle. The circle represents the acoustic phenomenon by which language travels from sender to receiver. At the same time, language is enclosed in a triangle representing the factually spoken language (i.e., words with meaning). By placing the triangle partly within the circle, Bühler points out that a linguistic sign can only represent that part of reality the sign refers to, while the receiver may add associations and interpretations to the linguistic sign when making inferences about it. In applying the model to our current topic, it is exactly these extra associations and interpretations which might be affected by the use of gender fair language which may lead to more gender balanced thoughts and behaviors. In other words, whereas the generic masculine form "Ingenieure" (male engineers) and the gender fair form "Ingenieurinnen und Ingenieure" (female and male engineers) refer to the same group of jobholders in the same occupational domain, the two linguistic forms may trigger more or less gender balanced perceptions.

In what follows, this thesis uses the three functions of language (representation, appeal, and expression) as described in Bühler's communication model (1934) to systematize the few existing empirical findings on the impact of language on gender equality and to illustrate how gender fair language relates the three functions of language. In doing so, channels/functions through which language may contribute to more gender equality will be identified.

Figure 1: Communication model according to Karl Bühler (1934)



Function 1 "Representation": Gender fair language = gender fair mental representations?

According to Bühler (1934) the first function of language is that it is used to refer to and to represent reality. Since linguistic signs (i.e., words) cannot fully represent the reality to which they refer, there is always room in recipient's mind for interpreting what has been said. Applied to the issue of gender fair language, the question is whether using generic masculine forms or gender fair forms promotes more or less gender fair representations of the world in recipient's mind.

In the studies to be reported in this thesis, I used descriptions of occupational titles as an example. The world of employment has an important impact on individual's quality of life in terms of income, mental and physical health (Crouter, Bumpus, Maguire, & Mc Hale, 1999; Sharf, 2002; Thomas, Benzeval, & Stansfeld, 2007). At the same time, the labor market is strongly gender-segregated which has been shown to be negatively related to economic prosperity, national health, and social cohesion on a societal level (Löfström, 2009; Ward, Lee, Baptist, & Jackson 2010; World Economic Forum, 2010; European Commission, 2008). Hence, more gender balanced representations about jobholders in different domains in recipients' minds might be a good starting point for creating a more gender equal society.

Therefore, the impact of presenting occupations in generic masculine forms versus pair forms on recipients' gendered associations will receive particular attention in this thesis.

Evidence that gender fair language fosters gender balanced mental representations about occupations.

Experimental research with adult samples indicates that speakers of grammatical gender languages rely strongly on the grammatical gender cues available in a role noun to make gender inferences about that role (e.g., Gygax, Gabriel, Sarrasin, Oakhill, & Garnham, 2008; Gygax, Gabriel, Lévy, Pool, Grivel, & Pedrazzini, 2012). Consequently, generic masculine forms (e.g., Ingenieuren, male engineers) are typically not interpreted in a generic way but rather in a male specific way. Alternatively, the use of pair forms which explicitly state the feminine and masculine form of the role noun compared to generic masculine forms trigger relatively more mental associations with women, resulting in more gender balanced representations (e.g., Braun, Gottburgsen, Sczesny & Stahlberg, 1998; Gabriel & Mellenberger, 2004; Heise, 2000, 2003; Irmen & Köhncke 1996; Rothmund & Scheele, 2004; Scheele & Gauler, 1993; Stahlberg & Sczesny, 2001; Stahlberg, Sczesny & Braun, 2001). A full account of these studies is given in the enclosed manuscripts 1 and 2.

The research gap on the influence of language on gender-related representations

In relating these findings to Bühler's communication model (1934), it seems that the use of gender fair language can influence individuals' mental representations of the world: Role nouns (e.g., occupational titles) presented in a generic masculine form most likely trigger male-only representations while role nouns in a pair form trigger relatively more gender balanced representations in recipients' minds. Manuscript 1 included in this thesis describes an investigation of these assumptions.

Going beyond previous research, primary school children aged 6 to 12 were used as research participants. Shifting children's gender-typed associations and perceptions about occupations towards more gender balanced perceptions is of particular importance: Once gender is established as a significant social category in children's minds, it regulates incoming information in such a way that information perceived as relevant or appropriate for the own sex group receives special attention while information considered as more relevant or appropriate for the other group is ignored or even rejected (cf. gender schema theory, Martin & Halveson, 1987). During the elementary school years, children associate an increasingly

wider range of occupations with either males or females (Helwig, 1998; Liben, Bigler & Krogh, 2001; Miller, Lurye, Zosuls & Ruble, 2009; Ruble & Martin, 1998; Stockard & McGee, 1990). These gender-related perceptions of occupations guide children's educational and vocational choices from age six onwards since they aspire for occupations which are in line with the cultural gender stereotypes for their own gender (Eccles, 2007; 2011; Gottfredson, 1981; 2002; 2005).

Gender stereotyped perceptions about occupations are especially detrimental for girls since, as early as primary school, they feel that traditionally male occupations are not appropriate to their gender (Bandura, Barbaranelli, Caprana, & Pastorelli, 2001; Eccles, 2007; 2011). Consequently, primary school girls who are in the crucial formative stage of their occupational development aspire to a more restricted range of occupations and to less prestigious and challenging jobs than same-aged boys do (e.g., Eccles, 2007; Eccles, Barber, & Jozefowicz, 1999).

Cognitive accounts of gender development suggest that children actively search for gender cues provided in their social environment and use this information to establish an understanding about what it means to be a boy or a girl (see Martin & Ruble, 2004). A large amount of societal practices present in children's environment have already been identified as significant factors in influencing children's gender-typed perceptions of occupations (see Ruble et al., 2006, for a review). For instance, children are strongly influenced by reinforcement and punishment of gender "appropriate" behaviors by parents, peers, and teachers (Bandura, 1977; Fagot & Hagan, 1991). It has also been demonstrated that children are more likely to copy same-sex behavior (Bussey & Perry, 1982; Perry & Bussey, 1979) and consequently learn about gender "appropriate" behavior by observing the kinds of behavior (e.g., occupations) in which women and men are depicted in the media, like books (e.g., Karniol & Gal-Disegni, 2009), or television (e.g., Signorielli & Lears, 1992; Williams, 1986).

While previous research has substantiated the impact of the above mentioned factors on children’s gender stereotyped perceptions of roles such as occupations, this thesis aims to study the role of language as an additional factor of influence. Hitherto, language as it relates to the development of gender stereotyped perceptions about occupations has not received much attention. Yet language as a tool of social practice not only functions as a device for explicitly and intentionally transferring information, but also expresses gender categorizations on a more implicit and subtle level and is omnipresent in children's environments.

Function 2 "Appeal": Gender fair language = An appeal to recipients to engage in gender fair behaviors?

According to Bühler's communication model (1934), language carries an appeal for the receivers. Applied to the issue of gender equality, a meaningful appeal of gender fair descriptions of occupations could be to aspire for less gender-typed occupations and to feel more certain to be able to succeed in these occupations.

Evidence that gender fair language may promote gender fair behaviors.

Evidence for the influence of variations in language on occupational aspirations comes from experiments with adults (e.g., Bem, & Bem, 1973; Born & Taris, 2010; Briere & Lanktree, 1983; Gaucher, Friesen, & Kay, 2011; Stout & Dasgupta, 2011). For example, Bem and Bem (1973) demonstrated with American senior high school and university students that the use of generic masculine forms in job advertisements (e.g., telephone frameman) had a negative influence on women's interest in traditionally male occupations. In contrast, gender unbiased job advertisements (e.g., telephone frameworker) had a positive influence on female students' interest in male gender-typed occupations. Similar findings were reported by Briere and Lanktree (1983). Their participants were asked to read a text on ethical standards for the occupation of a psychologist. Participants who read the version with references to psychologists by "she or he" rated the occupation to be more attractive to women compared to those participants who read the text with references to the psychologist by "he".

The research gap on the appeal of gender fair language in promoting gender fair behavior.

No research has yet tested the impact of language on children's interest in occupations. This is especially dissatisfying given that vocational development constitutes a lifelong process which starts around age 6 (e.g., Gottfredson, 1981; Porfeli, Hartung, & Vondracek, 2008; Super, 1957; Super, Savickas, & Super, 1996; Vondracek, Lerner, & Schulenberg, 1986). From the age of six onwards, children start to constrain their interest to occupational domains they consider appropriate for their gender (Gottfredson, 1981; 2005). These early interests developed in middle childhood are highly predictive of later educational and vocational choices, as evidenced in retrospective interviews and longitudinal research (e.g., Trice & McClellan, 1993).

This thesis proposes that it is the influence of gender fair language that causes a change in mental representations (Bühler's function no. 1 *representation),* i.e., girls'

perception of successful women in male domains, which mediates the effect of language use on occupation interest (Bühler's function no. 2 *appeal*). Support for this presumption comes from Gaucher and colleagues (2011) who constructed job advertisements for male-dominated areas (e.g., engineering, plumbing), varying the amount of wording with masculine connotations (i.e., words associated with maleness such as leadership, competitiveness, or dominance). Female participants found the jobs more appealing the fewer masculine wordings the jobs descriptions contained. The effect of masculine wordings on women's perceptions of job appeal was, however, meditated by their perceptions of belongingness (e.g., "I am similar to the people who work in this career").

Besides occupational interest, children's self-efficacy beliefs are a crucial component of their vocational development. Bandura defined self-efficacy as "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (1995, p. 2). Self-efficacy beliefs are predictive of educational and vocational aspirations (Bandura et al., 2001). For instance, in a study by Chatard, Guimont and Martinot (2005), a list of occupational titles were presented to 15 year-old French speaking students either in generic masculines or in pair forms. Participants were then asked to indicate their level of confidence in passing the qualification exam required for the job. Results showed that both young men and women from the pair form condition felt more confident about passing the test than participants from the generic masculine condition. Complementing this line of research, manuscript 2 of this thesis aims to identify the mechanism by which such boosts in occupational self-efficacy beliefs come about and investigate primary school children who are at the beginning of their vocational development.

Function 3 "Expression": Gender fair language = Expression of the sender's commitment to gender equality?

According to Bühler's communication model (1934), language use always reveals some elements of the speaker's personality. At the same time, listeners are always trying to identify possible causes for what they observe (Asch, 1946; Heider, 1958; Jones & Davis, 1965). Consequently, even subtle variations in linguistic practices of speakers can act as a cue which triggers stereotyped evaluations within listeners (Bargh & Chartrand, 2000; Higgins, 1996; Higgins, Rholes, & Jones, 1977). Applied to the issue of gender equality, this could imply that speakers of gender fair language are people who support the norm of gender equality and are also associated with commitment to gender equality.

Evidence for gender fair language as expressions-function for ones commitment to gender equality.

Language use can be a means to *express* personal views, for instance on the social status of men and women in society (Parks & Roberton, 1998). Jacobson and Insko (1985) reported that attitudes towards women relate to language use: They found that students with high scores on the Attitudes towards Women Scale (i.e., students with an egalitarian attitude) chose significantly more nonsexist pronouns when responding to an 18-item pronoun questionnaire than students with more traditional attitudes towards women. Similarly, Matheson and Kristiansen (1987) showed that less positive attitudes toward nontraditional women were associated with more gender-biased pronoun use. More recently, Swim, Mallet, and Stangor (2004) found that the more strongly people endorsed Modern Sexist beliefs, the more likely they were to use sexist language (e.g. writing "he" to describe a person in a rather typical masculine job) and less likely to use nonsexist language (e.g. using "he or she" to describe a person in a rather typical masculine job). It seems that less sexist beliefs coincide with the usage of gender fair language.

Relating these findings to Bühler's communication model (1934) it seems that speakers who are less sexist express this piece of self-information by using more gender fair language. For gender fair language to be effective in contributing to a more gender equal society, it is important that receivers also notice this language use and link it to non-sexist attitudes. In a study by Sibley and colleagues (2009) including 102 New Zealand undergraduate students, male and female participants expressed less sexist attitudes after they had been exposed to a non-sexist speaker. Therefore, manuscript 3 of this thesis will examine the expression function of language from the receiver's perspective: are speakers of gender fair language – as compared to speakers of traditional language – perceived as less sexist and as credible ambassadresses and ambassadors of gender equality?

Although several linguistic practices (e.g., dialect versus standard language) have been subject to investigation, indeed showing that variations in speech styles lead to different perceptions of speakers (see Bradac, Cargile, & Hallet, 2001; Giles & Coupland, 1991 for an overview), speakers' use of gender fair language and its impact on listeners' perception – as compared to speakers of traditional language – has largely been neglected. One of the few exceptions was a study conducted by Rubin and Green (1991). Participants of this study heard an audio-taped speech of a male or a female preacher either using gender exclusive formulations (i.e., ´man', 'mankind', and generic 'he/his') or gender inclusive terms (i.e., 'people', 'humans'). Greene and Rubin (1991) reported that preachers who used inclusive

language (e.g., saying 'humans' or 'people' instead of using 'men' generically) were unexpectedly not judged differently than preachers who used exclusive language on dimensions like attractiveness, or potency.

In contrast, Johnson and Dowling-Guyer (1996) found that after reading counseling session transcripts students judged counselors using exclusive language (e.g. describing all receptionist as 'she' or all postal carriers as 'he') – compared to counselors using inclusive language (e.g. using ' she or he', ' he or she' regardless of the traditional gender connotation) – as more sexist. Sexism, however, was measured by a single-item only instead of a psychometrically more sophisticated measure, thus limiting the generalizability of the findings. Also, gender inclusive language was only manipulated through subtle pronouns changes (e.g., saying 'she' instead of 'he' when referring to an unknown person holding a traditionally male job) instead of more salient manipulations via personal nouns (e.g., saying 'actresses and actors' instead of 'actors' only). Furthermore, this study did not measure participants' attitudes towards linguistic equality which is shown to moderate people's gender-related language use (e.g., Frank-Cyrus & Dietrich, 1997; Rothmund & Christmann, 2002; Steiger & Irmen, 2007).

The research gap on gender fair language as a cue for ones commitment to gender equality.

In summarizing, the question of whether gender fair language influences listeners' stereotyped perceptions of the speaker remains unanswered. While the findings from Johnson and Dowling-Guyler (1996) suggest that speakers of gender fair language are perceived as less sexist, no such effect was found in the study by Green and Rubin (1991).

While the perception of speakers who use gender fair language has only rarely been investigated, the few available findings are inconsistent and out-dated, given the increased public awareness and attention devoted to the promotion of gender fair language in recent years (e.g., APA, 2009; EU, 2008). Against this background, manuscript 3 of this thesis investigates whether speakers who use gender fair language are perceived as ambassadresses and ambassadors of gender equality, i.e., as non-sexists struggling for more gender fairness. If this were in fact the case, with the exposure to non-sexist speakers mitigating recipients' sexist attitudes over time (Sibley, et al., 2009), speakers of gender fair language could thus actively contribute to more gender equality. Manuscript 3 also investigates whether listeners' attitudes towards linguistic equality moderate possible outcomes of the perception of speakers who use gender fair language.

Outline of the dissertation

The aim of this dissertation is to examine the influence of gender fair language use. Language is the key element in communication (e.g., Bühler, 1934) and is said to influence people's perceptions of reality (Sapir-Whorf, 1956; Bordoditsky et al., 2003; Banaji & Hardin, 1996). This thesis investigates how gender fair language use may influence gendered perceptions (representations) and attraction (appeal) of occupations in primary school children aged 6 to 12 as well as perceptions of speakers (expression) (cf communication model Bühler, 1934). Gender fair language is a relatively new norm which receives increased attention by numerous professional organizations, publishing companies, and even governmental organizations (e.g., APA, 2009; Duden, 2006; EU, 2008), yet its impact remains hardly investigated and understood. In order to close this research gap, a number of experiments were run to test the research questions raised above. Bühler's communications model (1934) was used as an overarching framework to order the factors which might be influenced by gender fair language use. Figure 2 arranges all factors into Bühler's model.

Manuscript 1 of this thesis presents three experiments with a total of 809 primary school children which were designed to examine whether children's gender stereotyped perceptions of traditionally male occupations and girls' occupational interest in male occupations can be influenced via the presentation of occupations in pair forms instead of generic masculine forms. The children were between 6 and 12 years of age. While children of this age are in a crucial phase in the development of gender stereotypes (Blackmore et al., 2009; Ruble et al., 2006) and in the development of vocational aspirations (Gottfredson, 2002; 2005; Hartung et al., 2005; 2008; Porfeli et al., 2008; Watson & McMahon, 2005), they have hardly ever been investigated with regard to the issue language, occupational gender stereotyping, and occupational interest. The following research hypotheses were tested in the studies contained in manuscript 1:

1. Pair forms (compared to generic masculine forms) used to describe stereotypically male occupations facilitate associations with female job holders in children.

2. Pair forms (compared to generic masculine forms) used to describe stereotypically male occupations promote gender balanced perceptions in children about the ability of women and men to perform in male occupations.

3a. Pair forms (compared to generic masculine forms) used to describe stereotypically male occupations foster girls' interest in male occupations.

3b. The positive impact of pair form use (compared to the use of generic masculine forms) on girls' interest in stereotypically male occupations is mediated by their perceptions of women's ability to perform in male occupations.

Manuscript 2 presents two experiments with 591 primary school children which were designed to test whether children's perceptions of occupational status of stereotypically male occupations and their self-efficacy beliefs about male occupations are influenced differently by descriptions of occupations being either presented in pair forms or in generic masculine forms. Changes in occupational self-efficacy beliefs were expected to be mediated by the influence of language on perceived status of male occupations (cf. Figure 2). More specifically, the following hypotheses were tested in the studies reported in manuscript 2:

1. The use of pair forms (compared to generic masculines) when describing stereotypically male occupations diminishes children's perceptions of occupational status.

2a. The use of pair forms (compared to generic masculine forms) when describing stereotypically male occupations promotes children's vocational self-efficacy.

2b. The positive impact of pair forms use (compared to generic masculines) on children's vocational self-efficacy is mediated by their perceptions of occupational status.

Manuscript 3 presents two experiments with 363 university students which were designed to test whether the use of gender fair language (i.e., pair forms) influences the way speakers are perceived. Research participants had to judge an applicant based on an audio recording of a job interview. This applied setting was used to test whether applicant's language use (pair forms versus generic masculine forms) influenced the ascription of sexism, warmth, and competence and how likely recipients considered it that the applicant was hired (cf. Figure 2). More specifically, the following hypotheses were tested in the studies presented in manuscript 3:

1. Speakers using pair forms (compared to generic masculines) are perceived as less sexist.

2. Speakers using pair forms (compared to generic masculines) are perceived as warmer (well intended).

3. Speakers using pair forms (compared to generic masculines) are perceived as more competent.

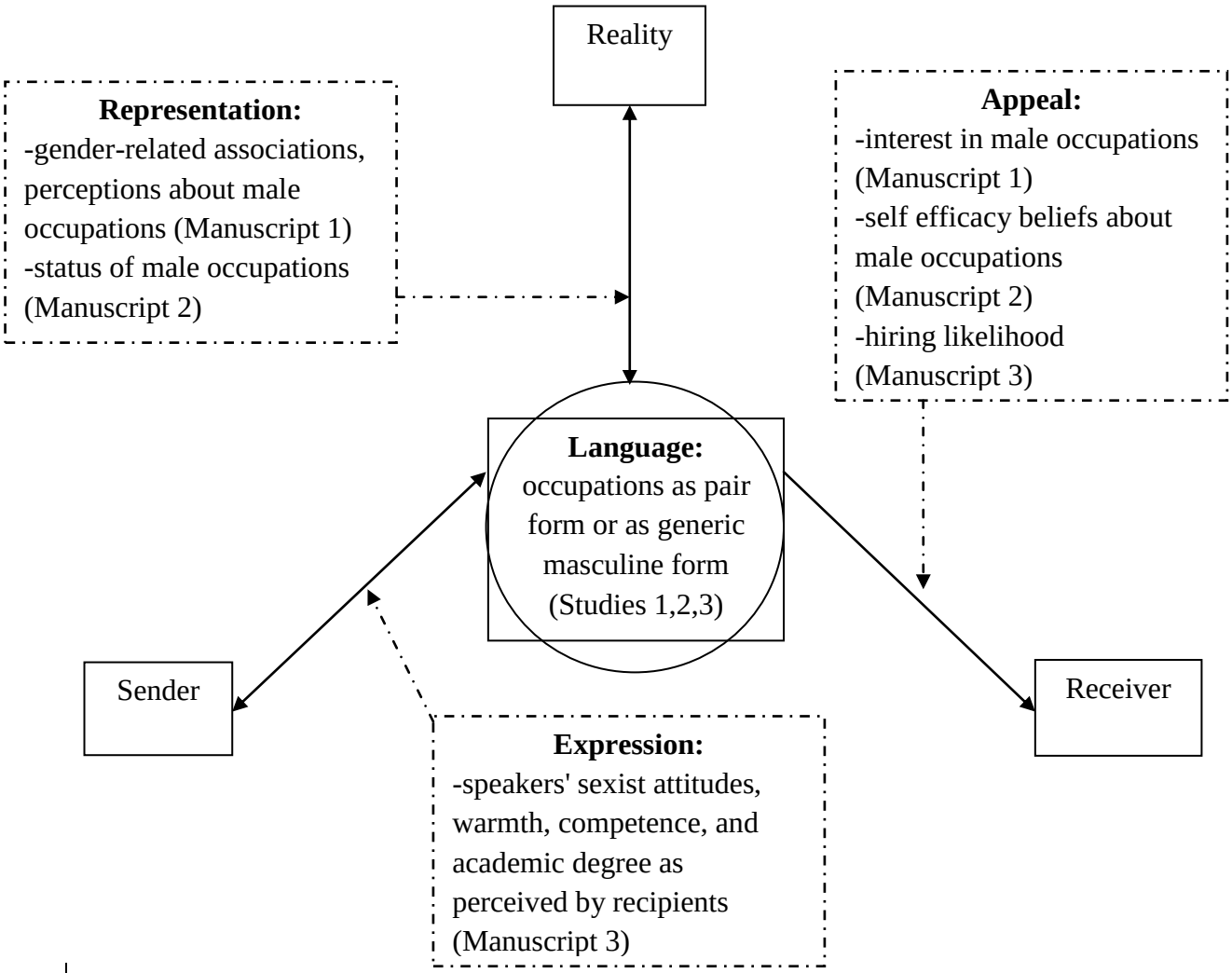
4. Speakers using pair forms (compared to generic masculines) are more likely to be considered for hire.

5. Recipients' attitudes towards gender fair language moderate their perceptions of speakers of gender fair language.

6. Sex of speaker moderates people's perception of speakers of gender fair language.

Figure 2

Overview of the studies of the thesis: The influence of gender fair language on the three functions of language (representation, appeal, expression) as described in Bühler's (1934) communication model.



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Changing (S)expectations: How Gender Fair Job Descriptions Impact Children's Perceptions and Interest regarding Traditionally male Occupations

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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 stereotypicallymale 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 andmale engineers), compared to descriptions using the generic masculine form(e.g., Ingenieure), generally increase themental accessibility of female jobholders, promote more gender-balanced perceptions of the success of males and females, and strengthen girls' interest in stereotypically male occupations.

Keywords: Gender Stereotypes, Gender Fair Language, Occupational Interest, Primary School Children, Career Education, Occupational Success

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.

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 duringmiddle 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 stereotypicallymale 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 thesemale domains for themselves, compared to female studentswhowere 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.

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 frequentlymake gender-referenceswhen 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 gendermarking of personal nouns. Gender references can bemade 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 respondedmore 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 formcompared 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 formswith an explicit reference to women, compared

to the generic “he”, triggered more associations with females (e.g., Hyde, 1984; Schau & Scott, 1984).

In our researchwe aimto investigatewhether 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., genericmasculine 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.

The Impact of Gender Stereotypes on Vocational Development

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 (1981, 2005), at about the age of six children eliminate their interest in occupations which are in conflict with their gender self-concept. Those whose occupational choice is not accessible choose a different field of activity rather than altering their stereotypes toward an occupation. Although this filtering process in children aged 6 to 12 is quite crude and often inaccurate, its influence on vocational development is lasting (e.g., Woods, & Hampson, 2010).

The processes described by Gottfredson (e.g., 2005) are particularly detrimental for girls and women since they mostly aspire to work in stereotypically female occupations which offer on average less status, lower salaries, fewer opportunities for advancement, and less promising future options than stereotypically male occupations (e.g., Eccles, 2007; 2011; WEF, 2010). Primary school girls feel that many (stereotypically male) occupations are not gender appropriate for them and compared to boys of the same age, they only consider a restricted range of occupations as potential career options (e.g., Eccles, 2011; Hartung et al., 2005; Mc Mahon & Patton, 1997).

One of the reasons why many females are not interested in stereotypically male occupations is that gender disparity in these domains suggests that women do not really belong there: 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, Friesen, & Kay, 2011; Murphy, Steele, & Gross, 2007; Stout, Dasgupta, Hunsinger, & McManus, 2011; Walton & Cohen, 2007; Weisgram, Liben, &

Bigler, 2010). For instance, Stout and her colleagues (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.

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 et al., 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. 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 many languages, among others Spanish, French, Dutch, and German. Hence, in these languages the gender-typed interpretation of masculine role nouns (e.g., occupational titles) is sometimes ambiguous from the receiver’s point of view. Thus, masculine role nouns 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 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, Oakhill, & Garnham, 2008; Irmen & Schumann, 2011). Gygax and his colleagues (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 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 a particularly effective in promoting gender balanced representations in recipients' cognition (see Stahlberg, Braun, Irmen, & Sczesny, 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 gender-balanced association in adults, no research has ever examined whether gender-stereotyped perceptions of occupations in young children are also influenced through language. However, indirect support comes from the English language as a natural gender language. Several studies tested alternatives (e.g., "*he/she", "they"*) for the generic use of the pronoun "*he*". Results point in the same direction as those found for grammatical gender languages like German or French: Alternative linguistic forms with an explicit reference to women (e.g., "*she or he"*, "s/*he*"), compared to the generic "*he*", trigger more associations with females in children's gender-typed associations (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 children's associations with female job holders and strengthen perceptions of females' success in stereotypically male occupations. We predict that the use of different linguistic alternatives (i.e., generic masculine forms versus pair forms) to present stereotypically male occupations shape different gender-stereotyped associations and perceptions of women's and men's success in these occupations in children aged 6 to 12.

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 fromexperiments 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

masculinewordings (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 linewith our prediction that gender fair languagemay promote females' interest in stereotypicallymale occupations, they failed to identify the underlying psychological mechanisms. In our research, we suggest that language variations in occupational titles impact the easinesswithwhich 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.

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 fromtwo 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 testedwhether 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.

General Methodology

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.

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 grandmean centered (Aiken & West, 1991). All effect coded variables, children's age, and the two-way interaction terms between children's sex and linguistic formand between linguistic formand language typewere entered simultaneously. The criterion variableswere: associations with female jobholders in stereotypically male occupations (Experiment 1), perception ofmales' and females' success (Experiments 2 and 3), and strength of interest in pursuing a stereotypicallymale 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.

Experiment 1: The Effects of Gender Fair Language Use on Children's Associations with Female Job Holders

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). 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).

Materials

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.

Results

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, β=.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 significantmain effect for children's sex emerged, b=−.30, β=−.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, β=−.17, t(173)=−3.86, p<.05, indicated that on average Dutch speaking children mentioned more male names than German speaking children.

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, β=.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, β=.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

intervention *b*=-.03, *t*(171)=0.85, *p*=n.s. All results of regression analysis are detailed in Table 1.

Table 1

Experiment 1: Predictors of Gendered Associations towards Stereotypically Male, Female, and Gender Neutral Occupations

Notes. Effect codes: LF =Linguistic Form (generic masculine form = -1, pair form = 1), Child's Gender (girl = - 1, boy = 1), LT = language type (strong grammatical gender language = -1,weak grammatical gender language = 1),

	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		
L I	.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	
L T	-.292*	.026	-.184		.182*	.085	-.149		-.038	.053	-.028	
LI*Sex	.038	.070	.024		.171*	.080	.140		.124†	.066	.091	
LI*LT	-.106	.026	-.067		-.167†	.085	-.137		-.026	.052	-.019	
LI*Age	-.062	.038	-.050		.080	.058	.069		.250*	.048	.194	
				.357*				.225*				.210*

Age is centered grand mean.
* p < .05; † p < .10.

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 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 et al., 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.

Experiment 2: The Effects of Gender Fair Language Use on Children's Perceptions Toward Gender-Based Success in Stereotyped Occupations

Participants

Participants were children (*N*=171) from 10 classrooms of a public primary school in Germany. Ages ranged from 6 to 13 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).

Materials

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 (α=.55). Results of regression analyses are detailed in Table 2.

Results

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, β=.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, β=.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.

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, β=-.180, $t(165)$ = -2.04 p<.05. Post-hoc simple slope tests revealed that young children, b=.14, $t(168)$ = 4.13 p<.01, 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.

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		
L I	.081*	.039	.176		.101*	.029	.242		.037	.027	.122	
Sex	-.001	.033	-.003		.029	.030	.059		-.022	.016	-.071	
Age	.062 *	.025	.240		-.027ƒ	.017	-.184		-.019	.016	-.112	
LI*Sex	-.004	.033	.009		-.012	.017	-.039		-.010	.016	-.033	
LI*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 Gender (girl = -1, boy = 1), Age is centered grand mean.
* p < .05; ƒ p < .10.

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.

Experiment 3: The Effects of Gender Fair Language Use on Children's Gender-related Perceptions about Occupations and Their Occupational Interest

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 6 to 13 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 6 to 13 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).

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 perceptions 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.

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 (α=.78).

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 (α=.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		
L I	.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	
L T	.083*	.026	.195		-.030	.040	-.065		.004	.014	.011	
LI*Sex	.004	.016	.009		.003	.019	.008		.002	.022	.005	
LI*LT	.021	.026	.050		-.029	.040	.065		-.008	.010	-.024	
LI*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 Gender (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		
L I	.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	
L T	-.010	.032	-.012		-.150*	.039	-.184		-.010	.036	-.012	
LI*Sex	-.075*	.032	-.096		.013	.042	.016		-.064	.053	-.077	
LI*LT	.057	.039	.073		.046	.039	.056		.073ƒ	.043	.088	
LI*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 Gender (girl = -1, boy = 1), LT = language type (strong grammatical gender language = 1, weak grammatical gender language = -1), Age is centered grand mean.
* p < .05; ƒ p < .10.

Results

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, β=.36, t(427)=6.58, p<.05. Furthermore, a significant main effect for age emerged, b=.28, β=.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, β=.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, β=-.15, t(427)=-4.19, p<.05.

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, β=-.10, t(320)=-2.09 p<.05. Post-hoc simple slopes 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 intervention, , b=-.01, t(318)=0.25 p=n.s.

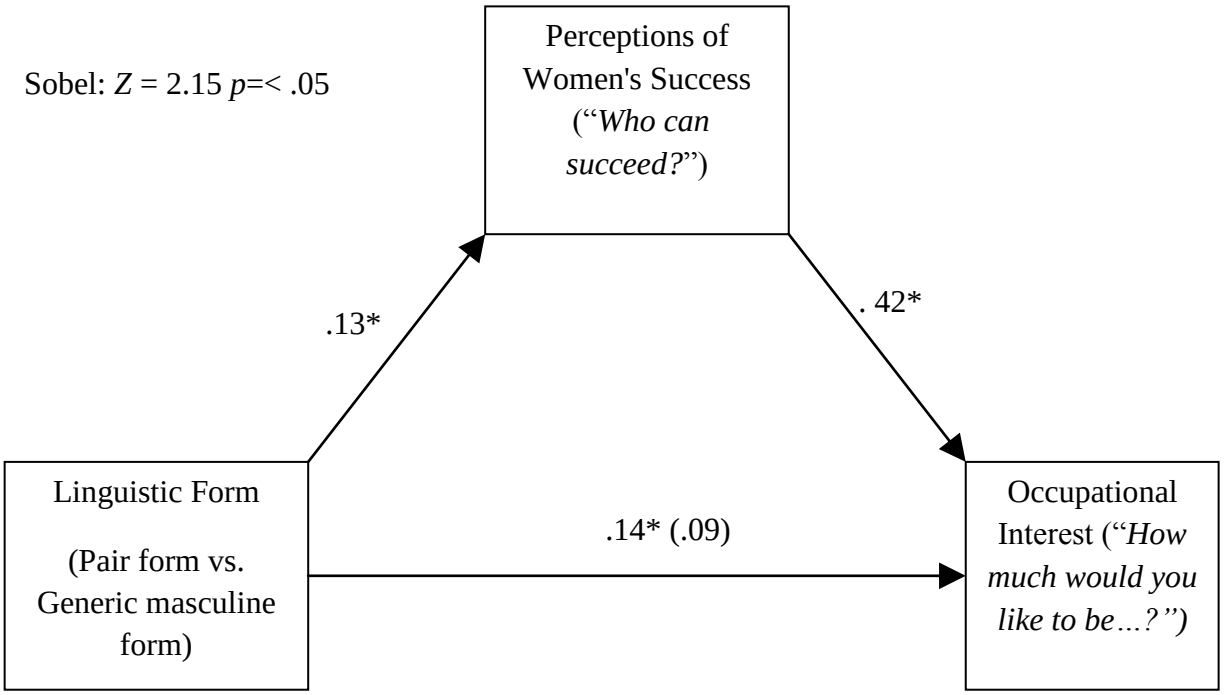
Mediation of the Effect of the Linguistic Form on Girls' Interest in Stereotypically Male Occupations via Girls' Perception of Women's Success Ratio in Stereotypically Male Occupations

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' gender-stereotyped 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 Figure 1 illustrates, when taking girls' gender-stereotyped 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.

Figure 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.

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.

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 strengthens 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).

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 differentially influences their gender-stereotyped associations (Experiment 1), their perceptions of occupational success (Experiment 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 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 gender-stereotyped 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 primary school children to give less gender-biased 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 less gender-biased behavior (see Stahlberg et al., 2007, for a review), our study is the first to provide empirical support that this effect exists in school-aged children. 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 formwhen describing stereotypically male occupationsmay contribute to themaintenance of occupational gender stereotypes (cf. Maass & Arcuri, 1996).

Our findings have practical relevance in that genderedOur findings have practical relevance in that gender-stereotyped 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 theories (1981, 2005). It seems that 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 have been found 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 adult samples (e.g., Bem & Bem, 1973; Born & Taris, 2010; Gaucher et al., 2011; Stout & Dasgupta, 2011), these 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 gender-stereotyped associations and perceptions of stereotypically male occupations as well as girls' interests 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) whenmaking 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 differenceswere 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 inmembers of the other gender group, irrespective of the gender-typicality of the occupations.

General Conclusion

Altogether, the findings fromthe 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 themedia 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.

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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)	vrachtwagenchauffeurs (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

3

A Double Edged Sword: The Impact of Gender Fair Language Use on Children's Perceptions of Occupational Status and their Vocational Self-Efficacy Beliefs

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A Double Edged Sword: Teachers' Use of Gender Fair Job Descriptions and Children's Perceptions of Occupational Status and their Vocational Self-Efficacy Beliefs

Abstract

Gendered occupational preferences develop as early as in primary school and are particularly disadvantageous for girls who tend to restrict themselves to comparably low status occupations. In this study we tested a linguistic intervention aiming to strengthen children's – and particularly girls' - self-efficacy beliefs towards stereotypically male occupations. In two classroom experiments, we tested whether children's perceptions of social status and vocational self-efficacy beliefs about stereotypically male occupations can be influenced by the linguistic form used by teachers to describe an occupation. Two experiments with 591 primary school children show that in languages with a strong (e.g., German) or moderate (e.g., Dutch) grammatical gender system, the presentation of occupations in pair forms (*Ingenieurinnen und Ingenieure*, female and male engineers), compared to generic masculine forms (*Ingenieure,* male engineers), diminished children's perceptions of occupational status and at the same time boosted their vocational self-efficacy with regard to traditional male occupations. Perceptions of occupational status fully mediated the impact of the linguistic intervention on children's self-efficacy beliefs towards stereotypically male occupations.

Keywords: Gender Stereotypes, Gender Fair Language, Occupational Status, Vocational Self-Efficacy Beliefs, Career Aspirations

Introduction

Gender segregation in economic participation remains a worldwide problem (World Economic Forum WEF, 2010). One of its main causes is gender bias in educational and occupational choices: Females and males of all ages show strong preferences for vocations that according to gender stereotypes are appropriate for their own sex (e.g., Weisgramm, Liben & Bigler, 2010). While the development of vocational interests constitutes a lifelong process, the nascent period is in childhood (e.g., Hartung, Porfeli, & Vondracek, 2005; 2008; Watson, & McMahon, 2005; 2007). The primary school years cultivate occupational aspirations which have been shown to influence future educational and occupational choices (see Hartung, Porfeli, & Vondracek, 2005; 2008; Porfeli, Hartung, & Vondracek, 2008; Watson & McMahon, 2005).

In this formative stage of vocational development, gender is a particularly salient and important element of children's self. As a result, children are inclined to prefer gender consistent occupations and to unnecessarily restrict their vocational options to professions consistent with their prescribed gender role (Gottfredson, 2002; 2005). This confinement to "gender appropriate" occupations has a particularly disadvantageous effect on girls since they distance themselves from stereotypically male occupations which offer, on average, higher status, better salaries, more opportunities for advancement, and more promising future options than stereotypically female occupations (e.g., Eccles, 2007; 2011).

Girls consider it less likely to be successful in such stereotypically male professions (Eccles, 2007; 2011) and, from a very early age onwards, aspire to a more restricted range of occupations and to less prestigious and challenging jobs than boys do (e.g., Eccles, 2007; Eccles, Barber, & Jozefowicz, 1999). Indeed, it has been shown that such self-efficacy beliefs are key determinants for educational and occupational choices (e.g., Bandura, Barbaranelli, Caprana, & Pastorelli, 2001; Eccles-Paersons et al., 1983; Eccles, 2007; 2011). For instance, the Expectancy Value Model of Achievement-Related Task Choices by Eccles (1983; 2007; 2011) hypothesizes that gender differences in educational and vocational choices can be traced back to gender differences in expectations for success. It has been repeatedly shown that compared to males, females have weaker self-efficacy beliefs or lower expectancies for success towards stereotypically male occupations, such as in the domains of technology or physical science (e.g., Eccles, 2007; Matsui & Onglatco, 1991; Murphy, Coover, & Owen, 1989; Sainz & Eccles, 2012) which causes disinterest and lack of aspiration for a career in these domains (Bandura, et al., 2001; Eccles, 2007; 2011).

While changing gendered occupational aspirations has long been recognized as a key for improving girls' and women's economic participation, few interventions have been investigated to tackle this issue (see Bailey & Nihlen, 1990; Barclay, 1974; Miller, 1986 for notable exceptions). Schools and teachers have a strong influence on children during the crucial formative stage of the development of occupational aspirations (e.g., Helwig, 2008; McMahon, Carroll, & Gillies, 2001; Watson, & McMahon, 2005). Therefore, schools should be the ideal place and teachers efficient agents to induce change in children's future vocational aspirations and self-efficacy beliefs.

In this study we will investigate the potential of a *linguistic intervention* in primary schools on children's occupational self-efficacy beliefs. Language is the utmost important medium for all instructional practices. Whereas language serves as a tool for exchanging meaning between instructors and learners, language use is often accompanied with unintended consequences (cf., Holtgraves, & Kashima, 2008). For example, variations in instructional language between teachers have been related to variations in educational outcomes, such as learners' vocabulary (Dickinson & Tabors, 2001; Turnbull, Anthony, Justice, & Bowles, 2009), learners' syntactic development (Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002), and learners' reading competence (Dickinson, McCabe, & Essex, 2006). Furthermore, language is the key tool to communicate stereotypes: depending on the linguistic forms used to describe groups, language may either transmit and contribute to the maintenance of existing stereotypes, or it may foster potential change in stereotypes (Maass & Arcuri, 1996).

Indeed, language not only reflects the social world but also has the power to influence people's perception of reality and subsequent behavior (e.g., Hardin & Banaji, 1993, Semin, 2004; Whorf, 1956). This also holds true for gender in language and people’s gendered perceptions (e.g., Boroditsky, 2009; Deutscher, 2010; Maass & Arcuri, 1996; Maass, Suitner, & Merkel, in press). In this paper we aim to examine the interface between language and gendered perceptions in a developmental phase during which occupational gender stereotypes are acquired and occupational aspirations are shaped. We hope to delineate the extent to which primary school children’s gendered perceptions of stereotypically male occupations are affected by the language forms in which they are described.

To foreshadow our argument, we want to test the notion that the use of gender fair language in descriptions of stereotypically male jobs impacts children's perception of occupational status and their vocational self-efficacy beliefs. More specifically, we predict that gender fair job descriptions are a double edged sword: On the one hand, they should increase the mental accessibility of female jobholders (Stahlberg, Braun, Irmen, & Sczesny,

2007, for a review), leading to a "feminization" of stereotypically male occupations which might diminish these jobs' social status in children's perception (e.g., Liben, Bigler, & Krogh, 2001). On the other hand, children's perceptions of a lowered social status should strengthen their self-efficacy beliefs towards the stereotypically male occupations.

Language and gendered perceptions

Empirical evidence for language effects on gendered perceptions converges from different sources: psycholinguistics, cognitive, and social psychology, among others (see Boroditsky, Schmidt, & Phillips, 2003; Gygax & Gabriel, 2011; Stahlberg, Braun, Irmen, & Sczesny, 2007, for reviews). Findings demonstrate that grammatical and lexical gender cues influence people's gender inferences with respect to role-nouns and occupations.

The impact of so-called "generic masculines" on recipients' gendered associations has received particular attention; this linguistic convention has long been criticized for its inherent sexism (e.g., Bußmann, 1995; Trömel-Plötz, 1982). Using masculines generically is the convention for referring to mixed gender groups or to groups of people whose sex composition is unknown or irrelevant and is customary in grammatical gender languages such as Spanish, German, or French. Masculines can be used (from the sender's perspective) and interpreted (from the receiver's perspective) in two ways: in a specific way, referring to men only, or in a generic way, referring to both women and men.

Psycholinguistic research has shown quite consistently that generic masculines indeed trigger male-only associations and inferences, rather than gender balanced associations in recipients' cognitions (see Gygax & Gabriel, 2011, for a review). For instance, Gygax, Gabriel, Lévy, Pool, Grivel, and Pedrazzini (in press) asked their French participants to work on a word association task in which they had to decide whether a person introduced by a kinship term (e.g., *aunt*) could be part of a group represented by a role name presented in a generic masculine form (e.g., *actors*). Results showed that participants more easily associated the generic masculine role noun with male than with female kinship terms: "incongruent" combinations between female kinship terms and generic masculine role nouns were more likely rejected or endorsed more slowly than "congruent" combinations. Gygax and colleagues (in press) further showed that people could – at least partially – overcome this automatic tendency and adopt a more gender balanced interpretation on the explicit level: Halfway through the experiment, participants were reminded about the use of generic masculines and their gender-open interpretation. This reminder was successful in eliciting some level of generic interpretation: the proportion of positive responses increased when

participants had to decide whether a person described by a female kinship term could be part of a group described in a generic masculine form. However, response times for these trials lagged, suggesting the use of explicit cognitive control. Thus it seems that, even if recipients are motivated to link female referents to grammatically masculine role nouns (i.e., judge this as a possible combination), such combinations are less mentally accessible to them.

Informed by such findings from psycholinguistic research, there have recently been efforts to introduce gender fair alternatives into official language. The use of such gender fair language forms is strongly promoted and recommended in the guidelines published by numerous professional organizations, publishing companies, and even governmental organizations (e.g., APA, 2009; Duden, 2006; EU, 2008). Meanwhile, the use of gender fair alternatives instead of generic masculines has become a new convention for language use in official contexts (Bußmann & Hellinger, 2003; Mucchia-Faina, 2005). The utmost important principle of gender fair language (cf., Duden, 2006; Hellinger & Bierbach, 1993) is the avoidance of generic masculines (i.e., *Ingenieure*, male engineers), for instance by making the biological sex of the referent linguistically explicit through the use of pair forms (e.g., *Ingenieurinnen und Ingenieure*, female and male engineers).

Indeed, a finding which coherently emerges from both sociolinguistic and social psychological research is that when both sexes are explicitly stated by using pair forms rather than masculine generics, more mental associations with women are triggered (e.g., Braun, Gottburgsen, Sczesny & Stahlberg, 1998; Heise, 2000, 2003; Rothmund & Scheele, 2004; Stahlberg & Sczesny, 2001; Stahlberg, Sczesny, & Braun, 2001; Vervecken, & Hannover, 2012). For instance, in an experiment by Stahlberg and Sczesny (2001), participants were asked to write down the names of famous musicians or athletes. Participants received these directions with either a generic macsuline form (*Musiker, Sportler*; male musician, male athlete) or a pair form (*Musikerin/Musiker; Sportlerin/Sportler*, female/male musician, female/male athlete). Results clearly showed that participants who had received the role nouns in pair forms listed more female personalities then participants in the generic masculine condition.

Whereas most research regarding this issue has been conducted using adults, Vervecken and Hannover (2012) recently demonstrated that primary school children aged 6-12 have already learned to associate occupations presented in a pair form, rather than in a generic masculine form, more strongly with females; this effect was particularly pronounced for stereotypically male occupations. In addition, they illustrated that when stereotypically male occupations were presented in pair form, children indicated that relatively more women

could succeed with them, compared to when the same job had been presented in a generic masculine form. These findings are particularly salient to the question of how language might influence the development of occupational gender stereotypes. As children move into and through primary school, they expand their knowledge about occupations and their gendered connotations (Blakemore, Berenbaum, & Liben, 2009; Ruble & Martin, 1998; Ruble, Martin, & Berenbaum, 2006). Furthermore, children of this age develop early occupational aspirations which are predictors of later academic and professional choices (e.g., Magnuson & Starr, 2000; Seligman, Weinstock, & Heflin, 1991; Trice, 1991; Trice & McClellan, 1993,1994; Weisgramm, Liben, & Bigler, 2010). Evidence demonstrating the importance of vocational aspirations developed during primary school on later academic and career decisions comes from studies with children and retrospective interviews with adults. For instance, a study from Seligman and colleagues (1991) showed that half of the investigated children aged 9 and 10 believed they had already made decisions that would impact their future careers. A retrospective interview study by Trice and McClellan (1994) found that one quarter of the investigated adults aged 40-55 had made decisions about their current professions in childhood.

Feminization = Devaluation?

The study by Vervecken and Hannover (2012) suggests that when stereotypically male occupations are presented in pair form, this causes some kind of "feminization" in the perception of that occupational group (i.e., individuals associate women more easily with these occupations and believe that more women can succeed in these occupations). Consequently, a downside of presenting stereotypically male occupations in pair forms might be that they are perceived as less prestigious: This could be the case since women, on average, work in lower status professions than men (e.g., lower earnings, less years of formal training).

Statistics from The World Economic Forum (WEF, 2010), based on 134 countries representing over 90% of the world's population, show that average wages in occupational sectors in which women are overrepresented lie beneath average wages in stereotypically male working domains. Also, women earn less than men, even when comparing women and men working in similar jobs. Women stay largely underrepresented in high status jobs such as legislators, senior officials, managers, and professionals and also in other stereotypically male sectors (i.e., car mechanics, truck drivers). In summarizing, statistics attest to a worldwide gender segregated labor market, with women dominating in low status professions and men in high status professions (WEF, 2010).

Applied to our current concern, we speculated that the "feminization" of a stereotypically male job triggered by it being described in a pair form (rather than a masculine generic) may coincide with its devaluation: Children worldwide grow up in an environment where it seems common that women earn less than men and receive less societal recognition for their work. Following social role theory (Eagly, 1987; Eagly, Wood, & Diekman, 2000) which states that people's ideas of gender are constructed out of repeated observations of women and men in their daily roles, children might form the general perception that women's work is easy and less prestigious compared to men's work As a result, in children's eyes feminine jobs may be lower status jobs.

Indeed, it has been repeatedly demonstrated that when children or adults are asked to indicate their perceptions of status (e.g., the level of earnings or levels of difficulty) for different occupations and activities, stereotypically female activities and occupations receive systematically lower ratings than stereotypically male activities and occupations (e.g., Berscheid, 1993; Beyer, 1990; Bradley, 1989; Liben, Bigler, & Krogh, 2002; Williams, Paluck, & Spencer-Rodgers, 2010). For example Williams, Paluck, and Spencer-Rodgers (2010) recently demonstrated by means of the *salary estimation effect* that adults tend to hold an automatic association linking men, more than women, with wealth. The authors suggest that it is not people's knowledge of the pay gap which leads to differential estimates of men's and women's salaries but rather the presence of a general male-wealth stereotype - largely operating outside people's awareness - which causes the differential judgment of men's and women's wages. In the same vein, research findings from Neff, Cooper, and Woodruff (2007) suggest that children aged 7 to 15 generally believe that men are granted more social status than females. Although this belief is amplified with age, it is already present in young children.

Further support for the assumption that feminizing stereotypically male jobs causes their devaluation in occupational status comes from experimental studies which manipulate the gender of workers (e.g., Alksnis, Desmarai, & Curtis, 2008; Cejka & Eagly, 1999; Diekman & Eagly, 2000; Eagly & Steffen, 1984; Eagly & Wood, 1982; Furnham & Wilson, 2011; Hogue & Yoder, 2003; Johannesen-Schmidt & Eagly, 2002; Kanekar, Maharukh, & Kolsawalla, 1989; Liben, Bigler, & Krogh, 2002; Touhey, 1974). For instance, in a study by Liben, Bigler and Krogh (2001) primary school children were presented fictitious job descriptions which were combined with pictures of either a male or a female job holder. Regardless of their sex, children ascribed lower status (i.e., earnings, level of difficulty) when a job had been presented with a female than with a male job holder.

These studies all suggest that perceptions of occupational status are not inherently connected with the job itself but can at least be partially explained by the gender of the imagined job holder. Against the background of these findings we speculate that presenting stereotypically male jobs in pair forms rather than in generic masculine forms may not only strengthen their mental association with female job holders but at the same time weaken the status children attribute to them.

Devaluation = Self-Assurance?

While we predict that children perceive stereotypically male occupations as less prestigious once they are described to them in a pair form, we also expect a rebound effect with respect to children's self-efficacy expectations. Bandura defined self-efficacy as "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (1995, p. 2). Job related self-efficacy should be experienced to the extent that individuals consider their capabilities to match the demands of the job. So, if feminization (triggered by a pair form description) coincides with devaluation (i.e., with the person considering the job as easier to do or as less important), then this devaluation should strengthen children's self-efficacy beliefs towards these occupations.

Support for this assumption comes from a study by Chatard, Guimont and Martinot (2005). They presented a list of occupational titles to 15 year-old French speaking students either in generic masculines or in pair forms. Participants were then asked to indicate their level of confidence in passing the qualification exam required for the job. Results showed that both young men and women from the pair form condition felt more confident about passing the test than participants from the generic masculine condition. Whereas this study substantiates our assumption that self-efficacy can be boosted when stereotypically male occupations are presented in pair forms, it did not test why this would be the case. We assume that devaluation in perceived occupational prestige (i.e., level of difficulty) mediates the effect of pair form use on self-efficacy beliefs.

Children's self efficacy is a crucial construct. Not only children's actual academic achievements but also their self-efficacy beliefs are important predictors of their academic and career aspirations (Bandura, Barbaranellie, Carpara, & Pastorelli, 2001).

Rationale and Overview of our Studies

We tested the following hypotheses:

1. The use of pair forms (compared to generic masculines) when describing stereotypically male occupations diminishes children's perceptions of occupational status.

2. The use of pair forms (compared to generic masculine forms) when describing stereotypically male occupations promotes children's vocational self-efficacy.

3. The positive impact of pair forms use (compared to generic masculines) on children's vocational self-efficacy is mediated by their perceptions of occupational status.

Two experiments with primary school children (*N*=591) were conducted to examine these hypotheses. Although we did not expect any gender specific effects, given the lack of specific research in this field, we also explored the possible differential influence of children's sex. We chose to test our hypotheses with primary school children between 6 and 12 years of age which is crucial phase in the development of gender stereotypes (Blackmore et al., 2009; Ruble et al, 2006) and in the development of occupational aspirations (Hartung, Porfeli, & Vondracek, 2005; 2008; Porfeli, Hartung, & Vondracek, 2008; Watson & McMahon, 2005).

To enhance the generalizability of our findings, we sampled children from two different language backgrounds: About half of the children were natives speakers of German, a strong grammatical gender language, and the other half were native speakers of Dutch, a more moderate grammatical gender language. Speakers of strong grammatical gender languages (e.g., German, Spanish, French) have been found to rely more strongly on grammatical gender cues for making gendered inferences than speakers of less gendered languages (e.g., English, Dutch) (e.g., Gygax, Gabriel, Sarrasin, Garnham, & Oakhill, 2008). Against this background, we wanted to investigate whether the impact of the pair forms versus generic masculines manipulation would have a differentially strong effect depending on children’s first language.

In Experiment 1, we explored the influence of pair forms versus generic masculine job presentations on children’s perceptions of occupational status by using subjective earnings as an indicator. Experiment 2 replicated and extended our first study in measuring subjective difficulty and subjective importance as indicators of occupational status. Also, pupils´ vocational self-efficacy beliefs were assessed, allowing for a test of our mediation-hypothesis. All occupational titles used in the two experiments are listed in the appendix.

General Methodology

Procedure

Two quasi-experiments were designed in which existing class constellations were preserved, and the experimental manipulation (job titles in pair forms versus job titles as generic masculines) was varied on the class level only. Instructions were given by the same female teacher in all participating classes within one school. The teacher presented the job titles with brief job-descriptions to make sure that all children had the same job in mind. These descriptions were held constant across conditions (e.g., generic masculine condition: "firemen are persons who extinguish fires", pair form condition: "firewomen and firemen are persons who extinguish fires"). Job titles were presented one after another, with the children indicating their responses in a questionnaire immediately afterwards. While stereotypically male occupations were the primary focus, to provide children with a broader range of job descriptions and to disguise the purpose of the study, stereotypically female and gender neutral occupations were included as filler items. The job descriptions differing in gender stereotypicality were orally presented by the teacher to the children in a random order.

Analysis

Since existing class constellations were preserved, we applied a standard linear regression model (total regression) with a standard error correction for complex data (Mplus5, Muthen & Muthen, 2007) instead of traditional MANCOVA analysis. Without this correction, standard errors would have been underestimated and significance tests would have been biased, given the complex data structure of pupils being nested in classes (Bryk & Raudenbush, 1992). All data were also analyzed using multilevel linear analysis to reflect the data's hierarchical structure. Results were the same as the ones reported with the standard error correction.

To test our assumption that the linguistic form (pair form or generic masculine) used in presenting occupational titles would impact children's perceptions of occupational prestige and their vocational self-efficacy beliefs, we conducted separate multiple regression analyses for our three criterion variables: stereotypically male, female, and gender-neutral occupations. All categorical variables (linguistic intervention, participant sex) were effect coded (values -1 and 1) and the continuous variable (age) was centered (Aiken & West, 1991). The two effect coded variables, children's age, and a two-way interaction term between children’s sex and linguistic intervention were entered simultaneously.

Experiment 1

Participants

Participants were children (*N*=435) attending classes 1 to 6 from 24 different classes from 2 different primary schools in Belgium (*n*=212) and 2 different primary schools in Germany (*n*=223). 113 pupils (60 female and 53 male) were assigned to the experimental group and 109 pupils (53 female and 56 male) to the control group. 106 pupils (59 female and 48 male) were assigned to the experimental group and 106 pupils (60 female and 45 male) to the control group. Mean age of experimental group was 9 years and 3 months (*SD*=1.7) and mean age of control group was 8 years and 9 months (*SD*=1.8).

Materials

Occupational Status. Job titles representing stereotypically male, female, and gender neutral occupations were selected based on a list of role names which Gabriel, Gygax, Sarrasin, Garnham and Oakhill (2008) and Irmen and Schumann (2011) had rated with reference to their perceived gender stereotypicallity.

From these lists[1] we selected 8 stereotypically male (>30% women), 5 stereotypically female (<70% women), and 3 gender neutral (45-55% women) occupational titles and amended a description for each of them. One of the stereotypically male items was for instance: "*Erfinderinnen und Erfinder: Personen, die neue Sachen entdecken*" (female and male inventors, people who invent new things). An example for the stereotypically female occupations was: "*Kosmetikerinnen und Kosmetiker, Leute, die andere hübsch machen*" (female and male beauticians, people who make others more beautiful). Following each presentation of an occupation title by the teacher, children were asked: "*How much do you think _____ get paid?*". The answering scale ranged from (1) "*very little*", to (5) "*very much*". Children's responses were then aggregated to calculate three variables: perceived status of stereotypically male occupations (α = .78), stereotypically female occupations (α = .68), and gender neutral occupations (α = .54).

Results

We expected that the presentation of stereotypically male job descriptions in linguistic pair forms would attenuate children's estimates of what people working in these jobs would earn. Since this effect was expected to come about by the stronger association of the job titles

[1] *Percentage of male/female workers as judged by participants in Gabriel et al. 2008 and Irmen & Schumann, 2011*

with female job holders (triggered by the pair form presentation), no such effect was expected to occur for stereotypically female or gender neutral occupations.

Table 1

Predictors for Perceived Prestige of Traditionally Male, Female and Neutral Occupations in Experiment 1

	Traditionally Male (Range 1-5)				Traditionally Female (Range 1-5)				Traditionally Neutral (Range 1-5)			
	b	SE (b)	ß	R^2	*b*	SE (b)	ß	R^2	*b*	SE (b)	ß	R^2
Intercept	3.757	.026			2.853	.025			3.949	.039		
L I	- .045†	.027	-.100		.050	.035	.086		-.004	.038	-.006	
Seks	.032†	.017	.071		-.090*	.031	-.156		.016	.041	.022	
Age	-.045*	.017	-.175		-.120*	.023	-.361		.125*	.027	.303	
L T	.061*	.026	-.136		-.113*	.039	-.195		.035	.038	.049	
LI*Sex	- .017*	.009	-.067		-.003	.031	-.006		-.029	.041	-.041	
LI*LT	-.016	.033	-.033		-.058	.035	-.100		-.005	.040	-.007	
				.069*				.237*				.101*

Note. Dummy codes: LI =Linguistic Intervention (generic masculine = -1, pair form = 1), Sex (girl = -1, boy = 1), LT = language type (grammatical gender language = 1, natural gender language = -1), Age is centered grand mean.

* p < .05; † p < .10.

Perceived Status of Stereotypically Male Occupations

Multiple regression analysis revealed a statistically significant two-way interaction effect between linguistic intervention and children's sex, *b*=-.017, β=-.067, *t*(428)=-1.97, *p*<.05. Post hoc tests of the interaction showed that boys ascribed lower earnings to stereotypically male occupations in the pair form condition than in the generic masculine condition, *b*=-.06, *t*(428)=2.03, *p*<.05. While the pair form intervention also tended to diminish girls´ earning beliefs, this effect was not statistically significant, *b*=-.03, *t*(428)=0.89, *p* < n.s. Figure 1 visualizes this interaction.

Furthermore, the analysis revealed a significant main effect for age, *b*=-.05, β=-.18 *t*(428)=-2.51, *p*<.05: the older the children, the less money they believed people in stereotypically male occupations would earn.

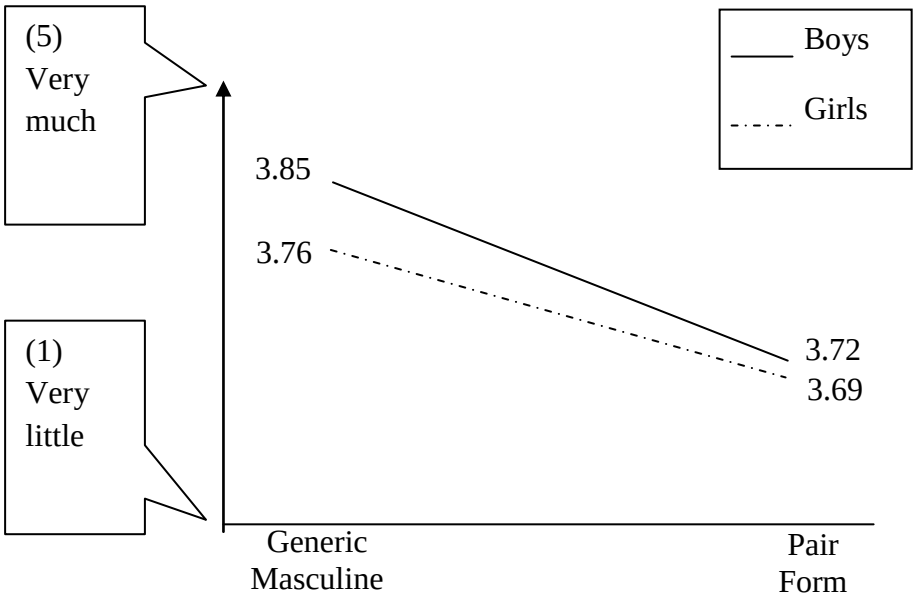
The analysis also showed a significant main effect of language type, *b*=-.06, β=-.14, *t*(428)=2.37, *p*<.05. In general, Dutch speaking children believed that persons in stereotypically male occupations would earn more money, compared to German speaking children.

Results from multiple regression analysis additionally showed a marginally significant main effect of children's sex, b=.03, β=.07, t(428)=2.40, p<.10 and a marginally significant effect of the linguistic intervention, b=-.05, β=-.10, t(428)=-2.59, p<.10. Given the significant two-way interaction between linguistic intervention and participant's sex, we did not interpret these main effects.

The interaction between linguistic intervention and language type was not statistically significant (t<1).

Figure 1

Two-way Interaction Effect of Linguistic Intervention and Children´s Sex on Perceived Status of Traditionally Male Occupations.



Perceived Status of Other Occupations

As expected, the linguistic intervention did not influence the perceptions of status of stereotypically female and gender neutral occupations (see Table 1 for an overview of all results).

Discussion

The primary purpose of Experiment 1 was to explore whether the use of pair forms (compared to generic masculine forms) when presenting occupations negatively impacts children's perceptions of occupational status of stereotypically male occupations. The

dependent measure was the level of income children believed the holders of certain occupations would earn.

Findings from Experiment 1 suggested that boys' perceptions of status (i.e., earnings) with regard to stereotypically male occupations were indeed affected by the linguistic intervention. Although girls also tended to ascribe lower earnings to stereotypically male occupations when they were presented in a pair form (compared to generic masculine form), this trend was not statistically significant.

An explanation for why the linguistic intervention affected boys' but not girls' perceptions of occupational status of stereotypically male jobs might lay in the way we operationalized occupational status. We asked children how much money they thought that workers in these occupations earn. A study by Weisgram, Bigler, and Liben (2010) shows that across all age groups, males (including primary school boys), but not females were more interested in an occupation if it was described as a high income job, compared to when the identical job was depicted as high in power, or as strongly associated with family or altruistic values. This may explain why, in our study, only boys showed an effect of the linguistic manipulation in their estimates of income levels: boys seem more sensitive to cues indicating earnings than girls. To test this post-hoc interpretation, we included additional indicators of occupational status in our second study.

Another explanation for why the linguistic intervention seemingly only impacted boys' perceptions of occupational prestige could be age-related. A main effect for children's age indicated that the younger children were, the more earnings they generally ascribed to occupations. After more closely examining our group composition, it became apparent that girls in the pair form condition were significantly younger than girls in the generic masculine condition. This age imbalance between the groups might have neutralized the effect of the linguistic intervention on girls' perceptions of workers' earnings in stereotypically male occupations. In our second experiment groups were matched for age.

While the focus of our study was on the impact of the linguistic manipulation on the perception of stereotypically male occupations, we had included descriptions of female and gender neutral jobs. In line with our notion that the effect on children's status perceptions should come about via the "feminization" of the occupation, results demonstrated no impact of the linguist pair form intervention on stereotypically female and gender neutral occupations. This differential pattern of findings suggests that our participants did in fact differentiate between the three different kinds of occupations. Also, it is consistent with previous research showing that pair forms increase associations with women and foster

gender balanced attitudes with regard to traditionally male occupations (e.g., Stahlberg et al., 2007; Vervecken et al., 2012).

Furthermore, in our data we found evidence for ingroup biases (cf. Tajfel, 1982): Both girls and boys judged earning for occupations associated with their own gender as higher than for jobs stereotypically reserved for the other sex. This finding is in line with developmental research which states that children are more positive about their own sex than about the other sex (Martin & Halverson, 1981; Ruble & Martin, 1998; Yee & Brown, 1994).

In summarizing, Experiment 1 produced initial evidence for our assumption that when stereotypically male occupations were presented in a pair form rather than a generic masculine form, perceptions of occupational status (i.e., earnings) were affected. With Experiment 2, we want to clarify the following issues. First, since the expected impact of the linguistic intervention on perceived status was significant only in boys, it should be tested again, this time controlling for the possible confound of children's age. Second, as occupational status cannot sufficiently be described by income levels, it should be tested whether other aspects of prestige are also affected when stereotypically male occupations are presented as a pair form (instead of generic masculine form). Third, we aimed to show that by presenting occupations in pair forms children's vocational self-efficacy beliefs can be boosted (hypothesis 2) and that children's perceptions of occupational status mediate the influence of the linguistic intervention on vocational self-efficacy beliefs (hypothesis 3).

Experiment 2

Participants

Participants were children (N=154) attending classes 3 to 6 from primary schools in Germany (n=103) and Belgium (n=78). German participants' age ranged from 7 to 12 years. 40 pupils (20 female and 19 male) were assigned to the control group and 63 pupils (34 female and 29 male) to the experimental group. Belgian participants' age ranged from 7 to 13 years. 40 pupils (17 female and 23 male) were assigned to the experimental group and 38 pupils (28 female and 10 male) to the control group. In Experiment 2, experimental and control group were very well matched by age: mean age of experimental group was 10 years (SD=1.1) and mean age of control group was 10 years and 2 months (SD=1.3).

Materials

Occupational Status. The same lists of 8 stereotypically male and 5 stereotypically female occupational titles as in Experiment 1 were used. Since Experiment 1 confirmed our

expectation that the linguistic treatment would not affect perceptions of gender neutral jobs, those were no longer included. Thus, only stereotypically female occupations served as filler items in Experiment 2, leaving a total of 13 occupations. For each of the 13 jobs children were asked 4 questions that we had translated from a study by Liben, Bigler, and Krogh (2001): a) "*How important is it to be ___?*", b) "*How hard is it to do the job of ____?*", c) "*How hard is it to learn the profession of _____?*" and d) "*How much money do you think ____ get paid?*". The answering scales ranged from (1) "*not at all*", to (5) "*very much*". Children's ratings on the four scales were aggregated across all male occupations (α = .83) and across all female occupations (α = .77).

Vocational Self-Efficacy. For each occupation, children were asked "*How confident are you that you would pass the qualification test required to do this job?*". The answering scale ranged from (1) "*very little*", to (5) "*very much*" (male occupations: α = .81, female occupations: α = .64).

Analysis

The same regression analyses as in Experiment 1 were conducted on the current dataset. Results are depicted in Tables 2, and 3.

Results

Perceived Status of Stereotypically Male Occupations

Multiple regression revealed a significant main effect of the linguistic intervention on children's perceived status of stereotypically male occupations b=-.10, β=-.26, t(147)=-2.81, p<.01. When male occupations were presented in pair forms, children – regardless of their sex, first language or age – perceived them lower in status than when the jobs had been presented in masculines as generic.

No other main or interaction effects were statistically significant (all other effects ps >.05).

Table 2

Predictors for Perceived Occupational Status of Traditionally Male and Female Occupations in Experiment 2

	Traditionally Male				Traditionally Female			
	b	SE (*b*)	ß	R^2	*b*	SE (*b*)	ß	R^2
Intercept	3.988	.035			2.948	.039		
L I	-.104*	.035	-.263		-.067	.044	-.072	
Sex	-.014	.042	-.038		-.093*	.045	-.161	
Age	.029	.027	-.092		-.068*	.019	-.268	
L T	.019	.034	.049		-.037	.045	.179	
LI*Sex	-.007	.043	.019		-.024	.046	-.069	
LI*LT	.031	.039	.081		.007	.047	-.016	
				.096*				.121*

Note. Value ratings from 1(only men) to 5 (only women), Dummy codes: LI =Linguistic Intervention (generic masculine = -1, pair form = 1), Sex (girl = -1, boy = 1), LT = language type (grammatical gender language = 1, natural gender language = -1), Age is centered grand mean.

* $p < .05$; ƒ $p < .10$.

Vocational Self-Efficacy Beliefs towards Stereotypically Male Occupations

Multiple regression revealed a significant main effect of linguistic intervention on children's vocational self-efficacy towards stereotypically male occupations, b=.12, β=.14, $t(147)=2.07$, $p<.05$. When stereotypically male job titles had been presented in pair forms, children – regardless of their sex or first language – felt more confident that they could pass a qualification test required to do this job than when the professions had been presented as a generic masculine.

Furthermore, the analysis revealed a significant main effect for children's sex**,** b=.38, β=.47, $t(147)=4.48$, $p<.05$: boys generally felt more confident that they could succeed in stereotypically male occupations than girls.

Perceived Status of and Self-Efficacy Beliefs towards other Occupations

As expected, the linguistic intervention neither influenced the perceptions of status nor children's self-efficacy beliefs with regard to stereotypically female occupations (see Tables 2 and 3 for an overview of all results).

Table 3

Predictors for Vocational Self-Efficacy in Traditionally Male and Female Occupations in Experiment 2

	Traditionally Male				Traditionally Female			
	b	SE (b)	ß	R^2	b	SE (b)	ß	R^2
Intercept	2.753	.034			3.556	.063		
L I	.115*	.016	.141		.010	.060	.016	
Sex	.382*	.076	.467		-.013	.047	-.013	
Age	-.041†	.023	-.061		-.049	.049	-.090	
L T	.022	.023	.027		.166*	.059	.251	
LI*Sex	.014	.073	.017		-.025	.048	-.058	
LI*LT	-.026	.029	-.032		-.038	.064	-.090	
				.257*				.066

Note. Value ratings from 1(not at all) to 5 (very much), Dummy codes: LI =Linguistic Intervention (generic masculine = -1, pair form = 1), Sex (girl = -1, boy = 1), LT = language type (grammatical gender language = 1, natural gender language = -1), Age is centered grand mean.

* p < .05; † p < .10.

Mediation of the Effect of the Linguistic Intervention on Children's Vocational Self-Efficacy Beliefs towards Stereotypically Male Occupations via Perceptions of Occupational Status

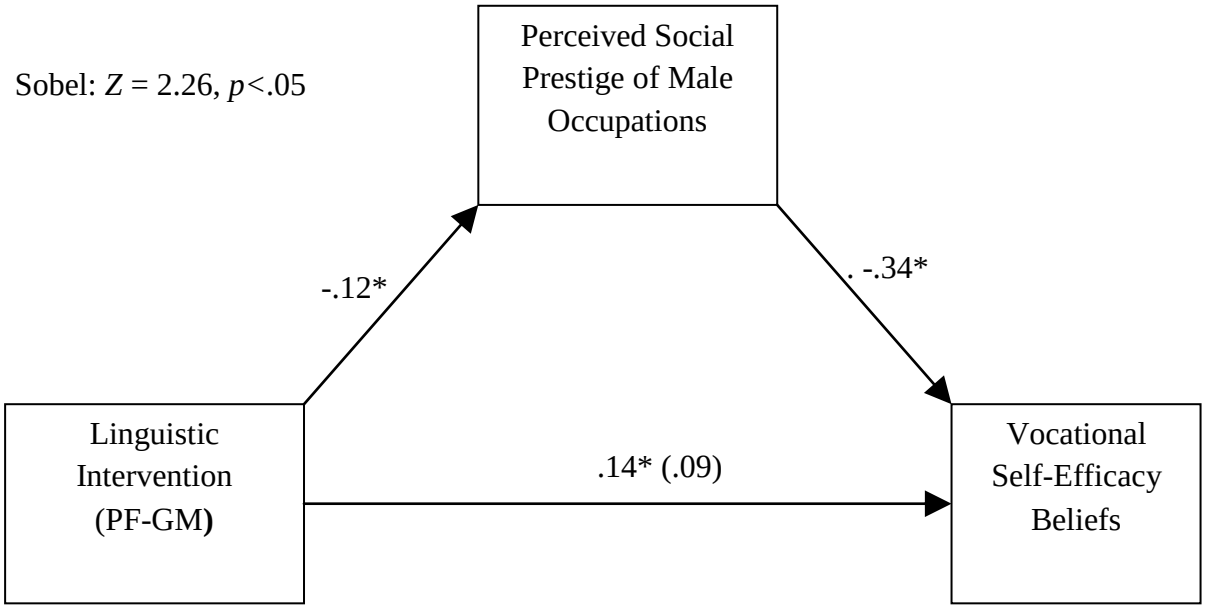
In order to investigate a possible mediation from perceptions of occupational status on vocational self-efficacy, we followed stepwise procedures proposed by Baron and Kenny (1986). Following recommendations from MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) to perform a single test of the indirect effect rather than multiple single tests, we also ran a test proposed by Sobel (1982).

Results showed that the relationship between the linguistic intervention and children's self-efficacy towards stereotypically male occupations was in fact mediated by children's perception of occupational status. As Figure 2 illustrates, the impact of the linguistic intervention on children's vocational self-efficacy was nullified completely when controlling for perceived status, b=.06, t(147)=1.12, p=n.s. The other prerequisites for assuming a mediation were also met: The linguistic intervention was both a significant predictor of perceived status of stereotypically male occupations b=-.17, t(147)=-3.84, p<.05, and of children's vocational self-efficacy beliefs towards them, b=.13, t(147)=2.19, p<.05. Furthermore, children's status perceptions were a statistically significant predictor of children's self-efficacy beliefs while controlling for the impact of the linguistic intervention

b=-.36, *t*(147)=-3.48, *p*<.05. Also, the Sobel test supported the hypothesis that the impact of the linguistic intervention (pair forms versus generic masculines) was mediated by perceptions of occupational status. In summary, results indicate that perceived occupational status fully mediated the relationship between linguistic intervention and vocational self-efficacy beliefs: children to whom the jobs had been described in pair forms perceived stereotypically male occupations as less prestigious (lower earnings, less importance, lower difficulty to learn and to do), with this subjective devaluation of the professions in turn strengthening children's self-efficacy beliefs in their ability to meet the requirements of these jobs.

Figure 2

Unstandardized Regression Coefficients for the Relationship between Linguistic Intervention and Vocational Self-Efficacy Beliefs as Mediated by Perceptions of Social Prestige of Traditionally Male Occupations



Note. Value ratings for occupational prestige and vocational self-efficacy beliefs from 1(not at all) to 5 (very much), dummy code: linguistic intervention (generic masculine (GM) = -1, pair form (PF) = 1).
Unstandardized regression coefficients between linguistic intervention and vocational self-efficacy controlling for perceived social prestige in parentheses.
* p < .05.

Discussion

Experiment 2 deepened our understanding of the impact of pair forms (compared to generic masculines) on children's perceptions of occupational status, vocational self-efficacy beliefs, and how these constructs are related to each other. Dependent measures were the perceived status and the level of self-efficacy beliefs regarding occupations which were orally

presented to the children. Extending Experiment 1 (earnings), Experiment 2 found a broader range of indicators of occupational status (importance, job difficulty, training difficulty) to be affected by the linguistic intervention.

It was apparent by the results that the use of pair forms (compared to generic masculines) to describe stereotypically male occupations attenuated the jobs' status in the eyes of primary school children. In Experiment 1, this effect was found for boys with respect to their estimates of income-levels; in Experiment 2, this was found for both gender groups using a broader operationalization of occupational status. It seems that by extending the concept of occupational status to include indicators other than earnings (which might seem less important to girls; Weisgram et al., 2010), by studying a slightly older sample, and by matching children across experimental groups according to their age, a clearer pattern of results was generated. Together, the findings from Experiments 1 and 2 strongly support our first hypothesis that, compared to generic masculine forms, the use of pair forms leads to a devaluation of the status of stereotypically male occupations in primary school children.

These results also support our second hypothesis that descriptions of stereotypically male occupations in pair forms (compared to generic masculines) boosted children's self-efficacy beliefs towards being able to meet the requirements of these jobs. This finding replicates those of Chatard and colleagues (2005) who found higher vocational self-efficacy beliefs in 15 year-olds for occupations which had been presented in pair forms (rather than generic masculine forms). Our study provides an explanation for this effect: it seems to be mediated by jobs being devalued in their status once they are associated with women (via the pair form description).

This assumption was substantiated by the findings of our second experiment. Our third hypothesis that the influence of the linguistic intervention on vocational self-efficacy beliefs was mediated through perceptions of occupational prestige (i.e., importance, earnings, job-difficulty and training-difficulty) was clearly supported.

Furthermore, our results showed that language forms (pair forms versus generic masculines) impacted children’s perceptions of occupational status and self-efficacy beliefs irrespective of whether their first language was a strong grammatical gender language, German, or a more moderate grammatical gender language, Dutch: While none of the differences observed between the two language groups were related to the linguistic intervention, they seem to reflect variations that were not the focus of our study (for instance, variations in absolute income levels being reflected children's earning estimates).

Experiment 2 revealed an ingroup bias (cf. Tajfel, 1982) for girls but not for boys. While girls perceived the status of stereotypically female occupations as higher than boys, girls and boys assigned equal levels of status (earnings, importance, difficulty of study and work) to stereotypical male occupations. Given children's understanding that men are granted more social status than women (Neff et al. 2007) it could be that girls upgraded the social status of those occupations traditionally reserved for their sex as an attempt to free themselves from the disadvantaged situation they find themselves in as females. At the same time however, they seem to know that men hold higher status which prevents them from downgrading stereotypically male occupations.

General Discussion

Combining previous research on the influence of gendered language on social inferences (e.g., Boroditsky et al., 2003; Gygax & Gabriel, 2011) with work on gender related occupational status (e.g., Diekman & Eagly, 2000; Liben et al., 2001) and vocational self-efficacy (e.g., Bandura, 1995; Chatard et al., 2005), this study experimentally investigated whether presenting job descriptions in pair forms or in generic masculines differentially affected children's perceptions of occupational status and vocational self-efficacy beliefs towards stereotypically male jobs. We had expected that the linguistic intervention would impact vocational self-efficacy beliefs by the assignment of lower status to professions which, via the pair form presentation, would more strongly be associated with female jobholders. In addition, we wanted to test whether the effects of the linguistic intervention would be observed across languages differing in the degree to which grammatical gender is encoded in their linguistic system (i.e., strong grammatical gender language and moderate grammatical gender language).

In both experiments, we obtained support for our first hypothesis that the use of pair forms when presenting stereotypically male job titles (compared to generic masculine forms) negatively influenced children's perceptions of occupational status. Pair forms not only decreased ascriptions of earnings (Experiment 1) associated with the profession but also other aspects of occupational prestige, such as job importance, training- and job-difficulty (Experiment 2). Past studies have shown that stating both sexes explicitly instead of using a generically masculine form when referring to mixed gender groups or to groups whose sex composition is unknown or irrelevant, facilitates mental associations with women in adults (Stahlberg et al., 2007) and in children (Vervecken & Hannover, 2012). Our present research is the first to show that this "feminization" of stereotypically male occupations also leads to a

devaluation of occupational status as perceived by primary school children aged 6-12. This result fits with more general findings on gender related perceptions of occupational prestige which demonstrate that both children and adults tend to attribute higher levels of occupational status to men and to professions in which male job holders outweigh females ones predominantly (e.g., Alksnis, Desmarai, & Curtis, 2008; Beyard-Tyler & Haring, 1984; Cejka & Eagly, 1999; Diekmann & Eagly, 2000; Furnham & Wilson, 2011; Hogue & Yoder, 2003; Johannesen-Schmidt & Eagly, 2002; Kanekar, Maharukh, & Kolsawalla,1989; Liben, Bigler, & Krogh, 2001; Mc Arthur & Obront, 1986; Touhey, 1974; Williams, Paluck, & Spencer-Rodgers, 2010).

The question of whether the use of pair forms versus generic masculines in job descriptions may impact perceptions of job status has received almost no attention in previous research. To our knowledge, only one small French study has been previously conducted on this issue: Gygax and Gesto (2007) did not find status devaluations in occupations as a result of presenting them in pair forms (rather than masculine generics). However, since the main focus of the Gygax and Gesto (2007) experiment was to test how different language forms impact reading time, the design was not ideal to detect potential devaluation of occupations as a function of the linguistic form in which it was presented. Also, whereas Gygax and Gesto (2007) worked with adults, our study included primary school children who lack extensive knowledge about different occupations (Ruble et al., 2006) and consequently were strongly guided by gender stereotypes when answering our status-related questions. And finally, Gygax and Gesto (2007) presented their intervention in a written format. Since it has been repeatedly shown that people tend to skip (i.e., not read, or only partly read) especially high frequency words (e.g., Frison, Rayner, & Pickering, 2005), it can not be ruled out that their participants did not read the end of the word (the where the grammatical gender becomes visible) or read the role nouns at all. Our experiments used a verbal instruction, thus increasing the likelihood that children heard the grammatical gender marking in the occupational titles.

Our second study revealed that as predicted by our second hypothesis, both boys and girls indicated higher levels of self-efficacy beliefs towards stereotypically male occupations when they were described to them in pair forms rather than in generic masculine forms. This finding complements the ones previously reported by Chatard and colleagues (2005) for 15 year-old students: apparently, pair form use can boost vocational self-efficacy beliefs in primary school children aged 7-12. It seems that boys and girls at that age have already developed an understanding that tasks with a male connotation are "difficult ones" while tasks

with a female connotation are "easy ones". As a result, they perceive stereotypically male occupations as higher in status but at the same time experience a weaker sense of self-efficacy towards them. With expectations of success being an important predictor of occupational preference, our findings thus also contribute to an explanation for why young people (and particularly young females) are typically less interested in advancing into professional domains that have a strong male connotation, such as science or technology (cf. Expectancy Value Model of Achievement-Related Task Choices, Eccles et al., 1983; Eccles, 2011). Indeed, children's self efficacy, in addition to their actual academic achievements and gender have been shown to be key determinants for preferred choices of an occupation (Bandura et al., 2001)

Our results also have implications for making stereotypically male occupations more attractive. By combining our results regarding the impact of linguistic forms (pair forms versus generic masculines) on children's perceptions of occupational status with the ones on their beliefs of vocational self-efficacy, we gained an in-depth understanding of the underlying mechanism by which the boost in children's self-efficacy beliefs about stereotypically male occupations were brought about: it was mediated by status devaluation. It seems that educators describing stereotypically male occupations to students in pair forms and refraining from using generic masculine form may boost their students' self-efficacy beliefs towards these occupations. Girls in particular might benefit from this self-efficacy boost since they tend to report lower levels of self-efficacy in academic and professional domains (e.g., Eccles, 2007 Matsui & Onglatco, 1991; Murphy, Coover, & Owen, 1989; Sainz & Eccles, 2012). Girls also tend to feel more restricted than boys in the number of occupations which they perceive to be “within reach” and “appropriate” for them (e.g., Dorr & Lesser, 1980; Looft 1971; McMahon & Patton, 1997). By presenting stereotypically male occupations in a pair form teachers might encourage girls to consider more academic and professional options instead of restricting their options from a very early age. Indeed, it has been demonstrated that gender differences in career choices are predicted by gender differences in occupational self-efficacy beliefs (Bandura et al., 2001).

Our set of experiments is the first in demonstrating these effects in two languages which differ in the extent to which grammatical gender is encoded in their linguistic systems. This is especially interesting since it has been suggested that the stronger a language's grammatical gender, the more its speakers rely on grammatical gender cues for making social inferences (Gygax et al., 2008) and the more likely they are to express sexist attitudes (Wasserman & Weseley, 2009). Results from our two experiments suggest that children from

a strong grammatical gender language (i.e., German) and a moderate grammatical gender language (i.e., Dutch) were equally affected by the linguistic intervention: they both devalued occupational status and reported higher levels of self-efficacy beliefs about stereotypically male occupations when they were presented as a pair form compared to presentations using the generic masculine form. This finding suggests that in languages which employ grammatical gender, and have the linguistic devices to explicitly state both sexes of workers, children's gender-related associations and beliefs about occupations can be influenced through linguistic forms used to present occupational titles.

Conclusion

In summarizing, the findings from our two experiments support the general notion that gender in language influences people's gendered perceptions (e.g., Boroditsky, 2009; Deutscher, 2010). Our results complement previous findings which have shown that the use of pair forms (compared to generic masculines) increases mental inclusion of women. We extend this previous work by showing that the "feminization" of stereotypically male occupations coincides with a devaluation of the status of these occupations, while at the same time promoting children's vocational self-efficacy beliefs. Compared to other interventions such as modeling successful workers in sex atypical occupations (e.g., Bailey & Nihlen, 1990; Miller, 1986) and explicit career education (Barclay, 1974), the use of pair forms is something which can be done on a daily basis by all teachers. Because of this ease of use and the large scale with which this intervention (the use of pair forms to present traditionally male occupations) could be implemented in the educational landscape, our current findings seem especially promising in promoting children's confidence in their academic and professional abilities regarding stereotypically male domains. Whereas studies with modeling successful workers in sex atypical occupations (e.g., Bailey & Nihlen, 1990; Miller, 1986) and explicit career education (Barclay, 1974) were usually successful in reducing gender stereotyping, they often failed to promote interest in sex atypical occupations. It is not enough to convince children that a person of their own sex can successfully work in a gender atypical domain, because that person could simply be perceived as an exception and thus not serve as a model (see Carnaghi & Yzerbyt, 2007; Richards & Hewstone, 2001). Our linguistic intervention, however, directly promoted self-efficacy beliefs in stereotypically male occupations in girls. This result is very promising in counterbalancing sex segregation in school courses and in the labor market in the long term. We find this line of research extremely exciting; future research may benefit from investigating other aspects of gender related occupational beliefs and

attitudes that are influenced by using pair forms instead of generic masculine forms to present occupational titles. This future research should contribute to a more complete understanding of all edges of the gender fair language sword.

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Appendix: Occupational Titles (Pair Forms in Brackets) Used in Experiments 1 and 2

	German	Dutch	English translation
Stereotypically male:	Austronaten (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) inventor
	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 automonteerster)s	(male and female) car mechanics
Stereotypically female:	Blumenverkäufer (und Blumenverkäuferinnen)	bloemenverkopers (en bloemenverkoopsters)	(male and female) flower sellers
	Babysitter (und Babysitterinnen)	kinderoppassers en kinderoppasseressen	(male and female) babysitters
	Zahnartzhelfer (und Zahnartzhelferinnen)	tandartsassisten (en tandartsassistentes)	(male and female) dental assistants
	Raumpfleger (und Raumpflegerinnen)	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

4

Ambassadors of Gender Equality? The Impact of Gender Fair Langauge Use on Perceptions of Speakers

Vervecken, D. & Hannover, B. (2012). Ambassadors of Gender Equality? How Use of Pair Forms versus Masculines as Generics Impacts Perception of the Speaker. *European Journal of Social Psychology*, *42*, 754-762.

Ambassadors of Gender Equality? How Use of Pair Forms versus Masculines as Generics Impacts Perception of the Speaker

Abstract

Although the use of gender fair language is strongly promoted in German-speaking countries, the impact of its use on the way speakers are perceived by others is still unknown. Results of two experimental studies showed that irrespective of their sex, speakers using pair forms rather than generic masculines were perceived more competent by both men and women. Also, they were seen as less sexist by male and female listeners with positive attitudes towards linguistic equality. Findings with respect to the attribution of warmth were more complex: they were not only impacted by language use, but also dependent on speaker's sex and listener's attitude towards linguistic equality. Results are discussed in the context of language and stereotypes.

Keywords: Gender Stereotypes, Gender Fair Language, Modern Sexism, People's Perception, Attitudes towards Linguistic Equality

Never before has so much momentum surrounded the issue of gender parity on the global stage. In an effort to attain gender equality, the use of gender fair language has been strongly promoted and settled in many guidelines published by numerous organizations and institutions (e.g., APA, 2009; EU, 2008). Fundamental to gender fair language is the rejection of generic masculines, i.e., the use of masculine nouns to refer to both sexes in cases of mixed gender groups or to groups whose members' sex is not known or irrelevant.

In the German language, for instance, almost all personal nouns have both a grammatically masculine and a feminine form. Accordingly, guidelines on German gender fair language (e.g., Duden, 2006; Hellinger & Bierbach, 1993) recommend making the natural sex of referents linguistically visible by using pair forms (e.g., Statistikerinnen und Statistiker, female and male statisticians), splitting forms (Statistiker/innen), or capital I (StatistikerInnen), rather than generic masculines (Statistiker, male statisticians). Nowadays it even seems that the use of gender-inclusive forms has become the norm in official language use (Bußmann & Hellinger, 2003; Mucchia-Faina, 2005).

Nevertheless, research on the use of gender fair language in less formal contexts reveals that the generic use of masculines is still the most common thing to do (Blauberg, 1980; Bußmann & Hellinger, 2003; Mucchia-Faina, 2005; Parks & Robertson, 1998). In a study by Vervecken, Moser, Sczesny, and Hannover (2010) for instance, when filling in a cloze, German participants showed a dominant tendency to use masculines generically to refer to groups composed of people whose sex was unknown. Only 15% of the participants used a gender fair variant in more than one out of five blanks.

Even though gender fair language is not widely applied among the general public, research results clearly show that gender fair language impacts recipients' gender-related associations, suggesting that pair forms (e.g., Astronautinnen und Astronauten, female and male astronauts) are an effective means to reduce gender stereotypes because they trigger more gender balanced representations in recipients' cognition compared to generic masculines (e.g., Astronauten, male astronauts) (see Gygax & Gabriel, 2011; Stahlberg, Braun, Irmen, & Sczesny, 2007;).

Despite its demonstrated effectiveness in reducing gender stereotypes, the use of gender fair variants is still the exception rather than the rule (Vervecken et al., 2010). We assume that this might be related to the way speakers of gender fair language are perceived by others. To date, no systematic empirical evidence has been gathered on the question of how the use of gender fair language might affect listeners' perception of the speaker. Possibly, with the use of pair forms in spoken language being rather unusual, speakers of gender fair

language become targets of all kinds of attributions, some of them positive, others negative or ambivalent.

One of the dimensions on which speakers may be perceived differently depending on their gender related language use is the attribution of sexism. Are speakers who use gender fair language perceived as ambassadresses and ambassadors of gender equality, i.e., as non-sexists struggling for more gender fairness? Or do listeners not make any inferences on their gender-related attitudes and intentions? Evidence for the former assumption comes from one of the few studies that have previously looked at how speakers of gender fair language are perceived by others: Johnson and Dowling-Guyer (1996) found that after reading counseling session transcripts students judged those counselors using inclusive language as less sexist. This study was, however, conducted for the English language. Also, sexism was only measured by a single-item instead of a psychometrically solid measure, thus limiting the findings' generalizability.

Additional dimensions on which speakers may be perceived differently depending on their gender related language use should be warmth and competence: Are they rather liked or disliked and are they perceived as competent or denied competence? Indirect support for the assumption that gender fair language use might affect listeners' perception on warmth and competence dimensions comes from research comparing individuals speaking either standard (e.g., Paris-based bourgeoisie accent and lexicon French) or non-standard (e.g., Canadian100100 or Belgian French) language (see Bradac, Cargile, & Hallett, 2001; Giles & Coupland, 1991; Ryan & Giles, 1982). Studies within this line of research show fairly consistently that speakers who use standard language receive higher evaluations on competence and status dimensions but at the same time receive lower judgments on warmth and solidarity dimensions (e.g., Edwards, 1982; Ryan, 1979; Yzerbyt, Porvost & Corneille, 2005). It seems that standard language is associated with high education and socioeconomic status and with people speaking in "official contexts" (such as the media) who are typically ascribed competence (such as intelligence, confidence, and ambition) but at the same time evaluated low on warmth related dimensions (Giles & Coupland, 1991). For speakers using non-standard language the opposite judgmental pattern has usually been observed: they are typically judged lower on dimensions such as competence and status but higher on warmth related dimensions (e.g., Edwards, 1982; Krauss & Chiu, 1998; Lambert, Hodgson, Gardner, & Fillenbaum, 1960; Purdie, Oliver, Collard & Rochecouste, 2002; Yzerbyt, Porvost & Corneille, 2005).

The ambivalence of the stereotypes triggered by speakers of standard versus non-standard varieties is also consistent with what the Stereotype Content Model predicts (SCM, see Cuddy, Fiske, & Glick, 2008; Fiske, 2011; Fiske, Cuddy, Glick, & Xu, 2002). This line of research suggests that warmth and competence are two universal dimensions guiding peoples´ perception of others which often result in ambivalent judgments of out-group members. Appraisals of the potential harm or benefit of the target's intent lead to ascriptions of high versus low warmth whereas appraisals of whether the target can or cannot effectively enact that intent trigger the ascription of high versus low competence. As a result, feminists or black professionals, for instance, are judged as highly competent and as untrustworthy, i.e., low on warmth ("envious stereotypes"), while housewives or elderly people are judged high on warm but low on competence ("paternalistic stereotypes"). Only a select group of people are judged both warm and competent ("admiration stereotypes"): ingroup members, and close allies. Some low status groups which are viewed as openly parasitic are judged low on both warmth and competence ("contemptuous stereotypes").

Fiske and colleagues (2002) suggest that mixed stereotypes combining competence and warmth result from people's consciousness of power relations between groups and serve as a functional tool, with high–low combinations justifying resentment, and low–high combinations justifying superordination, and both maintaining the status quo. SCM also suggests that the extent to which people are ascribed competence depends on the perception of their power/ status and the warmth dimension on the extent to which they are perceived as competitive.

Against this background, we want to suggest that speakers of gender fair language may trigger ambivalent stereotypes (SCM, Fiske, 2011; Fiske et al., 2002) in listeners. More specifically, gender fair language speakers are expected to be tagged as proficient in the sphere of competence, since the use of official language should be associated with high status (i.e., standard language). However, whether speakers of gender fair language are tagged as high or low on warmth should depend on the extent to which their intentions are perceived as potentially harmful or beneficial which again should depend on whether they are perceived as competitive (cf. SCM, Fiske, 2011; Fiske et al., 2002). Hence, no straight forward prediction on how language use should impact the ascription of warmth can be specified: On the one hand, it is conceivable that speakers of gender fair language are generally perceived as good intended and thus warm, since they seem to support gender equality which (in the developed world) can be assumed to be a widely accepted social norm. On the other hand, it could as well be the case that speakers of gender fair language are tagged as low on warmth because

they are perceived as slick persons behaving in a socially desirable way by adhering to the norm of gender fair language use, no matter what their personal attitude towards gender fairness is. Furthermore, it is conceivable that the ascription of warmth varies with the speakers' sex. For instance, it is possible that women engaging in gender fair language use are perceived as warm because their intent to support gender parity is considered intrinsically motivated and thus trustworthy, whereas this reasoning might not be applied to men. Possibly, men are even ascribed less warmth if they engage in gender fair language use because they are then perceived as "lacking some masculinity". Also, it is conceivable that sex of the listener may impact the ascription of warmth, with female listeners considering gender fair language speakers' intents (regardless their sex) as more beneficial (for women) and therefore acknowledge them more warmth than male listeners. Since previous research did not allow us to decide which of these assumptions would most likely apply, we did not put forward a directional hypothesis on how gender fair language use should affect speakers' perception on the warmth dimension.

Our general predictions regarding the ascription of sexism and competence should be moderated by the impact of perceivers' personal attitudes towards gender related issues. Research has shown that in general, language attitudes are crucial moderators in language perception (see Bradac, 1990; Street & Hopper, 1982). Also, previous research found the extent to which individuals engage in gender fair language and their preferences for different kinds of gender relevant wordings to vary according to their attitudes towards gender fair language (Frank-Cyrus & Dietrich, 1997; Rothmund & Christmann, 2002; Steiger & Irmen, 2007). Applied to our topic, listeners with positive attitudes towards linguistic equality should judge gender fair language speakers as more competent in general since they will treat gender fair speakers as members of their ingroup, as allies. This prediction is also in line with the speech convergence hypothesis (Bradac, 1990) according to which listeners judge same speech-style speakers more favorably.

The moderating impact of perceivers' personal attitudes should also apply to the ascription of sexism. We expected that it is especially people with positive attitudes towards linguistic equality who conceive speakers of gender fair language as ambassadresses and ambassadors of gender equality, i.e. as non-sexist. This should be the case because gender fair language use is promoted as a measure to obtain gender equality (see Mucchia-Faina, 2005; Pauwels, 1999). Also, attitudes towards linguistic equality have been found to covary with sexist attitudes: it is people who believe that women are discriminated against or deprived of equal opportunities that are also convinced that gender fair language is meaningful (Parks &

Robertson, 2004; Sarrasin, Gabriel, & Gygax, in press) and who are most likely to use gender fair language (cf. Cralley & Rusher, 2005; Jacobson & Insko, 1985; Swim, Mallet, & Stangor, 2004). Accordingly, people with positive attitudes towards linguistic equality should judge other people who engage in the same language practice as themselves to be non-sexist, too. No directional hypothesis was specified as to whether speakers of gender fair language should be perceived as less sexist by perceivers who themselves do not have favorable attitudes towards linguistic equality.

Experiment 1

Method

Participants

The participants were undergraduate and Master students (N = 168, 118 females, 42 males, 8 not reported) from the department of psychology and education science at a large German university. Respondents' age (M=25.00, SD=5.19) ranged from 18 to 50 years.

Procedure

Participants were told that they would read a speech from a person who applied for the job of a spokesperson for UNICEF. This applicant had to write her or his own speech regarding one of UNICEF's new millennium goals and present it as part of the application procedure. It was crucial for the participants to know that they read a self-written text and thus the person's own choice of wording. Gender fairness of the wording and sex of speaker were varied between participants, resulting into four experimental conditions to which participants were randomly assigned. To unobtrusively communicate speaker’s sex to the participants we either included a female or a male first name into the instruction: "While reading the text please try to image Johanna V./ Johannes V. giving this job interview presentation as vividly as possible." Immediately after reading the speech, participants were asked how they thought the speaker would react towards several items measuring sexism and had to describe the speaker on the warmth and competence dimensions plus to answer two one-item questions (make a hiring decision and assess academic degree). In order to avoid participants' becoming aware of the purpose of our study, the attitudes towards linguistic equality (AtLE) scale was to be filled out only after they had judged the speaker. To prevent a potential impact of the experimental task on participants' attitudes, they were asked to work on an unrelated task for several minutes before filling in the AtLE questionnaire.

Materials

Speech: Two versions of a speech on one of UNICEF´s millennium goals were prepared: one version in which all personal nouns (7 in total) were presented as generic masculines (e.g., Ärzte, male medical doctors) and another version with all personal nouns in pair forms (e.g., Ärzte und Ärztinnen, male and female medical doctors). To make it meaningful to our participants to judge the speaker with regard to sexism and to thus avoid any mistrust in our study's purpose, we selected the millennium goal to reduce maternal mortality as the topic of the speech. While this goal is concerned with women it is nevertheless not explicitly related to women's rights (but rather to issues like children's rights or family health care) and was therefore expected not to prime concepts of gender fairness.

Modern Sexism: Participants' perception of speaker' sexism was measured via Eckes' and Six-Materna´s (1998) 10-item scale which indicates to what extent the participant conceives of gender equality as already being attained in society (e.g., "Nowadays, women have equal opportunities in the labour market"; 1=I totally disagree, 5=I totally agree). Cronbach's alpha was: α=.54.

Competence and Warmth: To examine participants' general perception of the speaker the two 6-item warmth and competence scales of Fiske and colleagues (2002) were used, (e.g., "efficient", "friendly"; 1=not at all, 5=extremly). Cronbach's alphas were: *Competence,* α=.81; *warmth,* α=.83.

Assumed Hiring Decision and Speaker's Academic Degree: Finally, participants had to respond to two one-item questions. The first one asked participants to indicate how likely they thought the speaker would get the job on a 5-point Likert-scale (1=very unlikely, 5= very likely). The second question asked participants to indicate the highest academic degree they thought the speaker was currently holding (1= secondary school graduation, 5=doctoral degree). Note that while the provided answering categories were qualitatively distinct, the scale can be considered as an interval scale since the academic degrees correspond to different numbers of years of education the person has obtained.

Attitudes towards Linguistic Equality (AtLE): Participants' attitudes towards linguistic equality were measured by the 8-item scale of Rothmund and Christmann (2002) (e.g.,

"Linguistic equality is important concern for me"; 1=I totally disagree, 5=I totally agree). Cronbach´s alpha was: α=.93.

Design and Analysis

To test our assumption that speakers' language use would impact listeners' perception we conducted separate multiple regression analyses[2] for all of our criterion variables: sexism, warmth, competence, hiring decision, and assigned degree. All categorical variables: linguistic intervention (1 = Generic Masculines, 2 = Pair Forms), speakers´ sex (1 = female, 2 = male), participants´ sex (1 = female, 2 = male) were effect coded (values 1 into -1 and values 2 into +1) and the continuous variable AtLE were centered (Aiken & West, 1991). The three effect coded variables, participants' attitudes towards linguistic equality (AtLE), and all interaction terms (two-way, three-way and four-way) were always entered at once. In cases where interaction terms proved not to be significant, a sequential step-down procedure was used by removing the non - significant interaction terms to permit more powerful tests of the other effects in the model (Aiken & West, 1991). In cases where significant interaction effects emerged, post-hoc simple slope tests were calculated for all values of the effect coded variable and with high (+1*SD*) and low (-1*SD*) scores for AtLE (Aiken & West, 1991).

Results

To rule out that participants' descriptions of their attitudes towards linguistic equality might have been affected by the experimental treatment we conducted an analysis of variance on AtLE scores, with treatment plus speakers' sex as independent variables. No statistically significant effects occurred (all *F*'s <1), suggesting that neither the linguistic intervention nor speakers´ sex impacted AtLE.

Sexism

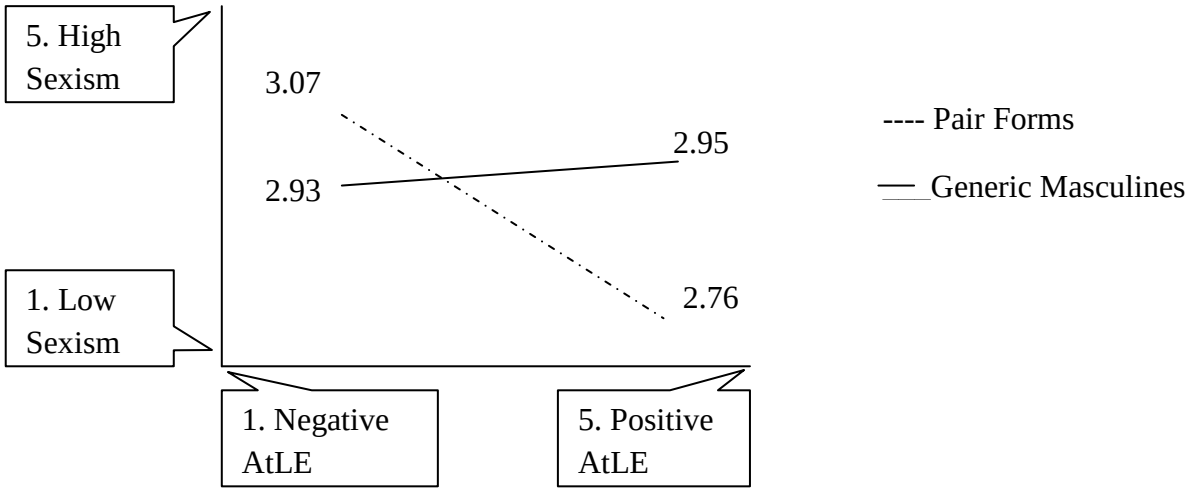
As expected, multiple regression analysis revealed a significant interaction between linguistic intervention and AtLE (Figure 1), *B*=-.077, β=-.178, *t*(150)=-2.3, *p*<.*05* (all other effects *p*s >.05). Post hoc tests of the interaction suggested that speakers using pair forms were perceived less sexist than speakers using generic masculines by participants with

[2] Since our participants differed largely with respect to their age, in an additional analysis we controlled for a potential impact of age. Our results remained unchanged. The only effect for age was that the older our participants were the higher the academic degree they ascribed to the stimulus person.

positive AtLE, *B*=-.15, *t*(150)=3.0, *p*<.01, but not so by participants with negative AtLE, *B*=.01, *t*(150)=0.2, *p*=n.s. In addition, a main effect according to which more positive AtLE led to stronger ascription of sexism was observed, *B*=-.069, β=-.161, *t*(150)=2.0, *p*<.05, suggesting that participants with positive attitudes towards linguistic equality are more alert towards detecting sexism, in general.

Figure 1

Sexism of Speaker by Language Condition and Perceivers' Attitudes towards Linguistic Equality (AtLE)



Competence

Multiple regression analysis performed on the ascription of competence revealed a main effect of the linguistic intervention, *B*=.092, β=.163, *t*(149)=2.0, *p*<.05: Regardless of their sex, speakers were perceived as more competent in the pair form condition than in the generic masculine condition by both female and male listeners and irrespective of listeners' AtLE (all other effects *p*s>.05).

Warmth

Multiple regression analysis conducted on the ascription of warmth revealed a main effect of linguistic intervention, *B*=.104, β=.160, *t*(150)= 2.0, *p*<.05: Regardless of their sex, speakers were perceived as more warm in the pair form condition than in the generic masculine condition by both female and male listeners and irrespective of listeners' AtLE (all other effects *p*s>.05).

Hiring decision

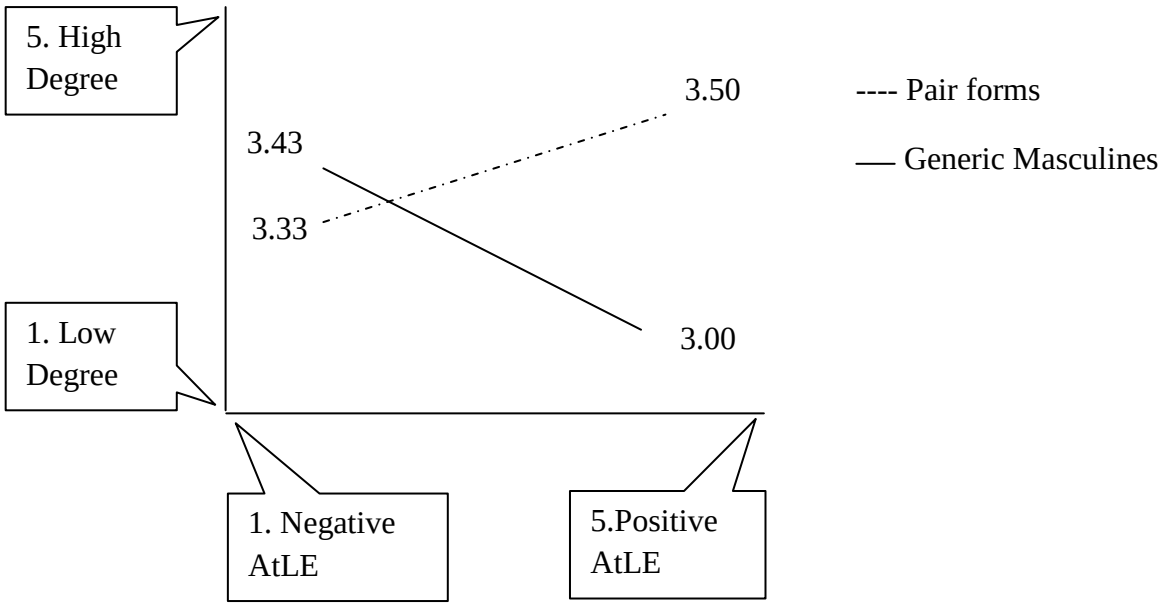
Results from multiple regression analysis revealed a statistically significant main effect of linguistic intervention on participants' belief whether this person would be hired or not B=.140, β=.166, t(144)=2.0, p<.05: Participants considered it more likely that applicants using pair forms would get hired than the applicants using masculines generically (all other effects ps>.05).

Degree

Multiple regression analysis revealed a statistically significant interaction effect between linguistic intervention and AtLE on participants' assignment of an academic degree (Figure 2) B=.156, β=.167, t(148)=2.1, p<.05. Post hoc testing showed that participants with positive AtLE B=.24, t(155)=2.24, p<.05, ascribed higher degrees to speakers using pair forms than to speakers using masculines generically. No such difference was observed in participants with negative AtLE B=-.05, t(155)=0.4, p=n.s. (all other effects ps>.05).

Figure 2

Assigned Academic Degree of Speaker by Language Condition and Perceivers' Attitudes towards Linguistic Equality (AtLE)



Discussion

Our findings from Experiment 1 revealed that the use of gender fair language use did not trigger ascriptions of low sexism in all listeners, but rather only in those recipients who themselves had positive attitudes towards linguistic equality.

In line with expectations, the use of pair forms compared to the generic use of masculines was generally associated with higher levels of perceived competence. This finding is consistent with research results on language and attitudes which demonstrate that speaking according to the official linguistic norm is associated with more competence (e.g., Lambert et al, 1960; Yzerbyt et al, 2005). In the same vein, the more positive our participants' attitudes towards linguistic equality were, the more they associated the use of pair forms with a higher level of academic achievement (assignment of higher academic degree). This can be interpreted as the attribution of higher status to speakers using pair forms than to those using masculines generically. This finding is consistent with the work on the SCM (Fiske, 2011; Fiske et al, 2002) which states that perceived status predicts perceived competence.

The findings from Experiment 1 also suggest that the use of pair forms may increase job-applicants' chances of getting hired: Our participants considered it more likely that speakers using pair forms during the job interview would get appointed.

Pair form usage was generally associated with more warmth, regardless of sex of speaker and of sex of listener. Combining the results for perceived competence and warmth, our findings suggest that pair form users are admired for their presumed high competence and good intents (SCM, Fiske, 2011; Fiske et al, 2002).

Altogether, findings of Experiment 1 suggest that the adaption of pair forms in one's speech contributes to the image of being a competent and warm ambassadress or ambassador of gender equality: There was a fair level of consensus in the way speakers using pair forms compared to speakers using masculines generically were perceived, with speakers using pair forms generally being seen as more competent, warmer, and having better chances of getting hired for the job for which they applied. Interestingly, extra benefits for speakers of gender fair language become evident in the perception of listeners with positive attitudes towards linguistic equality who additionally accredited higher academic degrees and lower sexism to speakers of gender fair language.

Several issues, however, remain unresolved. First, since we did not specify directional hypotheses as to how speakers of gender fair language should be perceived with respect to their sexism by listeners with unfavorable attitudes towards linguistic equality and with respect to their warmth, findings of Experiment 1 for the sexism and the warmth variables

should be tested as to their replicability. For sexism, this is particularly worthwhile since the sexism scale had reached only a rather low Cronbach´s alpha in Experiment 1. For warmth, our finding that speakers of gender fair language were ascribed more warmth irrespective of their sex should be replicated with a less subtle manipulation of speaker's sex. In Experiment 1, the only information hinting to the speaker's sex was the first name inserted in the instruction. In our second study we tried to make sex of the speaker more salient by using an oral speech rather than a written speech. In doing so we also prevent the possible objection that having participants read a text is not appropriate to grasp listeners' perception of a speaker. To broaden our findings' ecological validity, we used audio tapes of speeches in Experiment 2.

Experiment 2

Method

Participants

The participants were undergraduate and Master students (N = 205, 151 females, 50 males, 4 not reported) from the department of psychology and education science at a large German university. Respondents' age (M=25.79, SD=4.82) ranged from 22 to 62 years.

Procedure

Participants were tested in groups of 15 to 30 persons. Participants were told that they would hear an audio tape from a person who applied for the job of a spokesperson for UNICEF. This applicant had to write her or his own speech regarding one of UNICEF's new millennium goals and present it as part of the application procedure. It was crucial for the participants to know that they heard a self-written text and thus the person's own choice of wording. Following the presentation of the 2 minute speech, participants had to describe the speaker on the warmth and competence dimensions and were asked how they thought the speaker would fill out the sexism questionnaire. Again, participants filled out the attitude towards linguistic equality (AtLE) scale at the end of the session and only after they had worked on an unrelated filler task for several minutes.

Materials

The same speech as in Experiment 1 was used. Since it was crucial that the experimental conditions were identical other than with respect to the language intervention, a variant of the matched guise technique (Lambert et al., 1960) was used: One male and one

female speaker audio taped both versions of the speech, resulting in four different experimental conditions to which half of the male and half of the female participants were randomly assigned. With the same speaker being used in both conditions, many prosodic and paralinguistic features of voice (such as pitch, voice quality, and speech rate) were kept constant. Speakers were selected based on their paralinguistic features of voice: Five independent raters had previously agreed on that these two speakers represented prototypical voices for their gender. In other words, according to the raters the female speaker had an "average feminine voice", yet not an extremely feminine nor a masculine one, while the male speaker had an "average masculine voice". The same scales as in Experiment 1 were used to measure the variables involved and the same analyses as in Experiment 1 were applied to analyze the data.

Results

The following Cronbach-Alpha values were obtained: Modern Sexism, α=.72; Competence, α=.83; Warmth, α=.86; Attitudes towards Linguistic Equality (AtLE): α=.93.

Again, we run an analysis of variance on AtLE scores, with the results suggesting that as intended neither the linguistic intervention nor speakers' sex had an impact on participants' descriptions of their attitudes towards linguistic equality at the end of the study (all *F*'s <1).

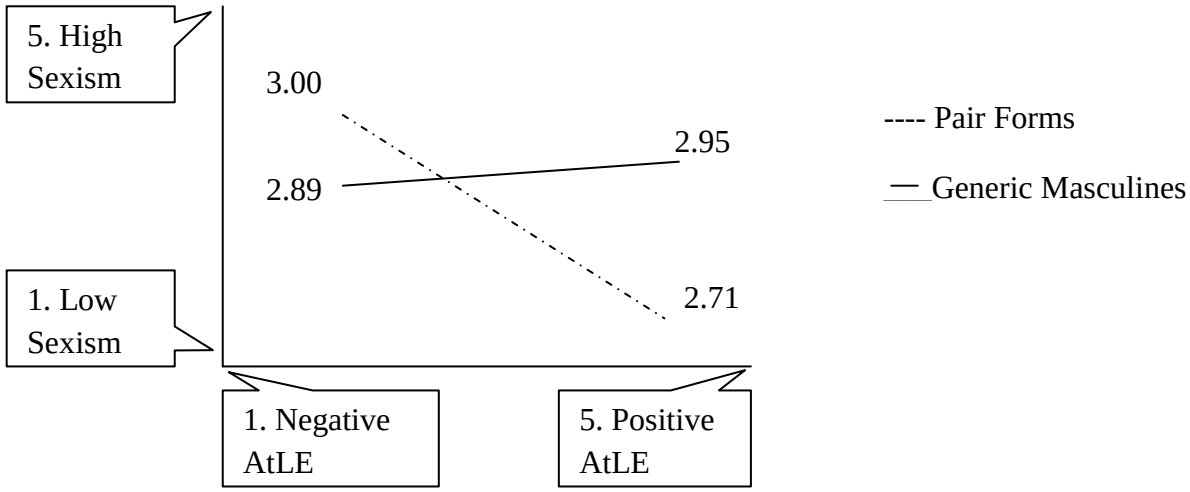
Sexism

As in Experiment 1, multiple regression analysis revealed a significant interaction between linguistic intervention and AtLE (Figure 3), *B*=-.095, β=-.192, *t*(196)=-2.7, *p*<.01. Post hoc tests of the interaction showed that the use of pair forms was perceived as less sexist than the use of generic masculines by persons with positive AtLE, *B*=-.16, *t*(193)=3.1, *p*<.01, but not by persons with negative AtLE, *B*=.05, *t*(193)=1.0, *p*=n.s.

Also, as in Experiment 1, we obtained a main effect of AtLE on the ascription of sexism, *B*=-.087, β=-.174, *t*(196)=2.1, *p*<.05, suggesting that holders of positive attitudes towards linguistic equality were more prone to generally attribute sexism to the speakers. In addition, a marginally significant main effect of the language treatment appeared, showing that speakers who used pair forms were judged as less sexist than speakers using masculines generically, *B*=-.080, β=-.148, *t*(196)=-1.8, *p*=.079 (all other effects *p*s >.05).

Figure 3

Sexism of Speaker by Language Condition and Perceivers' Attitudes towards Linguistic Equality (AtLE)



Competence

Replicating the findings from Experiment 1, multiple regression analysis performed on the ascription of competence revealed a main effect of language treatment, *B*=.095, β=.152, *t*(200)=2.2, *p*<.05: Regardless of their sex, speakers were perceived as more competent in the pair form condition than in the generic masculine condition by both female and male listeners. However, this time we additionally obtained a main effect of listeners' AtLE, *B*=.120, β=.207, *t*(200)=2.9, *p*<.01, suggesting that participants with positive attitudes towards linguistic equality ascribed more competence to all speakers (all other effects *p*s>.05).

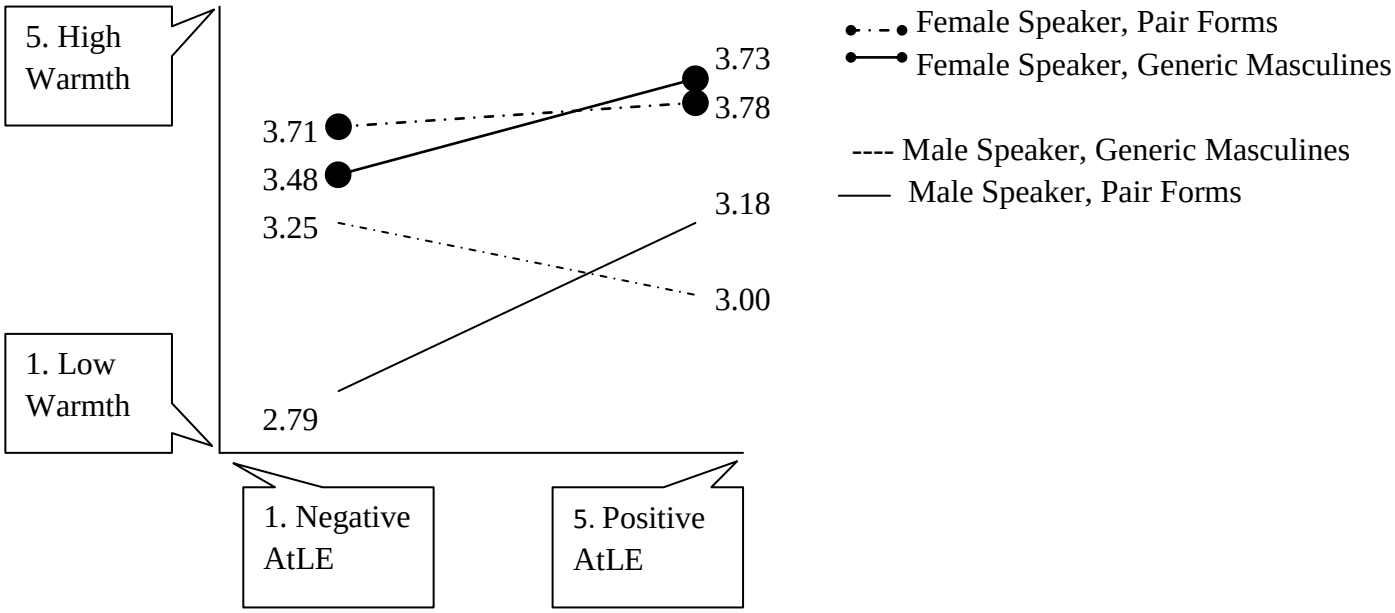
Warmth

Multiple regression analysis conducted on the ascription of warmth revealed a main effect of speakers' sex, *B*=-.317, β=-.422, *t*(197)=5.4, *p*<.001, indicating that in general, women were perceived as warmer than men. In addition, a significant three-way interaction (Figure 4) between linguistic intervention, speaker sex, and AtLE appeared, *B*=.120, β=.175, *t*(197)=2.7, *p*<.01 (all other effects *p*s>.05).

Post hoc testing of the interaction revealed that male speakers using pair forms were judged as less warm than male speakers who used masculine generics by participants with negative AtLE, *B*=-.23, *t*(192)=2.45, *p*<.05, but not by participants with positive AtLE, *B*=.09, *t*(192)=1.03, *p*=n.s. In contrast, no effect of language use appeared for female speakers (participants with negative AtLE, *B*=.10, *t*(192)=0.96, *p*=n.s., participants with positive AtLE, *B*=-.09, *t*(192)=0.94, *p*=n.s.).

Figure 4

Warmth of Speaker by Language Condition, Speaker Sex, and Perceivers' Attitudes towards linguistic Equality (AtLE)



Discussion

Experiment 2 replicated the findings of Experiment 1 in as far as the use of pair forms, this time heard in audio-taped speech samples, influenced listeners perception of speakers' sexism, warmth, and competence.

With respect to the ascription of sexism, results from Experiment 2 were largely in consistency with those found in Experiment 1. While both studies found listeners with positive attitudes towards linguistic equality to attribute less sexism to speakers of gender fair language, no main effect or, respectively, only a marginally significant main effect for language condition were observed in Experiments 1 and 2, i.e., for the perception of gender fair versus non-gender fair speech irrespective of listeners' personal attitudes.

Results for the competence dimension were consistent with findings from Experiment 1; speakers who included pair forms in their speech were judged more competent than speakers who used masculines generically in Experiment 2.

For the warmth dimension, findings from our two studies differed markedly from each other. While in Experiment 1 participants generally ascribed more warmth to gender fair speakers than to non-gender fair speakers, no such effect was observed in Experiment 2. Here, the only effect of the language treatment became obvious in participants with negative

attitudes towards linguistic equality perceiving male gender fair speakers as lower on warmth than male non-gender fair speakers.

General Discussion

Linking classic work of language and attitudes (Bradac et al., 2001; Giles & Coupland, 1991, Lambert et al., 1960) with work on intergroup stereotyping (SCM, Fiske, 2011; Fiske et al., 2002), the present set of studies investigated the impact of the use of gender fair language (pair forms versus generic masculines) on listeners' perception of the speaker. Furthermore, we were interested whether listeners' sex and attitudes towards linguistic equality and speakers' sex, in combination with speakers' language use, made a significant difference in people's perception.

Consistent results were obtained with respect to the ascription of sexism: Both experiments found that only people who are in favor of linguistic equality saw users of gender fair language as ambassadresses and ambassadors of gender equality. Persons with positive attitudes towards linguistic equality seem to interpret the use of gender fair language as an indication that the speaker is sensitive towards gender stereotypes, motivated not to adhere to them, and supportive of gender parity. By the same token, recipients with positive attitudes towards linguistic equality may interpret generic use of masculines as a subtle expression of sexist attitudes, as the speaker may appear to support the maintenance of gender stereotypes (Banaji & Hardin, 1996; Maass & Arcuri, 1996). This finding is in line with previous research demonstrating that people with pronounced positive attitudes towards linguistic equality have particularly non-sexist attitudes themselves (Parks & Robertson, 2004; Sarrasin et al., in press). Altogether, our findings suggest that in today's German society, the use of pair forms is not generally associated with lower sexist attitudes, i.e., the attribution that the speaker conceives of gender equality as not yet being achieved, but only by people who themselves are in favor of linguistic equality.

While previous research already demonstrated that people who use more gender fair forms in their written language are individuals with lower sexist attitudes (Cralley & Ruscher, 2005; Jacobson & Insko, 1985; Swim et al., 2004), our study is first to provide empirical support that this interrelation is also perceived by listeners. Also, to our knowledge our study is first in providing support for such an interrelationship for the German language.

In our study we have used the Modern Sexism Scale by Eckes and Six-Materna (1998) to measure listeners' perception of the speakers. This scale was chosen because it focuses on sexism as a socio-political perspective – rather than on sexism as an interpersonal attitude, as

does, for instance, the Ambivalent Sexism Scale (with its two subscales Hostile Sexism and Benevolent Sexism) by Glick and Fiske (1996). We have assumed that the use of gender fair language would rather tell listeners something about the speakers' socio-political beliefs than about speakers' personal attitudes towards women and men. Interestingly, while Modern Sexism and Ambivalent Sexism are significantly correlated (Glick & Fiske, 1996; for the German language see Sarrasin et al., in press), only Modern Sexism, but not Ambivalent Sexism, covaries with attitudes towards linguistic equality (Sarrasin et al., 2011), a link which was of special interest in our investigation.

As predicted, in both our experiments female and male speakers were judged more competent when they used pair forms instead of generic masculines, irrespective of listeners' attitudes towards linguistic equality or sex. This finding is in line with earlier findings from language and attitude research illustrating that people who speak according to the linguistic norm are perceived as more competent because standard language forms are associated with high socioeconomic status and power (e.g., Giles & Coupland, 1991): People are particularly likely to encounter speakers of gender fair language that act in professional roles and in formal contexts, such as teachers in academia, politicians, or those who work in media, all of whom can be considered to be intelligent, to enjoy a high status, and to have an excellent mastery of their language.

Interestingly, perceptions of the job applicants on the warmth dimension varied quite a bit depending on if a written text or a taped speech had to be judged. While recipients of the written speech judged speakers using gender pair forms as higher on the warmth dimension irrespective of their own and the speaker's sex, people who listened to the oral speech were unaffected by the language being gender fair or not, the only exception being male speakers using pair forms: They were ascribed less warmth by people with negative attitudes towards linguistic equality.

Apparently, we were successful in making speaker´s sex more salient to the listeners by using oral speech rather than a written text. Adding voice characteristics via real speech samples led participants to give differentiated evaluations on the warmth dimension depending on the speaker's sex. Relatedly, only in our second study were female speakers generally ascribed more warmth than male speakers: it seems, gender stereotypes (leading to the ascription of more warmth to women) were only activated if speaker sex was constantly made salient during the sound reproduction of the speech by either a male or a female voice.

The way in which information about the speaker was conveyed to our participants also varied between our two studies in that the use of gender fair language forms is much more

common in written than in spoken language (Bußmann & Hellinger, 2003; Mucchia-Faina, 2005). Hence, a possible interpretation of the findings from our first study is that people meanwhile are accustomed to gender fair language forms in written speech such that the use of generic masculines triggered feelings of low warmth. In summarizing our findings, it is not pair form use per se that make speakers appear warmer, but rather written forms of gender fair language seem to be accepted as trustworthy while the use of gender fair forms in spoken language do not necessarily convince listeners of speakers' good intent.

When combining the results for the warmth and competence dimensions, data from our first experiment suggest that women and men were perceived as more competent and warmer when using pair forms in their speech. In line with the "admiration stereotype" described in the SCM (Fiske, 2011; Fiske et al., 2002) this finding suggests that gender fair language use in written speech represents the cultural default in today's German society: it is the norm to adhere to linguistic guidelines through gender fair language use in writing.

However, findings from our second study suggest that the "admiration stereotype" for gender fair language users does not apply across the board: men using pair forms in their spoken language were perceived as more competent but at the same time as less warm by people with negative attitudes towards linguistic equality. In line with the "envious stereotype" described in the mixed stereotype content model (Fiske, 2011; Fiske et al., 2002) this finding can be interpreted along the following lines: Men using pair forms get social recognition for being competent but may at the same time appear very competitive from the point of view of people with negative attitudes towards linguistic equality. Since people with negative attitudes towards linguistic equality do not think that linguistic equality is important or can achieve changes (e.g., "…changes women's situation"), possibly, they assume that these men are concerned with their own interests (e.g., speaking according to the linguistic norm in order to get a job) which makes them appear very competitive. Competitive out-groups frustrate, tantalize, and annoy, so they are viewed as having negative intents (Fiske et al., 2002, pp. 881). This interpretation is in line with what our second study revealed for female speakers: the ascription of warmth remained unaffected by their oral speech containing gender fair forms or generic masculines. Possibly, the use of gender fair language by women is less likely to influence their perceived competitiveness since it is conceived as consistent – and thus less in need of explanation – that they speak in a way that expresses a positive attitude towards gender parity.

Furthermore, and also in line with other research on gender fair language and attitudes towards linguistic equality (e.g., Frank-Cyrus & Dietrich, 1997; Rothmund & Christmann,

2002; Stahlberg & Sczesny, 2001; Steiger & Irmen, 2007), our two experiments offers additional evidence that individual attitudes can moderate the influence of gender fair language on person perception.

Limitations of our Study and Future Directions

The notion advanced in this article was that gender fair language use influences people's perceptions of speakers' sexism, competence, and warmth. Although we did find evidence for gender fair language use affecting listeners' perceptions, the generalizability of our findings is limited in several respects.

First, future research should explore perceivers´ sensitivity to the circumstances under which gender fair language is used. The stimulus materials used in our two experiments referred to a rather official and formal setting (application for a job). One could argue that in such a formal context the use of gender fair language is strongly called for by prevailing norms. Also, it might be the case that the attribution of less sexism and higher competence to speakers of gender fair language is restricted to the setting in which the organization the stimulus person applied for is a very liberal one, promoting norms of gender equality. Exploring the question whether the use of gender fair language would trigger the same kind of attributions in contexts conveying different norms (e.g., application for a job in investment banking) may provide further insight in how language use impacts the perception of speakers.

Second, future work should also investigate the possible influence of paralinguistic features on perception of speakers´ sexism, competence, and warmth. In our second experiment we deliberately chose persons representing average features of male versus female voices, respectively (i.e., tone pitch). It cannot be ruled out, however, that a speaker's perception can interactively be affected by paralinguistic features and language use. For instance, female gender fair language users may be ascribed feminist attitudes if they have a very masculine voice but not when they have an "average" feminine voice, leading to different perceptions. To further explore this issue, future studies may consider including several speakers, representing a wide range of voices on the masculinity-femininity spectrum.

And thirdly, future work might want to investigate the mediating mechanism underlying the different evaluative perceptions of gender fair versus non-gender fair speakers. The main focus of our research was to explore the impact of gender fair language use on major dimensions of person perception. Unfortunately, our data do not allow for an identification of the processes by which variations in the ascription of sexism, competence, and warmth were brought about. For instance, where men in our second study punished on the

warmth dimension when speaking in a gender fair way because they were perceived as competitive or because they were perceived as lacking masculinity? Or were speakers of gender fair language evaluated more positively on the competence dimension because they were perceived as speaking in an enriched way (see Bradac & Wisegarver, 1984) or because they were perceived as socially competent, in the sense of behaving in accordance with the reigning norm of gender fairness? Future studies might want to further address this question.

Conclusions

Taken together, the results obtained from our two experiments are the first to reveal that the use of pair forms in the German language influences audience's perception of speakers' sexist attitudes, competence, and warmth. Whereas women seem to only gain from using pair forms, making them appear as ambassadresses of gender equality who are admired for their perceived high status and assumed good intentions, the impact of gender fair language is not so unambiguous for male speakers. Although gender fair male speakers were also judged more competent and warmer when their sex was not made particularly salient and when their speech was presented via a written text, ambivalent perceptions were elicited within listeners when men used gender fair forms in spoken language: In listeners with negative attitudes towards linguistic equality, men using gender fair language seem to have evoked resentment, rendering the perception of male ambassadors of gender equality impossible. It seems that when sex of the speaker was made more salient by voice characteristics pair form use alleviated the perception of warmth for male speakers. This suggests that in real life communication where speaker's sex is even more salient via the simultaneous operation of visual, auditory, behavioral, and social gender cues, pair form use may trigger even more negative or ambivalent perceptions of male speakers. Further studies with video samples varying language (pair forms vs. generic masculines), paralinguistic (masculine vs. feminine), and visual characteristics (masculine vs. feminine) could shed more light on the question in how far this is in fact the case. Also, additional studies with more heterogeneous samples of listeners in terms of age, socio economic status, or professional background, in different speech contexts (e.g., professional versus informal) and with different speech topics are needed to further advance our understanding of the benefits and penalties of gender fair language use.

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5

General Discussion

General discussion

Since gender fair language is often promoted under the banner of gender equality, yet empirical support for its effectiveness is largely lacking, the major aim of this thesis was to investigate whether the use of gender fair language does in fact serve its goals and whether backlashes have to be taken into account. To examine the potential of gender fair language in contributing to gender equality, this thesis focused on mental conceptions about the world of employment: Gender inequality, and particularly the gender segregated labor market, has a negative impact on several aspects of people's life, such as their personal happiness, social relationships, income, and mental as well as physical health (c.f., Crouter, Bumpus, Maguire, & Mc Hale, 1999; Sharf, 2002; Thomas, Benzeval, & Stansfeld, 2007). The impact of gender inequality even surpasses the individual level and is negatively related to economic prosperity, national health, and social cohesion on a societal level (Löfström, 2009; Ward, Lee, Baptist, & Jackson 2010; World Economic Forum, 2010; European Comission, 2008).

Some see gender fair language as a powerful tool to accelerate societal change towards gender equality. Language is the primary medium to communicate stereotypes and has tangible consequences for human interaction (Maas & Arcuri, 1996; Maass, Suitner, & Merkel, 2012). The notion that language may be related to facets of gender equality is based on the assumption that language influences people's thoughts in general (Hardin & Banaji, 1993, Semin, 2004; Whorf, 1956) and that gendered language is related to gendered thoughts, perceptions, and behaviors in particular (Boroditsky, 2009; Deutscher, 2010; Maass & Arcuri, 1996; Maass, et al., 2012).

Although empirical research on the effectiveness of gender fair language is still scarce, many professional organizations, publishing companies, and even governmental organizations have begun to promote it and to reject the use of generic masculine forms (e.g., APA, 2009; Duden, 2006; Eu, 2008). In an effort to shed light on the effectiveness of gender fair language, we ran several experiments testing either language variations' impact on mental representations of gendered occupations or gendered perceptions towards the speakers of gender fair language. Our studies on the mental representation of occupations included primary school children aged 6 to 12 because literature on vocational development suggests that the gender-segregated labor market finds its origin in young children. Vocational development constitutes a lifelong process (Gottfredson, 1981; Porfeli, Hartung, & Vondracek, 2008; Super, 1957; Super, Savickas, & Super, 1996; Vondracek, Lerner, & Schulenberg, 1986). Children aged 6 to 12 are in a crucial stage of development where they increasingly associate occupations with either women or men (Helwig, 1998; Liben, Bigler &

Krogh, 2001; Miller, Lurye, Zosuls & Ruble, 2009; Ruble & Martin, 1998; Stockard & McGee, 1990). These gendered perceptions about occupations strongly guide children's interest towards "gender appropriate" occupations (Eccles, 2007; 2011; Gottfredson, 1981; 2002; 2005). Importantly, the occupational interest developed between ages 6 to 12 is a significant predictor for subsequent educational and vocational choices (Hartung, Porfeli, & Vondracek, 2005; 2008; Porfeli et al., 2008; Watson & McMahon, 2005).

Against this background, this thesis experimentally investigated whether the use of gender fair (i.e., pair forms) versus traditional (i.e., generic masculine forms) language influences children's gendered perceptions of stereotypically male occupations. Based on findings with adults which show that pair forms (compared to generic masculine forms) foster associations with female workers (Stahlberg et al., 2007), we assumed that stereotypically male occupations presented in a pair form would also make it easier for children to mentally associate them with female jobholders and female success. However we anticipated that this "feminization" of male jobs would function like a double edged sword: the feminization of male jobs be accompanied by both a devaluation in perceived status of these occupations (Liben, et al., 2002) and a boost in self-efficacy beliefs (Chatard, Guimont, & Martinet 2005). Furthermore, when young girls envision more women in stereotypically male jobs, they might be more interested in eventually taking up such an occupation (e.g., Gaucher, Friesen, & Kay, 2011; Weisgram, Liben, & Bigler, 2010).

Also, language is much more than simply a collection of linguistic signs that represent reality or an apparatus for transmitting sheer content matter, it is the tool of utmost importance when it comes to interpersonal communication (Giles & Powesland, 1975). It has been shown, for instance, that speakers always insert some sort of self revelation in their message (Bühler, 1934; Schulz von Thun, 1998) and that listeners always try to identify possible causes for what they observe (Asch, 1946; Heider, 1958; Jones & Davis, 1965). Consequently, even subtle variations in linguistic practices of speakers, such as the use of gender fair language, can act as a cue that triggers stereotyped evaluations within listeners (Higgins, Rholes, & Jones, 1977; Higgins, 1996; Bargh & Chartrand, 2000). Since job interviews and hiring decisions ultimately decide which person will assume specific job roles, this thesis used a simulated job application procedure to investigate whether perceptions of an applicant are influenced by their use of gender fair language and whether language use could even influence the outcome of the application procedure.

The main findings of the thesis are summarized in Table 1 and described below. Notwithstanding the new insights this publication-based thesis hopes to provide, some

limitations have to be acknowledged which will be described after a summary of the main findings. Finally, future research directions will be pointed out.

This thesis borrowed from Bühler's communication model (1934) of the functions of language as an integrative framework to organize existing empirical findings about effects of gender fair language and to describe channels through which gender fair language may contribute to gender equality within a given language community. Based on Bühler's model this thesis hypothesized that gender fair language may influence:

1) gender-related perceptions of occupations (*representation* function)
2) individuals' attraction to different occupations (*appeal* function)
3) perceptions of speakers (*expression* function)

Aims	Findings	Conclusion
Manuscript 1 experimentally tested the differential effect of stereotypically male occupations presented in pair form or in generic masculine form on primary schoolchildren's gendered perceptions of occupations and their interest in several occupations,	Stereotypically male occupations presented in a pair form (compared to generic masculine form) facilitates associations with women and promotes gender egalitarian perceptions regarding women and men's abilities to work in stereotypically male occupations. Pair forms made girls more interested in male occupations which was in fact mediated by their increased egalitarian gendered perceptions about women and men's abilities in male occupations.	Children proved to be sensitive to gender information in occupational tittles and use this information to make gender inferences about the occupations. The generic use of masculine plural forms to describe stereotypically male jobs is likely to lead children to restrictive, male only associations and perceptions about stereotypically male occupations. The use of pair forms in educational contexts can contribute in shaping more egalitarian gender related perceptions about occupations and may encourage girls to not only consider occupations associated with their own gender but also occupations stereotypically associated with the other gender as a possible option to pursue in their future career.
Manuscript 2 experimentally tested the differential effect of stereotypically male occupations presented in pair form or in generic masculine form on children's perceptions of occupational status and their self-efficacy beliefs.	Stereotypically male occupations were perceived lower in status when they were presented as pair form (rather than as generic masculine form) which at the same time boosted children's self efficacy beliefs regarding these male occupations.	The "feminization" of stereotypically male occupations, by presenting them as pair form rather than generic masculine form, coincides with a devaluation of the status of these occupations, while at the same time promoting children's vocational self-efficacy beliefs. Because of this ease of use and the large scale with which this intervention (the use of pair forms to present traditionally male occupations) could be implemented in the educational landscape, our current findings seem especially promising in promoting children's confidence in their academic and professional abilities regarding stereotypically male domains.

Table 1. Summary of findings from the thesis

Manuscript 3 tested how the use of pair forms versus use of masculine's generically to refer to mixed gender groups and groups whose sex composition is unknown or irrelevant influences perceptions and judgments about speakers.	Results of two experimental studies showed that irrespective of their sex, speakers using pair forms rather than generic masculines were perceived more competent by both men and women. Also, they were seen as less sexist by male and female listeners with positive attitudes towards linguistic equality. Findings with respect to the attribution of warmth were more complex: they were not only impacted by language use, but also dependent on speaker's sex and listener's attitude towards linguistic equality. Furthermore, the hiring likability raise when speakers used gender fair language.	Whereas women seem to only gain from using pair forms, making them appear as ambassadresses of gender equality who are admired for their perceived high status and assumed good intentions, the impact of gender fair language is not so unambiguous for male speakers. Although gender fair male speakers were also judged more competent and warmer when their sex was not made particularly salient, ambivalent perceptions were elicited within listeners when men used gender fair forms in spoken language: In listeners with negative attitude towards linguistic equality, men using gender fair language seem to have evoked resentment, rendering the perception of male ambassadors of gender equality impossible. In real-life communication where speaker's sex is even more salient via the simultaneous operation of visual, auditory, behavioral, and social gender cues, pair form use may trigger even more negative or ambivalent perceptions of male speakers.

Gender fair language = gender fair mental representations?

Manuscript 1 examined whether the use of gender fair language to present stereotypically male occupations influences children's mental *representations* of male and female jobholders. One of the key functions of language is to represent reality (cf. Organon model, Bühler, 1934). Given the current language reform, several linguistic alternatives (e.g., generic masculine forms, pair forms) for describing occupations are available to a speaker for framing his or her message (see Duden, 2006). The use of different linguistic forms may in turn trigger different mental representations about the described group in recipients' mind (Carnaghi, et al., 2008; Carnaghi & Maass, 2007; Stahlberg et al., 2007).

Corroborating and complementing previous research findings for adults, the experiments described in manuscript 1 showed that the use of pair forms (compared to generic masculine forms) increased associations with female jobholders in stereotypically male domains in primary school children aged 6 to 12. Furthermore, in the pair form condition, children perceived the ability of women and men to work in male occupations in a more gender balanced manner than in the generic masculine condition. In other words, when stereotypically male occupations were presented in pair forms (compared to generic masculine forms), children were more convinced that women could also perform these jobs. As the impact of gender fair language has not been previously tested with children, this study adds to the scant evidence on beneficial effects of using pair forms (rather than generic masculine forms) on gender stereotyped perceptions *(representation)* about jobholders in stereotypically male occupations.

Since the presentation of stereotypically male occupations in pair form causes some kind of "feminization" in the perception of that occupational group (i.e., individuals associate women more easily with these occupations and are more convinced that women can also perform well in these occupations) we speculated that pair forms might also influence status representations about stereotypically male occupations (Gygax & Gesto, 2005). This could be the case since women, on average, work in lower status professions than men (e.g., lower earnings, fewer years of formal training) (see WEF, 2010). As a result, children may have adopted the general belief that women earn less than men and receive less societal recognition for their work. The findings reported in manuscript 2 indeed supported this assumption: presenting stereotypically male occupations in a pair form triggered associations of lower status (e.g., income, level of difficulty, importance) in primary school children aged 7 to 12. This finding complements previous research findings showing that 7 year-old children generally believe that men are granted more social status than women (Neff, Cooper, &

Woodruff, 2007) and that 11 year-old children ascribe lower status to a job if they believe it to be done by women, compared to when they believe the job is done by men (Liben et al.,2001). Our findings demonstrate that providing a traditionally male occupation in a pair form is sufficient to trigger associations of lower status.

These findings are inspiring also from a theoretical point of view: while many factors impacting children's gender-related perceptions of occupations have been previously identified (for overviews see Blakemore et al., 2009; Ruble et al., 2006), the results from our experiments suggest that linguistic forms used to describe occupations have an impact on children's gender and status-related perceptions. Interestingly, the impact of language had the same impact on children from a strong grammatical gender language (i.e., German) and on children from a moderate grammatical gender language (i.e., Dutch). These findings align with cognitive perspectives on gender development which suggest that children actively seek out gender cues in the environment and categorize their experiences along gender lines in order to make sense of their social world (e.g., Martin & Ruble, 2004). Our findings suggest that children even make use of gender cues included in verbal or written presentations of occupations in order to categorize the employment world along gender lines. Such gendered categorizations can be considered as precursors of gendered behavioral choices (Fiske & Taylor, 2007) such that language not only influences short term gender-typed associations and perceptions about occupations but may also have a considerable influence on shaping occupational gender stereotypes. More particularly, our findings suggest that the current practice – to use the generic masculine form to present stereotypically male occupations – contributes to the maintenance of occupational gender stereotypes (Maass & Arcuri, 1996).

Primary school children's gender stereotyped perceptions of occupations and their perceptions of occupational status are two crucial dimensions impacting and guiding children's educational and vocational development (Gottfredson, 1981; 2002; 2005). Therefore, the impact of gender fair language (i.e., pair forms) on children's gendered perceptions about occupation may have notable practical implications as described below.

Gender fair language = An appeal to recipients to engage in gender fair behaviors?

The next step in this thesis was to examine whether gender fair language would influence children's attraction to stereotypically male occupations. According to Bühler's communication model (1934) language functions as a signal which carries a request for its receivers. Applied to the use of gender fair language, we theorized that male occupations presented in pair forms (compared to their generic masculine forms) may make the

occupations more appealing to children. Results from the experiments described in manuscripts1 and 2 have already demonstrated that children's gendered perceptions about male occupations were influenced via the language form (i.e., generic masculine form or pair form) in which they were presented. Since gendered perceptions about occupations have a great influence on children's vocational development (Gottfredson, 1981; 2002; 2005), we experimentally tested whether children's occupational interest and self-efficacy beliefs regarding male occupations would be influenced by the linguistic form used to present occupations.

As suggested by feminist theory, the use of generic masculine forms to describe male occupations makes women linguistically invisible; this in turn renders it difficult for girls to visualize themselves in stereotypically male occupations (Trömel-Plötz, 1982, Stahlberg et al., 2007). While some research with adults has previously demonstrated that different linguistic alternatives available to describe occupations can promote women's interest in stereotypically male occupations (e.g., Bem, & Bem, 1973; Born & Taris, 2010; Gaucher, et al., 2011; Stout & Dasgupta, 2011), research with primary school children is nonexistent. Yet primary school children aged 6 to 12are in a crucial stage of their educational and vocational development in which they strive for occupations in line with the cultural stereotype for their gender (Gottfredson, 1981; 2002; 2005). Therefore this thesis explored the influence of language on occupational interest in primary school children.

In line with findings from adult samples, results from manuscript 1 showed that girls aged 8 to 12 indicated more interest in stereotypically male occupations when they were presented in a pair form rather than in a generic masculine form. What is more, it was girls' perception of women's ability to work in male occupations that mediated their increased interest triggered by the linguistic form in which it was presented. This finding fits with Gottfredson's theory of circumscription and compromise (1981; 2002; 2005) which states that children from age six onwards circumscribe their occupational aspirations to gender appropriate ones. They do so because gender is such an important element of the self that one is rarely willing to compromise it when faced with occupational choices: The three experiments described in manuscript 1 demonstrated that the use of pair forms activated a more gender balanced vision of job holders in traditionally male occupations, which in turn increased girls' interest in these (traditionally gender atypical) occupations.

Furthermore, the studies depicted in manuscript 2 revealed that the use of pair forms (rather than generic masculine forms) to present stereotypically male occupations boosted self-efficacy beliefs in children aged 6 to 12. Interestingly, both girls' and boys' self-efficacy

beliefs were affected by pair form use. While this finding is in line with the study by Chatard and colleagues (2005) with 15 year-old French speaking students, this thesis is first to delineate the underlying mechanisms for why pair form use makes increases in self-confidence in boys and girls: devaluations in perceived occupational status boost children's self-efficacy beliefs. In other words, when stereotypically male occupations are presented in a pair form, both boys and girls perceive these occupations as less important, less difficult, and less well-paid which increases their confidence that they could excel in these occupations.

Gender fair language is often criticized for being redundant, illogical, unaesthetic and useless (Blauberg, 1980; Parks & Robertson, 1998). However, our finding that gender fair language influences primary school children's occupational interest and self-efficacy beliefs suggests that the use of gender fair language – for instance in educational contexts – may be an effective pedagogical tool. Stereotypically male occupations presented in pair form rather than in generic masculine form not only simulate girls' interest in these occupations, it also boosts their confidence in their abilities to succeed in these gender atypical occupations. This is very important given that girls aged 6 to 12 are in a crucial stage of their vocational development and are not often interested in stereotypically male jobs because they believe them to be gender inappropriate (Bandura, Barbaranelli, Caprana, & Pastorelli, 2001; Eccles, 2007; 2011) and think it is unlikely that they can succeed in these gender atypical occupations (Eccles, 2007; Matsui & Onglatco, 1991; Murphy, Coover, & Owen, 1989; Sainz & Eccles, 2012). Since gender inequality, and in particular a gender segregated labor market, are negatively related to quality of life on an individual (Crouter et al., 1999; Sharf, 2002; Thomas et al., 2007) and societal level (Löfström, 2009; Ward et al., 2010), pair form use appears to be a promising tool in promoting gender atypical educational and vocational choices in girls and therefore merits further research.

Gender fair language = Expression of the sender's commitment to gender equality?

According to Bühler's communication model (1934), a speaker is likely to reveal some self-information via the language he or she uses. Applied to gender fair language, it has for instance been shown that the more inclined people are to use gender fair language the less sexist they are (e.g., Jacobson & Insko, 1985; Matheson & Kristiansen 1987; Swim, Mallet, & Stangor, 2004). Since listeners always try to identify possible causes for what they observe (Asch, 1946; Heider, 1958; Jones & Davis, 1965), it makes sense to assume that even subtle variations in linguistic practices, such as using gender fair language instead of traditional language (i.e. generic masculine forms), can act as cues triggering different perceptions within

listeners (Higgins, et al., 1977; Higgins, 1996; Bargh & Chartrand, 2000). This thesis examined more closely whether the use of gender fair language influences perceptions about the speaker.

The results from two experiments reported in manuscript 3 revealed that the use of pair forms did indeed influence the audience's perception of speakers' sexist attitudes, competence, and warmth. In the first experiment where we used a written format and gender of the sender was not very salient, the two universal dimensions of person perception – warmth and competence (Fiske et al., 2002)– were positively affected by pair form use compared to the use of generic masculine forms. Speakers of gender fair language being perceived as less sexist, more warm, and more competent corresponds to the "admiration stereotype" (cf. Fiske et al. 2002) which is reserved for people representing or living according to the cultural norm. This finding suggests that nowadays, gender fair language is generally accepted as the cultural norm within Germany, at least in formal contexts such as job application interviews (see Bußmann & Hellinger, 2003; Mucchi-Faina, 2005). However, the second experiment described in manuscript 3 in which audio tapes had been used and the speaker's sex was more salient revealed that male speakers of gender fair language were perceived as more competent and as less warm which corresponds to the "envy stereotype" (i.e., cf. Fiske et al. 2002). The envy stereotype is triggered when a person is identified as competent but competitive. This finding suggests that it is especially women who benefit from using pair forms in their speech. While male speakers were only perceived as more competent when using pair forms, women additionally profited from pair form use in the ascription of more trustworthiness (i.e., warmer).

Interestingly, in both experiments, male and female speakers of gender fair language were perceived as less sexist the more positive the perceiver's attitude was towards linguistic equality. This finding suggests that not everyone equates gender fair language use with egalitarian attitudes (i.e., low sexism); it is especially people with positive attitudes towards gender fair language who make this inference. One explanation could be that people with positive attitudes towards gender fair language acknowledge that today's society is still characterized by gender inequality and believe that gender fair language may be a tool in combating this inequality.

The practical implication of this line of research becomes very tangible in our findings for the hiring likability question: Speakers who used pair forms, regardless their sex, were thought to have greater chances of being awarded the job. These results should certainly be interpreted with care given that our research participants were not professionally trained

human resource employees. However, the consistency of the findings yielded from the two experiments provides strong evidence that the use of gender fair language does not go unnoticed. Instead, it likely influences the way the speaker is perceived by others; these perceptions, in turn, are accompanied by other beneficial consequences (e.g., raise in hiring likability). To fully understand the benefits and detriments that gender fair language use may entail, additional research is needed.

Limitations and future directions

Methodological issues

Although the results of this thesis provide valuable insights into effects of gender fair language use, some methodological limitations must be acknowledged when interpreting the results. In what follows, these limitations will be described, solutions suggested, and new research questions will be outlined.

Full Randomization:

Unfortunately we had to maintain existing class constellations during the experiments which rendered the cross-class assignment of children to control or experimental conditions impossible. It can not be ruled out that although in the experiments described in manuscripts 1 and 2 school classes were randomly assigned to control or experimental group, that for instance by pure luck some experimental classes already had more gender balanced perceptions about occupations from the start. Although we sampled several classes to reduce the likability of pre-existing differences between the experimental and control groups and applied a statistical procedure (i.e., standard error correction and multilevel analysis) to deal with the clustering of the pupils, other procedures should be tested in the future to replicate the present findings: For instance a fully randomized assignment of all children cross classes to experimental or control condition would be ideal. Another alternative is to collect data to detect pre-existing differences between classes that might bias the outcome of the experiment (e.g., children's gender-role beliefs). This would also allow for testing for moderators.

Moderators:

Collecting information on individual characteristics may also allow to investigate whether gender fair language affects all individuals to the same extent and via the same mediators. In the two experiments described in manuscript no 3 it was apparent that the impact of gender fair language use was often moderated by people's attitude towards gender

fair language. Additional moderators may be at work, too, like listeners' sexist attitudes or gender-role beliefs. Because of time constraints, no moderators (besides biological sex of participants) were investigated in the experiments with children described in manuscripts 1 and 2. It is however conceivable that the impact of gender fair language may be different for children with egalitarian rather than traditional gender-role beliefs.

Also, children's age may influence gendered associations of occupational titles. In a study from Switzer (1990), children about 12 years old gave more gender balanced interpretations of a hypothetical student who was referred to by the generic "he" then did 6 year old children who typically envisioned a masculine person. From a linguistic point of view it has been suggested that as children grow older they come to better understand the generic applicability of masculine generics (Switzer, 1990). Form a gender developmental point of view, it is known that older primary school children hold more egalitarian gender-related attitudes towards occupations than younger children (e.g., Trautner et al. 2005). Future research is needed to investigate whether the impact of gender fair language (i.e., pair forms) compared to generic masculine forms is moderated by children's age.

Another factor that may influence the impact of gender fair language is the sex of the speaker (e.g., teacher). Results from the speakers' perception experiments described in manuscript 3 suggest that it is especially female gender fair speakers who activate positive stereotypes are admired as ambassadresses of gender equality and serve as an inspiring role model. Applied to our experiments with children, female teachers especially might inspire young girls to think outside the box when developing occupational aspirations. By the same token, the impact of male teachers using pair forms on girls' occupational interest might be more limited: since male teachers are out-group members (cf. Fiske et al., 2002), girls might not identify with them. As a consequence, male teachers might lack persuasion power in promoting girls' interest in sex atypical careers. Future research may investigate this issue more systematically.

Ecological Validity:

Experiments are the only research designs that allow for a causal interpretation of the effects of gender fair language (i.e., pair forms versus generic masculine forms). However, the generalizability of their findings to describe everyday life behavior may be limited. Future studies may benefit from using behavioral measures and testing whether behavioral enactments are in fact influenced by language. One way of testing this is through the manipulation of actual descriptions of educational courses or real life job ads; one could test

whether female students or jobseekers who are in a stage of transition (about to make an educational or vocational choice) are more likely to choose a career in traditionally male domains after reading gender fair descriptions. Another way of testing the impact of gender fair language in real life settings would be to manipulate the language use in cover letters to see whether applicants writing in a gender fair manner (i.e., pair forms) are more likely to be invited for a job interview. Investigating more "real life" effects would improve the ecological validity of experiments who are interested in investigating effects of gender fair language.

Longitudinal:

Whereas the results of the present set of cross-sectional experiments illustrate many effects of gender fair language shortly after it is presented, it is difficult to make inferences about long term effects. A full account of the impact of gender fair language on children's development of occupational gender stereotypes and their subsequent educational and vocational development could only be provided by longitudinal study designs. For instance, some teachers could be trained in using gender fair language and the development of their pupils' gender-role beliefs could be monitored over a longer time period and compared to pupils of teachers who use traditional language. In a similar design, textbooks using either gender fair or traditional language could be randomly assigned to different school classes. Again, the development of children's gender-role beliefs could be monitored and compared.

Dependant measures

Another issue which needs to be mentioned is the fact that in this thesis we generally clustered all traditionally male occupations together. However, other categorizations and extra subdivisions within the traditionally male occupations are conceivable. A classic way of ordering occupations is provided by the RIASEC model (cf. Holland, 1997). Another way of categorizing occupations is according to whether they belong to Science, Technology, Engineering and Mathematics (STEM-fields), or not. Using a broader range of traditionally male occupations and dividing them into meaningful subcategories could provide a more detailed insight into the effects of gender fair language. Whereas the results described in manuscripts 1 and 2 suggest that pair forms had a small to medium effect (d=.24, r=.12) on girls' general interest and a medium sized effect (d=.34, r=.17) on children's self-efficacy beliefs towards traditionally male occupations, subdividing occupations into, for instance, STEM and non-STEM professions would allow for a more precise description of the circumstances under which pair forms impact recipients' mental representations.

Measurement

Although different stimulus materials (oral and written presentation, audio tapes) and dependent measures were used in this thesis (gendered perceptions, occupational interest, self-efficacy beliefs, warmth, competence, etc.) which proved to be sensitive to measure differences between the two language conditions (generic masculine forms or pair forms) this thesis exclusively used reactive questionnaire data. Further insight into the impact of gender fair language may be provided by implicit non-reactive measures such as response latencies or the implicit association test (cf. IAT, Greenwald, McGhee, & Schwartz, 1998). These kind of implicit measures are less biased by deliberate attempts to conceal attitudes and often reflect attitudes of which the respondent is not aware (e.g. Dovidio & Fazio, 1992; Greenwald & Banaji, 1995).

Future directions

Many other research questions regarding the impact of gender fair language remain unanswered:

Speakers effect: Wasserman and Weseley (2009) showed that differences between languages in the extent to which they refer to gender (grammatical gender vs. natural gender) are related to differences in sexist attitudes of speakers of the respective linguistic communities. For instance a bilingual person who speaks both a grammatical gender language (e.g., Spanish or German) and a natural gender language (e.g., English or Norwegian) endorses stronger sexist attitudes when he or she is speaking the grammatical gender language than when speaking the natural gender language. Wasserman and Weseley (2009) reasoned that grammatical gender languages promote sexism because they grammatically accentuate sex distinctions and consequently prompt their speakers to make sex distinctions in thought and behavior (e.g., Labrosse, 1999; Wasserman & Weseley, 2009). This thesis puts forward an alternative explanation in proposing that is rather the asymmetrical way in which references to sex are made in grammatical gender languages, causing a male bias and fostering traditional sexist gender-role beliefs. A future experiment could adopt the design of Wasserman and Weseley (2009) by having the same person speak using either pair forms or generic masculine forms and measuring variations in gendered perceptions and sexism (see also Holtgraves & Kashima 2005).

Listeners effect: The motivation behind the speakers perception experiments was that it is an important prerequisite that speakers of gender fair language would be identified as less sexist. This prerequisite should be met since it has been shown that repeated exposure to non-sexist speakers may promote decreased sexist attitudes in those exposed to the non-sexist model (Sibley et al., 2009). Although this thesis demonstrated in two experiments that speakers of gender fair language are indeed perceived as less sexist, it did not investigate whether repeated exposure to speakers of gender fair language (e.g., students of gender fair speaking university teachers) also fosters a decrease in sexist attitudes among those exposed. Future research may benefit from investigating this issue.

Mediators: Future studies might investigate the underlying mechanism by which the devaluation of occupational status, triggered by the use of pair forms to present stereotypically male occupations, comes about. For instance, Cejka and Eagly (1999) showed that perceived occupational status was related to participants' beliefs that successful workers required masculine (agentic) personality attributes (e.g., courageous, competitive or dominant). In the same vein, Johannesen-Schmidt and Eagly (2002) showed that participants ascribed more masculine (agentic) traits (e.g., intelligent, competitive, adventurous) to higher wage earners. Thus, research suggests that it is masculine characteristics which are linked with high occupational status. With respect to the impact of gender fair language, it may be that pair forms causes lower perceptions of occupational status because pair forms causes perceivers to attribute fewer masculine (agentic) personality attributes to the prototypical jobholder in these male occupational domains.

According to Gottfredson (1981; 2002; 2005), perceptions of occupational status guide children`s occupational aspirations from age 9 onwards. In the same line of reasoning, it has been shown that self-efficacy beliefs are key determinants for educational and occupational aspirations (e.g., Bandura, et al., 2001; Eccles-Paersons et al., 1983; Eccles, 2007; 2011). Although this thesis demonstrated the impact of language form (i.e., pair form versus generic masculine form) on perceptions of occupational status, self-efficacy beliefs, and occupational interest, the data were collected in separate experiments and do not allow examination of the relationships between these dimensions. Future research may benefit from examining how these dimensions are interact and through which specific mechanism gender fair language contributes to girls' interest in stereotypically male occupations. Applying the expectancy–value model of achievement and motivation (Eccles et al., 1983) could be helpful in this endeavor.

General Conclusions

Despite some limitations acknowledged above and many research questions still unanswered, the results presented in this thesis clearly support the general notion that language has the power to influence people's thoughts about reality (e.g., Hardin & Banaji, 1993, Semin, 2004; Whorf, 1956). More specifically, findings from the experiments show that gender information in language influences people's gendered perceptions (e.g., Boroditsky, 2009; Deutscher, 2010). Results showed that at least three groups of thoughts (cf. communication model, Bühler, 1934) are influenced by the use of gender fair language (i.e., pair forms rather than generic masculine forms):

1) thoughts about the content matter (i.e., gender-related *representations* about occupations),
2) thoughts about implications for the self (i.e., *appeal* of occupation) and
3) thoughts about the personality of the sender (i.e., *expression* of sender).

First, pair forms (compared to generic masculines) used to present stereotypically male occupations influenced primary school children's mental representations towards more gender balanced representations about the occupation. From a socio-cultural perspective it is said that people adopt stereotypes about gender roles by repeated observations of women and men in sex-typical roles (cf. social role theory, Eagly, 1987; Eagly, et al., 2000): Whereas many elements from the child's environment have already been identified as having an influence on children's development of gender stereotypes (e.g., the roles women and men as depicted in television and books, for overviews see Blakemore et al., 2009; Ruble et al., 2006) the findings from manuscripts 1 and 2 suggest that the linguistic tools used to refer to workers in stereotypically male domains may also contribute to children's development of occupational gender stereotypes. Language guides our attention, making groups salient or invisible: depending on the given linguistic form used to refer to jobholders in stereotypically male domains, language either contributes to maintaining and shaping existing gender stereotypes or to more gender egalitarian perceptions (Maass & Arcuri, 1996; Maass, et al., 2012).

Second, since gender stereotypes have a restricting impact on children's educational and vocational choices (Eccles, 2007; 2011; Gottfredson, 1982; 2002; 2005) the practical implications of our experiments might be significant for changing the gender segregated labor market. Whereas studies with adults have shown that language has an influence on adults' vocational aspirations (e.g., Gaucher et al., 2011; Stout & Dasgupta, 2011), the results from this thesis suggest that depending on the linguistic form (generic masculine forms or pair forms) used to present male occupations, children are subtly guided in their occupational

choices such that either gender-typed preferences are maintained or gender atypical choices become more likely. This is very important since gender equality and especially a gender equal labor market have been demonstrated to encourage economic prosperity, citizens' general health, and social cohesion (see Löfström, 2009; Ward et al., 2010; for reviews).

Third, variations in language use are noticed by recipients and used by them to make inferences about the sender. The moment the use of gender fair language is identified, stereotypes related to this type of language use are activated in the recipient. Gender fair language seems to act as a cue which not only expresses the speakers' non-sexist attitudes, the cue is also used to make inferences about the speaker's intentions and abilities. The findings from manuscript 3 suggest that the use of gender fair language may improve women's chances in a job application procedure: the use of pair forms triggered feelings of admiration towards female applicants (cf. Fiske et al., 2002) in both male and female perceivers and increased the (perceived) chances of getting hired.

In sum, the findings from this thesis suggest that the use of gender fair language may have tangible effects on human interaction (Maass, et al., 2012). Findings from manuscripts 1, 2 and 3 suggest that gender fair language may influence several factors relevant to the labor market with both short and long term consequences. Hence, if a society is truly interested in closing the gender segregated labor market and in shaping a more gender equal, inclusive and democratic society, the potential of language should be incorporated in the efforts. Although this inference may seem appear somewhat premature – since much more empirical research is needed to fully understand the impact of gender fair language – language's potential might be great since it is omnipresent in people's environment and guides us from birth onwards (Liben, et al., 2002). Therefore, one implication stemming from this thesis could be to train high impact persons like teachers, publishers, school councilors among others in using gender fair language. However, though language is very likely a factor which contributes to the degree of gender equality, it is important to note that gender fair language is just a tool and not an aim in itself: in order to be a powerful strategy and truly change the existing imbalance between genders, the current language reform must be accompanied by visible social, educational, vocational and political developments towards gender equality.

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Lebenslauf

Der Lebenslauf ist in der Online-Version aus Gründen des Datenschutzes nicht enthalten

Erklärung

Hiermit versichere ich, dass ich die vorgelegte Arbeit selbständig verfasst habe. Andere als die angegebne Hilfsmittel habeich nihct verwendet. Die Arbeit ist in keinem früheren Promotionsverfahren angenommen oder abgelehnt worden.

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