



“Women and “Ideal” Women”: The Representation of Women in the Construction Industry

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Abstract

Increased female participation has been highlighted as necessary to fill a labor shortage in the construction industry, but also to promote equality and efficiency. Despite initiatives to recruit women, the industry remains one of the most gender-segregated industries in the world. Increased knowledge about gender has been identified as needed to change the status quo. The aim of this study is to contribute with new insights into gender in construction by exploring how women in the industry are discursively represented, and how they talk about their workplace. It is based on analyses of texts from the web. The search engine WebCorpLive was used to retrieve and sort the material to enable linguistic analysis. The study shows that although the overarching message in the material is that there are many opportunities for women in the industry, closer analysis of it shows that women entering the industry are met with gender-biased attitudes, discrimination and unrealistic demands.

Keywords WOMEN in construction · The web as a corpus · Discourse analysis · Corpus linguistics · WebCorp Live

Introduction

Despite women’s progress in educational achievements over the last few decades worldwide, their progress has not been translated into equal advancement in all areas of work [21, 32, 41, 53]. Many professions are still heavily gender segregated, which contributes not only to unequal options for individuals, but also to discrimination

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and overt exclusion [see 12, 34]. The construction industry is a typical example of a work site heavily dominated by one gender. The percentage of construction work held by women is extremely low, between 9–13%, and has remained more or less at the same level over the years, although some countries see a slight increase [41]. In the US female participation was 8.9% in 2014 and 9.9% in 2018 according to the National Association of Women in Construction [40]. The figures for the UK and Australia in 2018 were 12.5% and 12% respectively [4, 26]. The majority of the women represented in the above-mentioned figures are moreover hired to do administrative work [41, 61].

Over the last few decades, a number of initiatives on organizational and governmental levels have been taken to increase the number of women in the industry. Equality and diversity policies have been initiated to enforce equal pay and promotion. There have been a variety of calls in the form of laws and regulations to prevent gender discrimination. In Australia, for example, companies larger than one hundred employees need to report the composition of their workforce to the government [24, 32]. Despite such efforts research shows that the industry remains highly male dominated with few visible changes [21, 23, 32, 39, 47, 52]. It seems evident that the above-mentioned initiatives alone and efforts to increase the mere number of women are not enough to make the industry attractive to all individuals irrespective of gender. Other more intangible obstacles need to be addressed, as pointed out by Clarke et al. [14] who argue that gender-biased norms and attitudes in the industry need to be made visible and problematized to attract more women, and also to make them stay [see also 24]. One way of making values and norms visible is by analyzing the language used to form them [5].

Previous research on gender in the construction industry has to a large extent focused on how masculine ideologies and the stereotypical image of the male construction worker as brave, risk-taking, technically talented and strong continue to inform the industry [e.g. 25, 28, 32, 42, 54]. Most studies on women in the construction industry have dealt with obstacles facing them, many of them qualitative studies on women in a particular workplace or country [e.g. 21, 32, 41]. Studies focusing on how women in the industry are discursively represented appear to be missing. An understanding of how women in the industry are perceived in terms of qualities and expected job contributions are likely to provide valuable insights into the work for a more gender inclusive workplace.

By analyzing what qualities and abilities women are associated with, and to map what concepts emerge when women in the industry talk about their workplace, the aim of this study is to add new perspectives to and knowledge about why female participation is persistently low in construction, and point to the power of language in both displaying, creating and reinforcing gender-biased structures and attitudes. Following Fältholm and Norberg [20], the analysis is based on documents retrieved from the web. Like Navarro-Astor et al.'s [41] study of women's career development in the construction industry, this study is not focused on a particular country or workplace, but focuses on the representation of women in the industry in general. To study how women are discursively represented, our study uses a combination of discourse analysis and a corpus linguistic methodology. This means that the documents analyzed were culled from the web on the basis of a number of selected search terms

or keywords (see Sect. 5). The results are thus to be seen as indications of discourses emerging as frequent or salient in documents not on beforehand selected by the researchers [7, 59]. Corpus linguistics is, as pointed out by Baker and Levon [7], a bottom-up approach starting with few hypotheses of what is likely to be found. In this sense it guards against ‘cherry-picking’ data to prove what can be expected and therefore intentionally selected and sought for [see also 25, 26, 60]. WebCorpLive, a search engine designed to enable analysis of web material, was used to retrieve the documents from the web and sort them for further analysis (see Sect. 5).

Gender in Construction

As mentioned, research on gender in construction has to a large extent focused on the masculine culture of the trade [e.g. 21, 28, 32, 42, 54]. Apart from showing that construction is a male-dominated industry, these studies have pointed at the existence of a particular gender hierarchy where notions of toughness and roughness play a crucial role in determining workers’ position in the hierarchy. In her study of the link between masculinity ideals and occupational health and safety in the Australian construction industry Iacuone [28] for example, shows that the hegemonic gender structure makes workers care little about their own, and other workers’ safety and well-being. Similarly, in a literature review of masculinity in connection to health and safety in high-risk occupations, such as construction, Stergiou-Kita et al. [54] found that traditional masculinity norms influence men’s health and safety negatively. Studies have also shown that workers have impeded the development of welfare and benefits in the industry such as amenities and annual leave, due to the idea that real construction workers tolerate harsh working conditions [27].

Other typical features of the masculine culture are objectification of women, heavy drinking, horseplay and larrikinism [28, 60]. In this male world, the presence of women, and men deviating from the prescribed norm, is shown to constitute a threat [15, 28, 42, 60]. If women and “weaker” men can do the job, as problematized in Ness’ [42] study, the glorified male culture falls apart. As a way of protecting and reasserting their masculine identity and power, men often respond with aggression and hostility towards “deviant” co-workers [14, 17]. Based on interviews with women in the UK building industry Wright [60] reports that sexualized workplace interaction is a persistent feature of construction sites, particularly in the manual trades [see also 16, 45, 56].

Research on women in the construction industry is less abundant, although an area of increasing interest [60] [see for example 15, 16]. Most studies so far have primarily focused on different types of exclusion women face [21, 32, 41, 60]. On a general level they report similar results. Women are excluded because of men’s fear of not being associated with the traditional masculine image of the trade. The forms of exclusion include everything from derogatory remarks and tests to show women’s incapability to perform a job in the industry to actual threats. Less direct ways of excluding women are shown in gender-biased selection criteria when individuals are hired [12, 15, 21, 41]. In a study of female engineers’ career progression in the Australian construction industry, Bryce et al. [12] found that it is common that female

engineers returning after maternity leave are allocated to professional roles that do not match their skills. Subtler ways of excluding women are also visible in practices where male workers try to protect women construction workers from physically demanding work tasks, as shown in Denissen's [16] study of how women construction workers manage gender identities in the US construction industry. Although such behaviors, often referred to as forms of benevolent sexism, may appear supportive, what they do in reality, as emphasized by Denissen, is that they contribute to the perception of women as individuals not really belonging in construction, and thereby the masculine definition of the work is reinforced and upheld. Studies have also shown that the demands on women are higher than those on men. Unlike men, women often have to prove that they are capable to perform a job in the industry [32, 41].

Exclusion has also been shown in studies of how male construction workers talk to each other. Baxter and Wallace [10] studied the spoken interaction of a group of white British male construction workers and concluded that one reason for the absence of women is that the "builders' discourse" is constructed in excluding ways. The way the male workers talked to each other indicated an active collaboration among them in constructing narratives of in-group and out-group identities, where the identity of the normative in-group was reinforced and maintained via derogatory remarks about workers falling outside this group. In their conversation, women were not mentioned at all. A conclusion made by Baxter and Wallace is that women are viewed as so unthreatening that they are not even part of the "out group".

Although many studies show that gender-biased structures and attitudes persist in construction and continue to inform it, changes are also reported. Changes in attitudes and values are shown in a study on perceived problems facing women in the South African construction industry [18]. Although the culture is reported as persistently male, the authors conclude that a positive shift in attitudes is taking place, particularly among younger workers. Similarly, Styhre's [55] study of gendered ideologies in the Swedish construction industry shows that old traditions glorifying the representation of the site manager as an omnipotent paternal figure is now problematized and subject to critique. The critique is again particularly noticeable among young workers. In a study of site operatives in the Australian construction industry, George and Loosemore [25] report that more inclusive and less dominant attitudes towards masculinity are visible. A potential explanation put forward by George and Loosemore is that values are adapting to changes in society overall.

It is, however, noticeable that even if the above-mentioned studies include examples of change, they also contain examples of extremely traditional gender perceptions. The belief of women and men as different by nature and therefore suited for different tasks is persistently visible in them. English and Hay [18], as an example, conclude that 'there has been increasing concern with the positive qualities that women can bring to the workplace as opposed to the male qualities they lack' [18: p. 158]. Women's abilities to listen and bring in softer skills, such as peacekeeping and politeness are mentioned as examples of what women are understood as likely to contribute with. The studies also show that the traditional male culture is to some extent accepted and even protected by many women. The women interlocutors part of English and Hay's [18] study, as an example, appear

to accept that they have to earn respect from their male colleagues. They also state that men will not change, if changes are to occur, they themselves need to change to fit in. In a similar fashion Agapiou [2] reports on women in the Scottish construction industry stating that females who want to work in the industry should 'be able to either laugh at or ignore some of the jokes that men may tell at work' [2: p. 703], or, as concluded by Madikizela and Haupt [33: p. 12], along with women gaining increased experience in the industry they become 'less sensitive to male dominance and discrimination'.

Gender: A Social Construction

The approach we take to analyze our data is based on the understanding of gender as a social construction done in interaction with others [58]. It means that gender is not constituted by nature, but seen as constantly reshaped and formed in ongoing processes [5, 58]. We identify ourselves daily with others as either male or female, where cultural clues such as clothing, behavior and language constitute important means of gender identification [49]. In this view, gender expectations are reflections of social norms and values, upheld and reinforced by daily actions and interactions between people in a variety of settings. Young females and males are treated differently due to social expectations and ideas of what it is to be a girl or a boy. Studies have, for instance, shown that girls are represented and expected to be quieter and more agreeable and understanding than boys [6, 43]. They are moreover more typically than males recognized for their appearance, often with sexual undertones [e.g. 13, 43, 49]. Such perceived gender differences and expectations have an impact on how young individuals perceive themselves, how they form their lives, and what choices they make, socially and professionally.

The identity of a job or profession in terms of gender is thus a construction based on ideas of what it is to be male or female, reinforced and upheld in daily practices [3, 5, 10]. In her article *Hierarchies, jobs, and bodies* Acker argues [1] that organizations are not gender neutral. Assumptions about gender is embedded in structures and processes used to construct organizations and thinking. Gender is not to be understood as something only brought into the organizations by their employees. Therefore merely adding the number of women in workplaces with an extreme low number of women is not likely to change how gender is done [30]. Women are still tokens in a male-dominated world [30]. If changes are to take place, the focus should, as argued by Acker, among others, be on organizational processes and organizational values and cultures [1, 14, 24]. The first step towards gender-equal workplaces is to make people aware of gender issues, and problematize the consequences of gender-biased structures.

Language a Powerful Tool to Study Discourses

This study draws on the conception of language as a powerful tool not only to show how people understand the world, but also maintain and reinforce their perceptions about phenomena and objects surrounding them [5]. The aim is to gain increased knowledge of gendered attitudes in the construction industry by analyzing and describing how women are discursively constructed, and what words and concepts appear as salient when they talk about their workplace. The term *discourse* is used in a variety of disciplines, in a number of inter-related, but sometimes somewhat different ways [5, 38]. Like Baker [5], we follow Foucault [22: p. 49], and focus on *discourses* in the sense of ‘practices which systematically form the objects of which they speak’ [5, 22]. One way to study the way an object is formed and understood is via language [5, 19]. By studying language and language contexts traces of discourses are likely to emerge, as pointed out by Baker [5].

A central concern in corpus linguistic studies is to study collocational patterns (words commonly found in close connection). Such patterns of representations have in the context of gender been used to show gendered attitudes and structures [6, 43, 46]. Pearce [46], as an example, investigated verbs and adjectives collocating with *woman/women* and *man/men* in the *British National Corpus*. Traces of a male power and activity discourse were shown in verbs associated with activity and strength collocating with *man* rather than *woman* as subject. As for women, the discourse of women as a social category was shown in words like *celibate*, *childless*, *fertile*, *heterosexual*, *married*, *unmarried* and *single*, which were considerably more common with *woman* compared to *man*.

The number of researchers employing a corpus linguistics methodology in discourse analysis is growing, and the method has been pointed out as both useful and promising. The above-mentioned study by Pearce [46] is one example. Others are Baker et al.’s [9] study of British news articles about refugees and asylum seekers, Baker and Levon’s [7] analysis of how different types of men are represented in British news articles, Schröter and Veniard’s [51] comparative study of migration in French and German news papers, and Norberg and Fältholm’s [44] corpus-based analysis of the representation of women in the mining industry (for additional examples, see for instance [8, 20, 29, 36]).

Method and Material

This study is based on data from the web. As known, the web includes billions of words and provides its users with continuously updated information [11]. To turn to the web as the primary source for this study was therefore considered both relevant and worthwhile, in particular for a study focusing on an entire industry with a global perspective [cf. 20].

The texts generated by WebCorp are from 2006 to 2017 and cover materials from a large variety of sources where women in the construction industry are

Table 1 Search phrases, number of hits and documents

Search phrases	Number of hits	Number of documents
Woman/women builder(s)	12/23	4/6
Woman/women in construction	6/74	3/19
Woman/women in the construction industry	2/15	2/28
Diversity in construction	17	7
Diversity in the construction industry	14	8
Female builder/builders	66/41	9/5
Female construction worker/s	149/76	22/18
Total	505	131

discussed, for example on-line newspapers, construction journals, materials from construction companies, unions and governments, women networks and blogs. The average length of the texts is between 3 and 6 pages, but there are examples of texts only one page long and texts up to 35 pages. The total number of documents is 131. They are mainly about women in management positions in the industry and less about women as site workers, possibly a reflection of the fact that there are fewer women construction workers [14, 41].

As mentioned, WebCorpLive was used to retrieve and sort the material from the web. It was constructed in 2000 as a prototype tool (at that time WebCorp) to enable linguistic studies of web data. It functions in the way that in response to a selected search string (a word or a phrase), WebCorpLive extracts concordance lines, that is, immediate surrounding contexts found across a variety of texts where the particular search phrase occurs, as illustrated below, where a part of the output for the phrase “female construction workers” is presented (for a more detailed technical description of its infrastructure see [11, 48]).

<https://www.theguardian.com/careers/careers-blog/2015/may/19/where-are-all-the-women-why-99-of-construction-site-workers-are-male> Text, Wordlist, text/html, UTF8 (Content-type), 2017-09-15

1. Holly Porter, who runs a networking group for **female construction workers**, Chicks With Bricks, explains: “The industry has
2. Is sexism; research shows that more than half of **female construction workers** said they were treated worse than men because of

As shown, the search phrase “female construction workers” is found two times in this particular document. All these examples can then be analyzed in context by clicking on the phrase. Apart from providing information about where a particular phrase or word is found, and how many times it occurs (the above example is only a part of the output for the phrase “female construction workers”, for the total number of occurrences of the phrase retrieved from the web, see Table 1), WebCorpLive makes it possible to establish collocational profiles of words, that is, recurrent or

common combinations of words found in close proximity of a particular search term (see Sect. 6 below). It is thus a powerful engine enabling analyses of web data. It should, however, be mentioned that WebCorp Live only treats results from a maximum of 120 webpages per search term, as a matter of processing speed [57]. It should also be mentioned, as pointed out by Fältholm and Norberg [20], that using web data has both advantages and disadvantages. It is of course positive to always retrieve updated information, but since information on the web is continuously updated, it also implies that text downloaded one day, may not be there, or has been slightly modified, on a later occasion.

The documents analyzed here were selected on the basis of fourteen search phrases, as presented in Table 1. These phrases were considered both general and specific enough to retrieve information about how women in the industry are represented [cf. 44]. To search for *woman*, *builder*, *worker*, *woman worker* or *construction worker* only would, for example, have given a result not specific for women in construction. *Diversity* combined with *in construction* and *in the construction industry* were chosen as search terms, despite the fact that they are not limited to gender, as it was made evident that the documents retrieved from the web on the basis of them mostly dealt with women. Searches were done in April and September 2017. It should be noted that in downloading the material some documents appearing when clicking on the search phrases only included links to other documents. Following Fältholm and Norberg [20], who conducted a similar study with a focus on gender diversity in mining, we decided to continue the search by clicking on these links until the information sought for was found. The documents downloaded on the basis of the search phrases were then carefully read with a focus on finding (1) references to qualities and abilities ascribed to women in the construction industry, and (2) what concepts or ideas emerge when women in the industry talk about their workplace.

Women in the Construction Industry

The first step in the analysis was to acquire information about the collocational profiles of the respective search phrases. They were established within a maximum of four spaces to the left and the right from the search terms (WebCorpLive, default range). They yielded some information of in what contexts discussions about women in construction typically occur. The phrases “woman in construction” and “women in construction” are often found together with words (number of hits in parenthesis)¹ like *awards* (17), *Wales* (7), *young* (5), *welcome* (5), *apprenticeships* (5), *home* (4), *association* (4), *Ireland* (4), *network* (4), *employers* (4), *OAEC* (3), *outstanding* (3), *resources* (3), *protective* (3), *workshops* (3), *leaders* (3) *winner* (2) and *youth* (1). Without further analysis of the contexts where these words occur, the profiles suggest that women in construction are important and sought for. Women entering

¹ Prepositions, conjunctions and personal names are not listed here, as they provide little information about women-in-construction discourses. The words *male*, *female*, *woman* and *women* were excluded for similar reasons. Apart from these words, the list of words is exclusive.

the industry appear to be young women, and those who have found a place in the industry seem to be outstanding individuals who are awarded various prizes for their achievements. The profiles also highlight networks in the women-in-construction discourse. “Diversity in the construction industry” and “Diversity in construction” provided a similar pattern. They occur together with words like *need* (4), *obstacle* (4), *better* (4), *gender* (4), *lack* (3), *inspiring* (3), *improving* (2), *boost* (2), *promoting* (2), *career* (2), *skill* (2), *sustainability* (2), *opportunities* (1), *inclusive* (1), *politics* (1), *champions* (1), *encouraging* (1), *help* (1), *developing* (1) and *awareness* (1). The phrases “woman in the construction industry” and “women in the construction industry” collocate with *discrimination* (6), *home* (4), *barriers* (2), but also *bridges* (2), *discussion* (2), *leaders* (2), *companies* (1), *number* (1) and *recruit* (1). This seems to suggest that there are challenges for women in the industry, but also discussions about ways to overcome them.

The words *woman*, *women* and *female* combined with *builder(s)* and *female* together with *construction worker(s)* showed a focus on women’s physical appearance. Recurring words found together with these phrases are *white* (54), *photos* (42), *portrait* (33), *sexy* (24), *young* (22), *blonde* (21), *images* (19), *helmet* (12), *smiling* (8), *wearing* (7), *looking* (7), *dress* (6), *hat* (6), *view* (6), *measurement* (5), *pretty* (4), *description* (4), *unique* (4), *gallery* (3), *collection* (3), *home* (3), *camera* (3), *pictures* (2), *big* (2), *advertising* (2). Most of these collocates are, however, found on web pages with photos and pictures of women and female builders, and less frequently in documents discussing women in the industry.

As mentioned, these profiles say something about in what contexts discussions about women in construction are likely to be found. To establish patterns of representations in connection to the research questions, an analysis of the entire documents was considered needed. This analysis was conducted manually by close reading of the 131 documents retrieved from the web. The study thus uses a combination of close reading of texts and analyses of language expressions found in connection with women in the industry. What follows is a presentation and analysis of the patterns of representation found across the documents. To highlight examples in texts culled from the web bold font was added.

The Overarching Discourse

The first observation in the analysis of the material tallies to a great extent with the patterns shown in the collocational profiles. A recurring theme is that there are many opportunities for women, and that the industry needs to understand the value of attracting ‘skilled female workers’, as shown in the first excerpt below (1), the words uttered by the managing director of an employment agency in the UK.

- (1) “Many construction companies have realised the value of skilled female workers and are actively recruiting and supporting women.”

<https://www.randstad.co.uk/job-seeker/areas-of-expertise/construction-property/women-in-construction/> (2016-04)

Another recurring theme is that increased female participation is necessary if the industry is to grow and be successful, as illustrated in (2). Women are important because they are likely to improve efficiency and the work environment of the industry, as shown in (3).

- (2) The integration and development of women in the construction sector needs to become a priority if we are to grow our industry and the country's economy. (<https://www.property24.com/articles/women-in-the-construction-industry/16127>) (2012-08-27)
- (3) We regularly employ women in roles from shuttering carpenter to groundworker. Experience has shown us that having a more gender diverse project site helps improve our efficiency and the work environment for everyone's benefit. <http://www.morrisroe.co.uk/our-careers/women-in-construction/> (2017-04-16)

On a general level, the possibilities for women are highlighted across the documents, and even described as endless, as communicated on the homepage of Women in Construction, Northern Ireland (<http://citbni.org.uk/Women-in-Construction-%281%29.aspx>). (September, 2017). But despite this seemingly positive discourse about opportunities for women in the industry, closer analysis of the material reveals that the message communicated to women is far from positive and clear-cut when it comes to expectations on them, and how they are perceived.

Qualities/Abilities Associated with Women

Qualities/abilities associated with individuals are likely to say something about how these individuals are perceived, and thereby also what the expectations on them are. This section lists and discusses qualities and abilities mentioned in connection with women found across the documents culled from the web. Some of them are qualities directly ascribed to women (*successful* and *conscientious*), whereas others are behaviors either defined as necessary for women to have (*to speak with authority*, *have problem-solving skills*), or understood as qualities women are expected to contribute with (*new ways of thinking*, *collaborative skills*). Close reading of the material resulted in two larger semantic groups: (1) Qualities/abilities associated with women in general and (2) qualities/abilities ascribed to women role models. The former group mainly consists of qualities women are generally perceived as lacking. The opposite qualities are thus indirectly understood as pertaining to the feminine. The latter includes qualities/abilities ascribed to women who have found a place in construction. Since the data includes a mixture of word classes, both individual words and whole phrases, few identical examples occur across the documents. Consequently, the lists of words do not include quantitative data, which is general practice in corpus linguistic analyses in particular when identifying collocational patterns. Phrases or words indicating the same underlying meaning associated with women occur however repeatedly across the data, and have been used to identify traces of the women-in-construction discourse [cf. 44].

Table 2 Qualities/behaviors/capabilities mentioned in connection with women

To succeed in construction women need to:

Have problem-solving skills, be strong, be fit, put [their] own ideas forward, speak from the heart, believe in themselves, stand their ground, have knowledge, be proud of what [they] do, speak with authority, state [their] position, [show] no emotion, like pressure or heavy responsibility, be sensible and practical, be calm, [show] authority, listen more and speak less, be conservative in[their] approach, have experience working with a team-based environment, enjoy being in charge, be ready to carry the load, [use] the word 'we', have dress sense, be good at [their] job, be more vocal, be prepared to take risks, have a smile on their faces, be prepared to join the banter, be 100 percent right, swear, have a thick skin, have a good sense of humour, be good enough, strong, prove [themselves], work harder [than men], work twice as hard, prove [their] ability

Qualities/abilities directly ascribed to women:

Abilities to multi-task and negotiate, show compassion and understanding, offer solutions to ease process[es], [endowed with] a female perspective

The phrases are not listed in any particular order

Qualities/Behaviors Indirectly Associated with Women

As shown in a number of general studies on typical characteristics ascribed to females and males [e.g. 6, 46], but also in studies with a particular focus on construction [2, 18], and other industries [44], the perception of women and men as different by nature is notable in the data. Perceived gender differences are primarily shown in descriptions where women are recommended to acquire certain abilities to fit in, as shown in Table 2. The underlying message in the contexts where these words/phrases are found is that there are certain qualities pertaining to the existing workforce, that is men, and to fit in women need to acquire a number of skills perceived as male. They need to ‘speak with authority’, as shown in the advice given by a South African quantity surveyor to women considering a job in the industry:

(4) “Absorb as much information as possible and **speak with authority** when the opportunity arises,” says Roji [...]“**Be calm and state your position with authority, not emotion, listen more and speak less.**” <https://www.property24.com/articles/women-in-the-construction-industry/16127> (2012-08-27)

A woman’s perceived inability to inspire power and authority is together with the idea of female subordination to men also shown in the excerpt, where the traditional perception of women as more emotional than men is mentioned [cf. 46], and where the recommendation to women working in the industry is to ‘listen more and speak less’.

The general advice, often given by other women, is, as communicated in (5), that women should remember that construction is after all a male industry [cf. 18]. Women therefore need to adjust their way of being to fit in and be accepted [cf. 44].

(5) **Stay away from using ‘I’, ‘me’ and ‘my’ too much rather ‘us’ and the word ‘we’ more often, as this is more acceptable in the male dominated industry.** <https://www.property24.com/articles/women-in-the-construction-industry/16127> (2012-08-27)

They are recommended to act in ways that are traditionally seen as male. If they can do this the ‘rewards are great’, as suggested in a women-in-construction blog:

- (6) “It is a position of power and you need to **be ready to carry the load and enjoy being in charge**. If you do not like **pressure or heavy responsibility** this is no the job for you, but the rewards are great when you compile and manage a successful team and project.” <http://www.makers.com/blog/women-in-construction-industry> (2015-11-30)

The perception of women as less assertive than men also comes forward in these examples. They need to remember to ‘believe in themselves’ and ‘put their own ideas forward’ [cf. 44], at the same time as they contradictorily are recommended to stay away from challenging men, as shown in (7), the recommendation of a MBAWC (Master Builders Association of the Western Cape) executive member.

- (7) When you know that you **are 100 percent right**, challenge your male counterpart, they hate being shown up at the best of time. [And] [...] while you are at it, do not score points by bringing your male counterpart down in front of a crowd. <https://www.property24.com/articles/women-in-the-construction-industry/16127> (2012-08-27)

There are also a handful examples in the material where women’s and men’s perceived differences are shown in qualities directly ascribed to women. These examples are more positive in the sense that they focus on what women can do rather than what they are lacking. The underlying conception is, however, that women and men are endowed with different qualities. Consequently, women entering the industry are believed to add qualities that the existing workforce does not have. They are, for example, believed to have a natural ability to ‘multi-task’ and be endowed with communicative skills [cf. 20] as illustrated in (8), the words of an American contract manager, who also, as illustrated in (9), suggests that women, unlike men or more than men, can ‘show compassion and understanding’.

- (8) “Be aware that you may have to work harder than the guy next to you for the same pay, but also know that you are well suited for your job based on your **natural abilities to multi-task and negotiate**,” she says. <http://www.makers.com/blog/women-in-construction-industry> (2015-11-30)
- (9) “I bring a new approach and attitude to project management than some of the men,” she says. “It’s an advantage being a woman when working with homeowners during construction. I can **show compassion and understanding** when they are going through the upheavals inherent to construction. They are more comfortable confiding in a woman when it comes to these project hiccups, and

that helps because **I can offer solutions to ease the process.**" <http://www.makers.com/blog/women-in-construction-industry> (2015-11-30)

There are, as suggested below on the home page of a contracting company in California, female as opposed male perspectives of things.

- (10) Her 27 years of experience as a designer and General Contractor coupled with a **female perspective**, provide her a deep understanding of how people use their homes, and a keen eye for creating inviting living spaces and wonderful curb appeal. <http://www.buildergirl.com/> (2017-04)

Apart from suggesting that there are differences in terms of what women and men are likely to contribute with, these examples show a connection between women and social skills. Women are represented as more understanding than men. They are able to show compassion for other people, understood as contributing with a better work environment, as shown above in (3), and more likely than men to possess communicative and collaborative skills, such as the ability to negotiate and offer solutions that will ease processes [cf. 20]. See also Kelan's [31] study of the construction of women in management literature, where it is argued that women are recruited because of their perceived feminine skills.

Qualities/Abilities Ascribed to Women Role Models

The qualities presented above are mainly ascribed to women not necessarily in construction, although discussed in a construction context, but understood as pertaining to women in general. There are also qualities directly ascribed to women, without indirectly comparing them with men. The majority of them are references to or descriptions of women represented as role models for young new comers.

As suggested in the collocational profiles of "woman/women in construction" in particular, and shown in Table 3, the achievements of women who have succeeded in finding a place in construction are paid attention to and highlighted. These women are typically represented as successful role models for other women. They are represented as the most 'talented female professionals'. They are 'remarkable' and 'pioneering women' full of enthusiasm and with a record of 'excellent career progression'. They are extraordinary individuals, as shown in (11–12), referring to two extremely versatile women in construction, who, apart from working full time, or more, manage to study part-time, and still have time for social activities, as shown in the first example, or, as in the second, to train late every night, do personal training early in the morning, and, as suggested in the heading of the article, have time for manicure every week.

- (11) As well as working full time and studying part-time, Alex has still found time to take part in the Little Britain Challenge Cup – the Annual Construction Sailing Regatta in Cowes. <http://citbni.org.uk/Women-in-Construction-%281%29.aspx> (date unknown)

Table 3 Qualities/behaviors/capabilities ascribed to women role models

They are described as:

The brightest and best female achievers, pioneering women, remarkable women, the building sectors most talented female professionals, [contributing with] great work and craftsmanship, [having] extensive abilities, pioneers in innovation, enthusiastic, reliable, conscientious, strong character[s], qualified, skilled female workers, recognizing excellence, rising stars, pioneering trades-women, inspir[ing], provid[ing] skills, passionate, [having] a positive impact, showing professional capabilities, [having] knowledge, [showing] passion for [...] [their] work, [showing] integrity, delivering quality solutions, resilient, driven, hard-working, forging a career for themselves, build[ing] better futures, creating a better construction industry, challenging stereotypes, creating new ways of thinking, taking the lead, [showing] responsibility, [having] excellent career progression, being positive role models, strong female ambassadors, self-motivated, strong passionate women, successful women, excellent role models, building a better country, inspir[ing], encouraging young people, striving to inspire, fantastic female role models, overcome[ing] barriers, build[ing] better futures, getting on and making choices, female achievers, seek [ing] out mentors, change agent[s], set[ting] a fine example for [other] women, set [ting] a fantastic example, challeng[ing] gender bias, changing the site culture, changing perceptions, driving for a change, challeng[ing] traditional assumptions, promot[ing] diversity, bring[ing] in new approaches and attitudes, changing traditional assumptions, young entrepreneurs, [individuals]making inroads into gender inequality, [changing]the ways guys are

- (12) I try to work a good eight or nine-hour day. [...] I also play rugby at an elite level [...] I train pretty much every night until 9 pm and do personal training every morning when I wake up at 5.50 am. (<http://www.telegraph.co.uk/women/womens-business/10320077/Meet-the-female-brickie-who-still-gets-her-nails-done-every-week.html>) (2013-09-19)

The accomplishments of these women are often found on homepages and in reports from events where they are awarded prizes for their achievements. It is made evident that these “ideal” women are special, not only because of their knowledge and skills, but because they have managed to enter and stay in the industry. They have ‘put themselves out there’ and have been identified as ‘the ones “to watch” as they get a foothold in the industry’, as illustrated in (13). They have managed to overcome the barriers in a male-dominated industry, even if ‘the journey is not an easy one’, as articulated by a woman construction workers in an interview on women in the South African building industry (<https://www.property24.com/articles/women-in-the-construction-industry/16127>). (September 2017)

- (13) The extensive PR campaigns showcasing the finalists is aimed at encouraging companies to employ and train more women in the sector and highlights the exciting opportunities for young women considering a career in construction. [...] The Awards categories will recognise those women who are **Pioneers in Innovation** within the built environment as well as identifying those “**Young entrepreneurs/rising stars**” - who have put themselves out there and have been identified as the ones “to watch” as they get a foothold within their sector. [http://www.womeninconstruction.co.za/\(2017-06-07\)](http://www.womeninconstruction.co.za/(2017-06-07))

Another phenomenon shown in the data is that women who have managed to find a place in the industry are not only likely to function as role models for other women, they are expected to change the gender-biased culture of the industry. They are likely to drive for changes in recruitment methods, change traditional perceptions and assumptions and in doing so not only contribute to a better site culture, but a better country, as illustrated in the following two examples:

- (14) There are senior women in the industry **setting fantastic example** and **driving for change** in recruitment methods and perceptions to encourage more women to enter the industry. (<http://citbni.org.uk/Women-in-Construction-%281%29.aspx> (2016-05-12))
- (15) It's on the back of your achievements – and thousands of other women beyond this room - that we're literally **building a better country** and **making inroads into gender inequality**. <https://www.gov.uk/government/speeches/championing-women-in-the-construction-industry> (2015-01-08)

Like the results presented in Mayes and Pini's [37] examination of the business case for employing women in the Australian mining industry, our material suggests that gender is all about women. Women alone are made responsible for changing the gender-biased culture of the industry, and contributing to a better country and world, while the rest of the industry is, 'exempted from any substantial/structural change' [37: p. 541]. The data also suggests, like the findings of Mayes and Pini's study [37], that the very presence of women is believed to contribute with better behavior among men, as expressed by a woman working as a carpenter at one of UK's leading concrete contractors:

- (16) 'It's the best site I've ever worked on. I feel welcomed and respected as both a woman and a carpenter. There are more women generally on site, and the increased visibility of women has **changed the way the guys are** with each other, as well as **changing the site culture** generally for the better.' [http://www.morrisroe.co.uk/our-careers/women-in-construction/\(2016-04-16\)](http://www.morrisroe.co.uk/our-careers/women-in-construction/(2016-04-16))

It is important to note that most of the qualities ascribed to these role models are, as shown in the table, rather general. They are skilled, knowledgeable, talented etc. without references to any specific skills needed in their jobs. It is also noticeable that these women's achievements are often compared to the achievements of other women. They are typically referred to as remarkable *women*, the brightest and best *female* achievers, and the most talented *female* professionals rather than just remarkable individuals.

Table 4 Words/phrases referring to gender-based discrimination

Discrimination, harassment, sexism, sexual discrimination, victimization, challenge, stereotype(s), prejudice, inappropriate comments or behavior, negative comments, lower pay, sexist, gender barriers, stereotyping, stereotyped, sexist remarks, sexist attitudes, biased attitude, gender pay gap, glass-ceiling, cat-calls, whistleblowing, wolfwhistle, whistles, bullying, assaults, threatened with rape, harassed, patronizing and belittling attitudes, intimidation, violence, second-guessed, not taken seriously, overlooked, ignored in group environment, treated worse than men, treated [poorly], demeaning comments, laughed at, isolated, not level, excluded from male conversations, pressured to fit in, given the cold shoulder, understood as assistants, passed over for promotion, paid less, commented on, lower wages, treated as a porcelain doll, unfriendly [attitudes], [called] hot lesbians, touched inappropriately, mocked, grabbed, intimidated with pretended sex acts, slapped on the bottom, pornographic pictures, old boys club, called useless, spastic and bimbo, looked down on, pushed to the side

Women and Discrimination

The previous section suggests that women who manage to enter the male-dominated world of construction are praised and paid attention to. By focusing on how women talk about their workplace, and mapping words referring to the workplace environment, additional information about the women-in-construction discourse was considered likely to emerge. As shown in many previous studies focusing on obstacles facing women in the industry [15, 16, 34, 45, 56], the pattern that emerged almost instantly indicated a close connection between construction and gender discrimination. Words like *harassment, sexism, discrimination, victimization* and *prejudice* occur repeatedly across the material. Some of these words are of course used to discuss improvements or simply to state that discrimination is no more or has declined, but most of them are found in contexts where it is shown that individuals not perceived as living up to the male norm are excluded and discriminated. These findings are congruent with a survey of the UK construction industry, conducted in 2017, (building.co.uk) where it was found that 73% of female engineers have experienced sexual discrimination, harassment or victimization at work some time in their careers.

Words/phrases referring to discrimination or discriminatory attitudes are listed above in Table 4. The list includes both actual words for discrimination but also references to how women are treated, such as *paid less, laughed at* or *touched*. As shown, the forms of exclusions together with actual words for discrimination are varied and many. They include examples of women reporting that they are ‘not taken seriously’, ‘excluded from male conversations’, mocked and met with ‘subtle sexism’, as shown in examples (17) and (18). The first one the words of a South African construction workers, and the second, those of a young Notre Dame graduate.

- (17) Apart from the fact that the industry is still male dominated, she points out that women are often **second-guessed, not taken seriously** and even plain **ignored in a group environment**. (<https://www.property24.com/articles/women-in-the-construction-industry/16127> (2012-08-27)).

- (18) A female office engineer describes subtle **sexism** of the industry: “Even after attending a male-dominated science and tech high school and completing a male-dominated civil engineering major, it was only once Caroline, a 2014 Notre Dame graduate, started working that she felt surrounded by an ‘**old boys club**’ — the air clouded with off-handed, subtly **demeaning comments** toward women in general”. <http://www.makers.com/blog/women-in-construction-industry> (2015-11-30)

Bullying and ‘verbal harassment’ by drunken males are additional examples of overt discrimination female construction workers face at work, as shown in (19), the reported words of a Cambodian construction worker.

- (19) Unlike my friends who work in factories, I prefer working in construction as my whole family is here with me. Yet despite being close to my loved ones I face verbal **harassment** from male co-workers when they are drunk at night. (<http://www.bbc.com/news/in-pictures-39102989> (2017-03-13))

Example (20) is an excerpt from a report on the serious abuse a female construction worker suffered at a workplace in Melbourne.

- (20) The Victorian Supreme Court heard that between August 2008 to July 2010 fellow workers **threatened her with rape, touched her inappropriately** and **mocked** her about sex toys and sexual acts (<http://www.abc.net.au/news/2015-12-17/female-construction-worker-awarded-1.3m-sexualharassment/7039062>).

There are also a number of contexts where discrimination is the case, but no particular word for it is used. To ask a woman who is applying for a job, if she is calling on behalf of her husband is one such example, as illustrated in (21), or as in (22) belittling comments concerning women’s physical appearance, or statements questioning women’s presence in the industry. Both examples come from an article about gender and construction in The Guardian, problematized in relation to the huge demand on female builders.

- (21) “Ninety seven percent of all jobs on building sites are recruited by word of mouth and personal recommendation. Only 3% are advertised, and when women apply, they are often given the cold shoulder. “One woman rang about a bricklaying job,” Procter says, “and was asked, “Are you applying on behalf of your husband, love?”” (<https://www.theguardian.com/world/2006/aug/14/gender.uk> (2006-08-14))
- (22) “The worst moments,” says Sheridan, “are when men say to you, “Don’t break your nails, love,” or, if we are gutting a kitchen, ‘Shouldn’t you be cooking in

this, not building it?” (<https://www.theguardian.com/world/2006/aug/14/gender.uk>) (2006-08-14)

The focus on women’s physical appearance, many of them with sexual undertones, is also shown in the collocational profile of “woman/women builders.” See also Wright’s [60] study where it is reported that appearance and dress constitute a common concern for women in construction, and where fitting in in terms of appearance is seen in relation to the male norm.

Like the examples found in Denissen’s [16] study of how women in the US construction manage gender identities at work, there are also examples in our material showing that women are understood as in need of more help than other workers, as shown in the words uttered by a female American ironworker:

- (23) Ambra Melendez, a [sic] ironworker [...] [reports] that she often feels like men **treat women as delicately as a ‘porcelain doll’**. ‘When it comes to me lifting things, I sometimes have to push [men] out of the way and go and do it. [...] ‘I have to constantly show them that I can do this before they take it away from me.’ (http://www.huffingtonpost.co.uk/entry/female-construction-workers-hard-hatted-women_n_5978464) (2014-01-01).

As stated, such acts may appear positive, but in the long run they reinforce ideas that women are deviant workers not strong enough, physically or otherwise, to work in the industry.

To compensate for demeaning attitudes or feelings of not being “real” workers, there are a number of examples in the material of women stating that they constantly need to prove their ability (these examples as listed in Table 2 together with other abilities women need to have to succeed in the industry). To be accepted they overcompensate and work harder and even twice as hard as men, as shown in the following three excerpts. The words of women from three different construction sites in the world.

- (24) “I do feel a sort of inherent **need to prove everyone** else that I can keep up with the demands of the job,” Caroline says. “It’s a macho´ industry where everybody works long hours and nobody wants to admit any weakness, [...]” (<http://www.makers.com/blog/women-in-construction-industry>) (2015-11-30).
- (25) The Somali women are preferred more than the Somali men because we **work harder** and are more reliable. (<https://www.tumblr.com/search/female-construction-worker>) (2014-01-01)

- (26) As a woman one constantly has **to prove one's ability** – having to **work twice as hard** as the males. (<https://www.property24.com/articles/women-in-the-construction-industry/16127>) (2012-08-27)

Altogether, the recurrence of similar expressions and statements clearly shows that discrimination is a serious issue in construction. Like the examples presented in the section above, women alone seem to be responsible for changing biased gender attitudes. Women should seek support by other women in women's organizations and report misbehavior, otherwise 'company leaders don't see a problem and don't do anything to correct behaviors' (<http://www.triplepundit.com/writers>). Women alone are understood as responsible for the upbringing of their children. They 'need to take a stance and teach [...] [their] children differently' (<https://www.property24.com/articles/women-in-the-construction-industry/16127>), as discussed in an article on women in the South African construction industry.

Discussion and Concluding Words

This study has analyzed how women in construction are discursively represented in materials produced by actors in the global construction industry. It has been shown that stereotypical notions of what constitutes the feminine contribute to perceptions of women as not really belonging in the industry. By mapping and analyzing qualities and abilities mentioned in connection with women two categories of description emerged from the material: women in general and women role models. The historical perception of women as passive, more emotional and less assertive than men is made visible in the first category. The message is that there are certain qualities that women need to acquire to succeed in the industry. The latter category includes qualities ascribed to women who have found a place in construction. These women differ significantly from the representation of women in the first category. They are represented as extremely successful and hardworking. They are examples other women need to follow. It is, however, made evident that what these role models or "ideal" women are expected to contribute with goes far beyond what is part of the actual job in construction. As role models for other women, they are not only likely to work twice as hard as men to show that they fit in, they are also expected to change the male culture of the industry and contribute to a better work environment [cf. 37].

Another striking finding is that sexual harassment is a recurring theme when women talk about their workplace. References to forms of exclusion together with actual words for discrimination occur repeatedly across the documents, showing that gendered and sexualized interactions persist in the industry, despite laws and regulations to prevent them. Wright [60] reports that professional women do not seem to be subject to the same degree of sexual harassment as those in non-professional trades. One reason for this, as problematized by Paap [45], is that the greater the physical distance from the corporate headquarters is, the easier it is to ignore formal policies [see also 50]. Considering that this study includes

more examples of women in professional than non-professional trades, the results appear as even more noteworthy.

The present study has shown that corpus linguistic methods can contribute with valuable information in discourse analysis. Recurring words and phrases found in connection with women in construction have been used as indications of how people in the industry conceptualize and treat women workers. It has been shown that what on the surface may be understood as indications of a more gender inclusive workplace environment may be misleading. Although the overall message in the material is that there are many opportunities for women in construction, closer analysis of recurring words used to define and talk about women in the same material, quite contradictorily shows that the most persistent conception of the industry is that it is a sexualized workplace infused with traditional notions of what constitutes feminine and masculine behaviors and abilities, and where the masculine constitutes the norm. Such patterns of representation may perhaps not be equally likely to be found in individual documents on beforehand selected [35]. Although this study is based on a rather limited number of documents, the results are nonetheless indicative of commonly realized women-in-construction discourses.

There are indeed examples of women in the material investigated who report that they enjoy their jobs and their co-workers, but in light of the extreme visibility of examples of sexual harassment across the documents together with the conception of women as not really having the “natural” abilities for a job in the industry [cf. 2, 18], it is likely that the industry will continue to be one of the most gender-segregated industries in the world. If the construction industry is to succeed in attracting women, and also other workers deviating from the existing male norm, gender is an issue that needs to be taken seriously. Although there are reported improvements in this respect, conflicting discourses and messages concerning female participation need to be made visible and problematized among *all* workers. Gender equality cannot, as has been shown, be a woman’s issue that will be reached by means of increasing the number of women in the industry with the expectations that the women entering the industry will change the culture and even civilize men.

This study is a contribution to the increasing number of studies using linguistic methods to study gender in discourse analysis. Since gender appears to be a serious issue in the construction industry, further similar studies are encouraged. This study has presented findings from documents in English. It is possible that data including other languages would have yielded a somewhat different result. Future studies covering data in other languages than English are therefore encouraged. Our study has provided indication on how women in the construction industry are perceived worldwide. Future studies could include in-depth analysis of how women are discursively represented in individual workplaces or countries. Further studies could focus on the representation of gender in a particular text type, e.g. on-line newspapers or homepages. Corpus-linguistic methods could also be used to explore the representation of men and their experience of the workplace both on a national and international level.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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