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The Impact of Sexism on Leadership in Female-Male Climbing Dyads

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Supplementary Materials: Data, Materials [see [Index of Supplementary Materials](#)]



Abstract

We investigated how sexism affected leadership in mixed-gender alpine climbing-dyads. We asked whether benevolent sexism would impair, and hostile sexism would increase (as a form of resistance) women's leadership; and whether benevolent sexism would increase men's leadership (as a form of paternalism). A correlational study assessed reported leading behaviour of alpine climbers. Then a vignette-based experiment presented climbers with cross-gender targets, of which three were sexist (non-feminist), and one feminist (non-sexist), and assessed leading intentions depending on targets' and participants' gender attitudes. Findings showed that women endorsing benevolent sexism indicated lower leading intentions with targets expressing benevolent sexism (i.e., benevolent and ambivalent men) as compared to hostile sexist men. Moreover, women's benevolent sexism negatively affected their leading intentions with men endorsing the same gender ideology. Unexpectedly, women with low endorsement of hostile sexism reported higher leading intentions with a hostile sexist man than an ambivalent one, and with an ambivalent than a benevolent man. Conversely, men intended to lead more with female targets who expressed benevolent sexism, accommodating these women's expectations. Further, men intended to lead more with ambivalent women, than with women deviating from gender stereotypes (i.e., feminist women, or hostile sexist women – who lack expected benevolence based on gender stereotypes). We conclude that benevolent sexism likely reinforces traditional gender roles in a leadership context when men face women who fit the gender stereotype; and when women are benevolently sexist, themselves. Moreover, low hostile sexist women confront men's hostility with higher leading intentions, as a form of resistance.



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Keywords

ambivalent sexism, benevolent sexism, feminism, gender roles, alpine climbing, leadership, confrontation

Gender inequalities persist in society and in particular in male-dominated domains such as leadership (Barreto, Ryan, & Schmitt, 2009). Sexist ideology sees men in control and women as followers. The embracement of such asymmetrical arrangements by both women and men is rooted in the ambivalent nature of gender relations. In the present research, we were interested in the impact of the two subcomponents of ambivalent sexism on women's leadership aspirations. We investigated two broad questions: a) whether men's and women's *benevolent* sexism (BS) would undermine female leadership and promote male leadership, and b) whether men's *hostile* sexism (HS) would increase female leadership, as a form of resistance to men's claims of superiority. In particular, the following studies investigated the impact of gender relations in alpine climbing, which is a masculine discipline (Ottogalli-Mazzacavallo & Saint-Martin, 2009; Runggaldier, 2011) with only ten percent female participation (Austrian Board of Trustees for Alpine Safety, 2011). It thus provides a relevant background to study the influence of sexism on interdependence of men and women in a context outside of romantic relationships where it is usually studied (e.g., Hammond & Overall, 2015). Moreover, it allows studying sexism in the context of leading, a topic that is understudied in the literature (exceptions are Barreto, Ellemers, Piebinga, & Moya, 2010; Rollero & Fedi, 2014). We first examined how sexism affected men's and women's reported leading behaviour in female-male climbing dyads (Study 1). As in real-life situations, such decisions depend on both the climber's and their partner's attitudes, we then took a dynamic approach. In an experiment we looked at how gender attitudes of both partners in female-male climbing dyads impacted leading intentions of women and men (Study 2). Below, we outline our rationale based on the previous literature on sexism and leadership.

Gender Roles and Sexism

Men are traditionally found in high-status positions, whereas gender roles prescribe subordinate or submissive positions for women (e.g., Eagly & Diekmann, 2005; International Labour Organization, 2011). Such status differences are maintained through gender ideologies such as sexist attitudes (Sibley, Wilson, & Duckitt, 2007). These must not always be hostile in nature. One particularity about gender relations is (compared to other minority-majority relations) that they are marked by interdependence that can help legitimize status differences by emphasizing positive affectionate attitudes and patronizing behaviours such as protection and care of men towards women (Jackman, 1994; Rudman & Glick, 2008). This was theorized in ambivalent sexism theory (Glick & Fiske, 1996), which divides sexist attitudes into two types: HS, a traditional and clearly negative type, which overtly expresses women's inferiority to men; and BS, a subtler type, which is

more positive in tone and underlines women's inferiority to men in a less aggressive way by expressing protective and paternalistic beliefs towards women.

Research has demonstrated that women's reactions towards these forms of sexism differ as a function of the type of sexism, but also women's own beliefs. In general, hostile sexist justifications are more easily contested than benevolent sexist ones (Becker & Wright, 2011; Moya, Glick, Expósito, de Lemus, & Hart, 2007). For instance, when negative gender stereotypes were explicitly activated, they triggered a reactance motivation in women resulting in more aggressive and successful use of negotiation strategies compared to men (Kray, Reb, Galinsky, & Thompson, 2004; Kray, Thompson, & Galinsky, 2001). Thus, although HS is meant to align women with the expectations of gender hierarchies, women tend – at least in more egalitarian societies – to oppose this type of sexism.

At the same time, the benevolent aspect of sexism is particularly difficult for women to resist, as it has a positive flattering tone that makes it difficult to recognise as sexist (Barreto & Ellemers, 2005; Becker & Wright, 2011; Kobrynowicz & Branscombe, 1997). Women themselves might endorse sexist beliefs, and be reluctant to give up the “benefits” that BS provides them (e.g., protection, admiration, and help), thereby contributing to maintaining the gender hierarchy (Hammond, Overall, & Cross, 2016; Shnabel, Bar-Anan, Kende, Bareket, & Lazar, 2016). Hence, BS has a strong potential to affect women's behaviour, hinder their performance (Dardenne, Bollier, & Dumont, 2007; de Lemus, Spears, & Moya, 2012; Moya et al., 2007; Vescio, Gervais, Snyder, & Hoover, 2005), and make them seek dependence rather than autonomy (Shnabel et al., 2016). Such effects are particularly strong for women who endorse BS themselves (Moya et al., 2007). Moreover, BS is often used to mask the negativity of HS, which would be resisted by women, resulting in *ambivalent* sexism, the expression of BS and HS simultaneously (e.g., Barreto & Ellemers, 2005; Swim, Mallett, Russo-Devosa, & Stangor, 2005). Ambivalent sexism is more prevalent than univalent sexism, and strong sexist ambivalence promotes justification of the patriarchal system (Sibley & Becker, 2012).

Sexism and Leadership

In the present research, we focus on the impact of different types of sexism on leadership in female-male dyads. Men are more likely to emerge as leaders than women (Dobbins, Long, Dedrick, & Clemons, 1990; for a meta-analysis, see Eagly & Karau, 1991), especially in tasks framed as masculine that make men appear more competent (Ho, Shih, & Walters, 2012; see also Messe, Aronoff, & Wilson, 1972). Thus, congruency between the leader role and gender stereotypes facilitates male leader emergence (Eagly & Karau, 1991) and exposure to gender stereotypes undermines women's leadership aspirations (Davies, Spencer, & Steele, 2005). For example, women confronted with BS emphasized relational characteristics, while deemphasizing task-related characteristics, which are linked to the leader stereotype (Barreto et al., 2010). Moreover, these women expected

a benevolent sexist man to be a better leader than they themselves in a collaborative context. Finally, [Rollero and Fedi \(2014\)](#) showed that women indicated lower leadership aspirations after reading about a public opinion study that described benevolent sexist attitudes, compared to one where public opinion was described as hostile sexist. Overall these findings suggest that exposure to BS can undermine women's self-description with typical leadership traits, as well as their leading intentions. Building on this previous research, we went one step further and investigated the dynamic impact of participants' own sexism in response to perceptions of their partner's sexism in a leadership context. Furthermore, we examined the influence of BS and HS against women on both *women's* and *men's* leadership aspirations.

Dynamic Gender Relations

Previous investigations of mixed-gender dyadic negotiations suggest that stereotypes expressed by a male interviewer affect women's performances. For instance, the expression of explicit negative stereotypes increases women's success in negotiation motivated by stereotype reactance ([Kray et al., 2001, 2004](#)). However, research showed that implicitly measured negative competence stereotypes in mixed-gender settings had a detrimental effect on women's performance; for women themselves via stereotype assimilation, and for men through lower evaluations of women ([Latu, Schmid Mast, & Stewart, 2015](#)). Moreover, when explicit verbal dominance was paired with non-verbal (implicit) benevolence, it triggered submissive behaviours in women ([de Lemus et al., 2012](#)). The opposing effect of more explicit expressions of stereotypes and the undermining effect of subtle stereotype cues was shown in a leadership context (e.g., [Hoyt & Murphy, 2016](#)). [Hoyt, Johnson, Murphy, and Skinnell \(2010\)](#) found that blatant stereotype threat increased women's perceived performance, whereas when explicit threat was coupled with subtle threat (solo status), it provoked stereotype vulnerability. However, these lines of research did not look into the dynamic of gender attitudes between both sides of the negotiation table, nor did they explicitly measure women's leading intentions.

The only investigation of dynamic gender relations that we are aware of concerns attractiveness ratings of cross-gender profiles in the context of romantic heterosexual relationships ([Bohner, Ahlborn, & Steiner, 2010](#); [Montañés, de Lemus, Moya, Bohner, & Megías, 2013](#)). These studies indeed showed that women preferred benevolent sexist intimate partners, compared to hostile and neutral ones. Moreover, this trend was reinforced by participants' own sexism, such that benevolent women felt more attracted to benevolent men, hostile women to hostile men, and vice versa. However, heterosexual preferences may be very different from preferences in non-romantic relationship settings, where competence and collaboration – rather than attractiveness – are in the foreground. Moreover, women who voluntarily join a masculine context, such as leadership, likely have to resist and counter HS. However, they may still be tricked by the subtle expressions of sexism through BS.

In the present research, we focused on the impact of sexism on leadership aspirations in a mixed-gender setting where we also considered participants' own attitudes. We argue that leading intentions in a masculine context where competence plays a role (i.e., alpine climbing) can be strategically motivated by the intergroup setting. The strategy chosen should be determined by an individual's own gender attitudes, and in response to the attitudes perceived in the person with whom they interact. By agreeing or disagreeing with their partner's sexist expectations, a person can show acquiescence or reactance through expression of weaker or stronger leading intentions. Acquiescence would most likely emerge when the partner's beliefs are in line with one's personal beliefs. Thus, when a male partner expresses BS, women would reduce their leading intentions if they also endorsed BS. However, acquiescence might also emerge as a form of complementarity based on assuming traditional roles (i.e., de Lemus et al., 2012). For example, a strategy of acquiescence would be for a man to take the lead if a female partner is benevolently sexist, and she thus expects him to take a protective role by leading. On the contrary, a female climber could decide to do exactly the opposite of what a hostile sexist man expects her to do if she perceives that her identity or freedom are being threatened (i.e., reactance motivation; cf. Brehm, 1966). Women should thus be likely to confront hostile sexist men who question their competences (e.g., Becker & Wright, 2011).

Finally, previous research (Bohner et al., 2010) used a low-sexist control group as a comparison standard, but this comes with the limitation that it is not clear whether participants imagined a low sexist person as someone who had pro-egalitarian attitudes, or someone who did not have any opinion on gender relations at all. Also, although there is evidence that feminism predicts leading intentions in women (Leicht, Gocłowska, Van Breen, de Lemus, & Randsley de Moura, 2017), to our knowledge no research has investigated the influence of feminist attitudes in the context of leadership from a dyadic perspective. Thus, in contrast to previous research, which only compared different types of sexism or the absence of sexist attitudes, we also analyse the impact on leadership intentions of feminist attitudes which convey gender egalitarian views, thus actively resisting sexist views. Feminist beliefs are related to sexism awareness in women as well as men (Swim, Hyers, Cohen, & Ferguson, 2001). Perceived feminist attitudes in men can have positive effects on women's self-confidence and reduce stereotype confirmation (e.g., Cihangir, Barreto, & Ellemers, 2014). Hence, men with feminist attitudes can have a positive impact on women's leading intentions, or at least allow women to rely on different factors (e.g., competence) to decide whether to lead.

The Present Research

Building on the aforementioned previous research, we had three aims. First, we investigated the influence of BS and HS in their isolated forms, but also their joint impact in the form of ambivalent sexism, which women judge as a more typical expression of

sexism in more egalitarian societies nowadays (Bohner et al., 2010). Second, we examined the influence of BS and HS against women on both *women's* and *men's* leadership aspirations. And finally, we were interested in the dynamic impact of participants' own sexism in response to perceptions of their partner's sexism.

The present research studied these questions in female-male dyads in alpine climbing, which is a highly masculine context. Performance in mountaineering is stereotypically linked to male superiority in traits that are considered prototypically masculine, such as physical strength (Messner, 1988), courage, and risk-taking attitudes (Koivula, 2001). Historically, women have been largely kept out of mountaineering under the pretence of "protecting" them (Runggaldier, 2011), and due to the supposed incompatibility of mountaineering with motherhood (Frohlick, 2006).

Alpine climbing provides a leadership context where clearly complementary hierarchical positions are taken. In an alpine climbing dyad, one person must be the leader, the other the follower. The leader climbs up first, tied to a rope which in turn is connected to the follower below the lead climber. The leader searches the itinerary and fixes protection equipment onto the rock to which the rope will be attached to secure the team. The leader takes higher risks because in the event of a fall s/he may fall several meters until the last piece of protection stops the fall. The follower climbs up after the leader and is thus protected by the rope fixed above. S/he can be helped by the leader who takes in the rope. A fall usually consists of a few centimetres until the rope is fully stretched. These two roles are consistent with gender stereotypical traits and activities (e.g., Eagly & Karau, 1991). The leader is in a helper position and can thus exercise power and authority over the follower, who in turn may appear to be subordinate and dependent (see Nadler & Halabi, 2006). Thus, we expect that ideological factors such as sexist beliefs should moderate female and male climbers' leading intentions. Even though female climbers have broken with tradition and are acting in a counter-stereotypical way by entering a masculine field, they may opt for roles within this system that fit stereotypical expectations, thereby avoiding conflict. In this way, sexist beliefs may undermine the logic of expertise ("The better climber leads"), such that priority is given to the application of protective gender roles.

Hypotheses

As women's leadership may be affected by their own attitudes but also by their partner's attitudes, we investigated both women and men.

Women's response to male partners' sexism — According to our discussion of gender dynamics and leadership, women should be disarmed by the apparent kindness of men's BS and thus accept the follower role more easily when their male counterpart expresses BS (Barreto et al., 2010). However, women's own BS should modulate such effects. Women who share benevolent attitudes were shown to be particularly prone to

buying into benevolent sexist men's restrictions (e.g., Moya et al., 2007). A woman who self-stereotypes as needing to be protected by men (i.e., high in BS) should thus be more likely to engage in behaviour that aligns with gender expectations expressed by the male partner. Thus, Hypothesis 1 concerns women who endorse BS (compared to those lower in BS):

We first argue that both benevolent sexist (i.e., high BS, but low HS) and ambivalent sexist encounters (i.e., high BS and HS) should lead to similar reactions because BS blurs the awareness of the discrimination in the case of ambivalence. We expected no differences for women high in BS between leading intentions with ambivalent and benevolent male partners, as in both, perceived benevolence should drive intentions, and thus lead to similar outcomes (H1a).

Moreover, women confronted with a hostile sexist man (i.e., high HS, but low BS) should perceive that their freedom is being threatened by men's blatant sexism and thus they should be motivated to confront it by demanding to lead, as a way to counter men's discrimination. Thus, we predict that women high in BS should respond with lower leading intentions with an ambivalent as compared to a hostile man (H1b).

In contrast, women who climb with a feminist non-sexist man may decide on their leadership intentions based on other factors unrelated to gender (e.g., competence) as they just assume an egalitarian role in the female-male dyad. Thus, we expected women high in BS to have lower leading intentions with an ambivalent than a feminist man (H1c).

Men's response to female partners' sexism — Women who contradict gender stereotypes can experience backlash reactions by men. This applies to women who threaten the gender hierarchy through the expression of feminism (Good & Rudman, 2010) and hostile sexist women who violate gender expectations of niceness and benevolence (Prentice & Carranza, 2002). These women may thus not be considered eligible for men's protection. Therefore, men would tend to lead less with them. Ambivalent sexist women should be deemed worthy of protection because they do not violate the benevolent stereotype prescription.

Therefore, we expect that male participants will not express different leading intentions with female partners who endorse ambivalent sexism as compared to BS (H2a). We expected stronger leading intentions with ambivalent compared to hostile (H2b), or feminist women (H2c). Finally, men's leading intentions with women should be stronger the higher their BS (H3).

In order to examine these dynamics, in Study 2 we experimentally manipulated partners' levels of sexism and examined participants' leading intentions as a response to these. Study 1 had three goals. First, we explored relationships between sexist attitudes and climbers' reported leading behaviour. Second, based on the original Ambivalent Sexism Inventory Scale (ASI, Glick & Fiske, 1996), we developed an ambivalent sexism

measure, which is context specific by being related to alpine climbing (ASic). Such beliefs are more relevant for the task itself; therefore, it is more probable that these are the kind of assumptions that influence people's choices in a real climbing situation. And third, it served to get representative sexism and feminism scores in the alpine climber population for the target profiles in Study 2.

Study 1

Method

We sent a weblink to an online survey in German to members of Austrian Alpine Clubs and asked them to forward it to climbing partners. We explicitly mentioned that the survey was on mountaineering and gender, and made an effort to reach women.

Ninety-two climbers voluntarily took part in the survey (51 women; $M_{\text{age}} = 37.07$, $SD = 12.00$; age range: 17 to 74 years old). All responses were used to develop the climbing-specific scales. However, only a subsample of $n = 82$ alpine climbers who had both male and female partners (36 men: $M_{\text{age}} = 39.47$, $SD = 11.06$; 35 women: $M_{\text{age}} = 39.11$, $SD = 13.71$) were included in the exploratory correlational analyses. (Two male and nine female alpine climbers indicated that they only climbed with either male or female partners and were thus excluded from these latter analyses.)

Participants responded to the following measures in the presented chronology, as well as socio-demographic questions (age, gender) at the end.

Climbing-Specific Sexism

We developed 13 items with a response format ranging from 1 (*completely disagree*) to 7 (*completely agree*; see top three sections of Appendix A, Table 1, in the [Supplementary Materials](#)). Items from the ASI (Glick & Fiske, 1996) were reframed for a climbing audience. Five items addressed climbing-specific HS (HSc; Cronbach's $\alpha = .79$, e.g. "When climbing with women, men have to resolve any difficult situations"), and eight items addressed climbing-specific BS (BSc; $\alpha = .79$; e.g., for benevolent paternalism "In the event of a helicopter rescue in the mountains, women should be flown out first", and for complementary gender differentiation "Male climbers are more adventurous, and female climbers more cautious"). We did not include items referring to heterosexual intimacy, as this was not relevant for leadership.

Climbing-Specific Feminism/Awareness of Discrimination

We constructed four items that addressed core aspects of feminist attitudes, perceived discrimination, and subordination of women (Morgan, 1996), in a climbing context (e.g., "Women still experience sexism in the climbing world"; see bottom section of Appendix A, Table 1, in the [Supplementary Materials](#); $\alpha = .77$).

Expertise

Expertise was measured by asking participants to indicate the highest climbing grade they had led in alpine climbing, without falling or pausing (i.e., sitting) on the rope. They indicated their expertise on the international climbing-grade system, with lower scores indicating lower expertise and higher scores higher expertise. Climbing grades were summarized in five ranges where “no leading” was coded as lowest expertise. The measure of expertise is self-reported but should still be a fairly reliable reflection of climbing competence. Climbers can only reach the top of an alpine route if they have the capacity.

Past Leading Behavior

The frequency of leading was measured by asking participants, on two separate scales, what percentage of pitches they had led when climbing with a male or a female partner (11-point scales from 0% to 100%, with 10% intervals).

Ambivalent Sexism

Finally, participants filled in the German version of the ASI (Eckes & Six-Materna, 1999; BS: $\alpha = .86$; HS: $\alpha = .93$).

Scale-Testing

Factor Analyses

To confirm that BSc, HSc, and feminism could be treated as separate constructs, we conducted a factor analysis including the ASIc and the feminist items. The Bartlett Test of Sphericity, $\chi^2(136) = 570.93$, $p < .001$, and a KMO index of .79 both indicated that the covariance structure was suitable for factor analysis. A principal axis factor analysis with Promax rotation suggested a four-factor solution with Eigenvalues over 1. The first factor (4 items, protective paternalism) explained 29% of the variance, the second factor (4 items, feminism) explained 16% of the variance, the third factor (5 items, HSc) explained 9% of the variance, and the fourth factor (4 items, complementary gender differentiation) explained 8% of the variance. All factor loadings were $> .51$ (see Appendix A, Table 1, in the [Supplementary Materials](#)). The two BSc sub-factors, protective paternalism, and complementary gender differentiation, were correlated, $r(90) = .41$, $p < .001$; the eight items were averaged to form a single index of BSc.

Correlations and Gender Differences

Consistent with prior research using the ASI (Glick et al., 2004), HSc and BSc were positively correlated, $r(90) = .558$, $p < .001$, 95% CI [.399, .684]. Significant correlations between the ASIc and the original ASI subscales supported the construct validity of the climbing-specific scale, HSc – HS: $r(90) = .454$, $p < .001$, 95% CI [.275, .602]; HSc –

BS: $r(90) = .428, p < .001, 95\% \text{ CI } [.245, .581]$; BSc – BS: $r(90) = .560, p < .001, 95\% \text{ CI } [.402, .686]$; BSc – HS: $r(90) = .412, p < .001, 95\% \text{ CI } [.227, .568]$). Correlations for each gender are displayed separately in Appendix A, Table 2, in the [Supplementary Materials](#).

Analyses on gender differences on the scales revealed that overall, male participants expressed significantly higher levels of sexist attitudes than women (see Appendix A, Table 2, in the [Supplementary Materials](#)). Surprisingly, there were no gender differences on the feminist scale, $F(1,90) = 1.159, p = .285, \eta_p^2 = .013, 95\% \text{ CI } [-.825, .245]$. For male climbers, feminist beliefs and BSc were positively related, $r(39) = .435, p = .005, 95\% \text{ CI } [.148, .654]$, suggesting that they confused their protective and patronizing behaviours towards women in climbing with feminism.

Correlational Analyses – Female Alpine Climbers

We first conducted a repeated-measures ANCOVA with leading with climbing partners (Partner gender: female, male) as a within-participants factor, and the mean-centred values of BS, HS, and expertise, and all interaction terms as continuous between-participant predictors. The analysis revealed a significant main effect of partner gender, $F(1,27) = 5.048, p = .033, \eta_p^2 = .158$, showing that women led more with female ($M = 5.10, SE = 0.42$) than with male partners ($M = 4.68, SE = 0.42$). No other effects were significant (all $ps > .096$, see Appendix A, Table 3a, in the [Supplementary Materials](#)).

A repeated-measures ANCOVA using the newly developed ASIc measures as predictors led to similar results (see Appendix A, Table 3b, in the [Supplementary Materials](#)) as the analysis with the original ASI measures.

Moreover, a between-participants ANCOVA on reported leading (both genders confounded) with BS, HS, and expertise, and all interaction terms as continuous predictors, revealed a main effect of expertise, $F(1,27) = 13.219, p = .001, \eta_p^2 = .329$, showing that the higher the expertise women had, the more they indicated that they had led (high expertise +1 SD : $M = 6.38, SE = 0.53$; low expertise -1 SD : $M = 3.41, SE = 0.58$); all other between-participants effects were $ps > .288$.

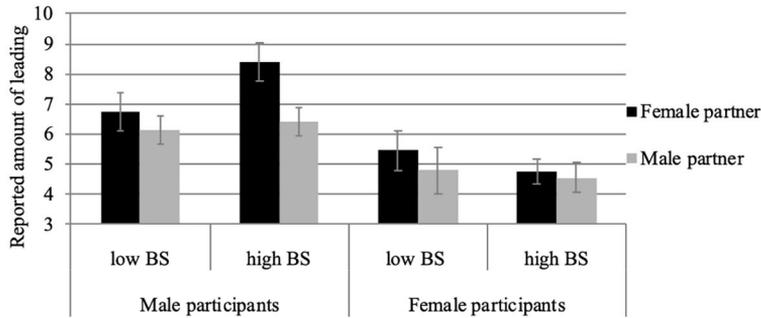
Correlational Analyses – Male Alpine Climbers

We used the same repeated-measures ANCOVA strategy as for female climbers. The results revealed a main effect of partner gender, $F(1, 28) = 21.561, p < .001, \eta_p^2 = .435$, indicating that men in general led more with female ($M = 7.56, SE = 0.428$) than with male partners ($M = 6.28, SE = 0.30$). This main effect was qualified by a two-way Partner Gender \times BS interaction, $F(1, 28) = 4.705, p = .039, \eta_p^2 = .144$. No other effects were significant (all $ps > .230$; see Appendix A, Table 4a, in the [Supplementary Materials](#)). We analysed simple slopes which revealed more reported leading with women than with men for high (+1 SD) benevolent sexist men ($M_s = 8.39, 6.42, SE_s = 0.65, 0.46$), $F(1, 28) =$

21.942, $p < .001$, $\eta_p^2 = .439$, but no differences for low ($-1 SD$) benevolent men, $F(1, 28) = 2.128$, $p = .156$, $\eta_p^2 = .071$. Estimated means are reported in Figure 1.

Figure 1

Estimated Means for Leading as a Function of Partner Gender, and Participants' Benevolent Sexism (BS) for Female and Male Participants



Note. Error bars indicate standard errors. Low = $-1 SD$, High = $+1 SD$.

Moreover, the same between-participants ANCOVA on reported leading (both genders confounded) as for female climbers was performed. It showed a significant main effect of expertise on leading regardless of the partner's gender, $F(1, 28) = 4.539$, $p = .042$, $\eta_p^2 = .139$. Thus, the more competent climbers were, the more they indicated that they had led ($+1 SD$: $M = 7.68$, $SE = 0.54$; $-1 SD$: $M = 6.16$, $SE = 0.45$). No between-participants effects were significant (all $ps > .119$).

For male climbers the same analysis with the newly developed climbing-specific ASIC measures revealed similar results (see Appendix A, Table 4b in the [Supplementary Materials](#)).

Discussion

Analysing self-reported leading behaviour and sexist attitudes of female and male alpine climbers, we found that women's leading behaviour was only influenced by their own climbing expertise, irrespective of the gender of their partners. Moreover, considering partner gender, women's endorsement of sexism was not crucial in determining their leading behaviour. However, these attitudes might play a role in response to the expression of a male partner's gendered expectations in a specific situation, which will be tested in Study 2.

Expertise was also a significant predictor of reported leading behaviour of men. In addition, men led more with female than with male partners; however, benevolent sexist beliefs modulated men's reported leading behaviour. Only highly benevolent sexist men

reported leading more often with women than with men. These findings provide initial evidence that BS may affect leadership in female-male climbing dyads.

Study 2

In order to test our hypotheses regarding the impact of sexism on leading intentions in mixed-gender dyads, we measured participants' own levels of gender ideology and exposed participants to four profiles of potential cross-gender climbing partners, who varied in sexist and feminist ideology. Our aim was to investigate how the interplay between participants' own attitudes and those of their partner influence leadership intentions in the masculine domain of alpine climbing.

Method

Our methodology was inspired by a procedure by Bohner et al. (2010) who presented profiles of targets with differing sexist attitudes (ambivalent, benevolent, hostile, and non-sexist). Bohner and collaborators used a low sexism profile instead of a feminist one as the fourth profile. Such a low sexism profile may imply two shortcomings. First, it may be an unattractive profile as it portrays a person who scores low on all the items. This person may indeed not be someone who holds no sexist beliefs but someone who tends to disagree with statements more generally (cf., Hepler & Albarracín, 2013). Second, although the ASI includes statements about feminists, these statements do not allow support of feminist ideology *per se* to be measured. Attitudes toward feminism are mostly negative (Rudman & Fairchild, 2007) and mostly diverge from support of gender equality (Vernet, Vala, Amâncio, & Butera, 2009). Thus, low scores on sexism do not mean that people are aware of gender inequality and it is not indicative of the person's position on gender relations. Consequently, we aimed to create a profile of a person who was not sexist, while emphasizing that s/he was clearly aware of gender discrimination (feminist). Therefore, the fourth profile in the present study was low in sexism and high in feminism, while the sexist profiles were low in feminism. Our manipulation of partners' sexism thus consisted of presenting participants with four profiles of potential climbing partners who had supposedly provided their opinions about gender relations in climbing: a) one *ambivalent* profile (high in HS and BS, but low in feminist attitudes) b) one *benevolent* profile (low in HS and in feminist attitudes); c) one *hostile* profile (low in BS and in feminist attitudes); and d) one *feminist* profile (low in HS and BS, but high in feminist attitudes).

We used a within-participant experimental design where all participants were exposed to four cross-gender profiles. The choice of this design had two advantages: Viewing all profiles simultaneously allowed us to activate a direct comparison between profiles, thus allowing us to test whether women responded similarly to positive encoun-

ters with men (i.e., men expressing BS or feminism), leading to the acceptance of male leadership. Or, whether it is the protection and gender differentiation expressed in BS that drives this effect, and not the positivity of the encounter. Moreover, it provides the most stringent test of our hypotheses by comparing whether sexist benevolence also constrains women's leading intentions when it is accompanied by hostility (ambivalent profile), even when the purely benevolent alternative is available. Since women were exposed to men's attitudes towards women (the ingroup), whereas men were presented with women's heterosexist gender attitudes (beliefs about relations between men and women), the hypotheses are not symmetrical and analyses for male and female participants were performed separately. We first present the method and measures used for both participant gender groups, and then the results and discussion for each gender separately.

Participants

Sixty-two alpine climbers participated in an online survey posted on various internet forums used by German-speaking alpine climbers. Twenty-eight were female and 34 were male alpine climbers ($M_{\text{age}} = 37.14, 36.21, SD = 12.12, 8.92, \text{min} = 21, \text{max} = 60, 52$ years; 67.9% vs. 73.5% were Austrian, 21.4% vs. 23.5% German, and 21.4% vs. 2.9% Swiss, respectively).

Materials

The materials were presented in the following chronology:

Profiles of targets – We presented four profiles that were created with items of ASIc. We further included climbing-specific feminist items based on Morgan's (1996) feminism scale. Following Bohner et al. (2010)'s methodology, the profiles were portrayed as questionnaires on which cross-gender climbers had supposedly expressed their agreement with items of the ASIc (see Appendix B, Figure 1, in the [Supplementary Materials](#), four hostile sexist items, four benevolent sexist items, and two feminist items). In order to increase the ecological validity of the profiles, we used participants' mean responses to the ASIc in Study 1. We calculated high (low) scores for each type of gender attitude by taking the mean value of the responses from Study 1 and adding (subtracting) one standard deviation.

Participants first saw all four profiles in a randomised order on the same page and were told to assume that these potential climbing partners had the same climbing expertise as the participants themselves. Then each profile was presented again, and participants were asked to answer manipulation check items, rate the profile's likability (The results can be found in the [Supplementary Materials](#)), and to express leading intentions with the profile on seven-point scales (from 1 *completely disagree* to 7 *completely agree*). All four profiles could be viewed at any time.

Manipulation checks — Four items assessed whether the participants perceived the targets as sexist (“This wo/man holds sexist beliefs”), benevolent sexist (Male participants: “This woman wants to be protected”, “This woman values the differences between men and women”, inter-item correlations for all four targets were significant, $r_s(32) > .375$, $p_s < .029$, 95% CI [.043, .632]; Female participants: “This man cares for and protects women”, “This man values the differences between men and women”, $r_s(26) > .400$, $p_s < .035$, 95% CI [.032, .672]), or feminist (“This wo/man holds feminist beliefs”).

Leading intentions with targets — Two items asked participants about their leading intentions in a difficult alpine climbing passage, indicating that the participant and each target had the same climbing expertise. This was important in order to hold constant potential effects of expertise (see Study 1). The first item measured participants’ own leading intentions (“To what extent would you prefer to lead this pitch?”), and the second their leading expectations of the partner (“To what extent would you prefer that your partner leads?”). Items were negatively correlated (Male participants: for three targets: $r_s(32) > -.405$, $p < .018$, 95% CI [-.653, -.078], for the hostile one: $r(32) = -.120$, $p = .498$, 95% CI [-.440, -.227]; Female participants: all four targets $r_s(26) > -.441$, $p_s < .019$, 95% CI [-.699, -.082]). The second item was reverse-coded and the mean of the two items was computed.

Climbing-specific sexism and feminism — Participants’ own gender beliefs were measured at the end of the survey using the 13 items of the ASIc (Male participants: all alphas $> .78$, female participants: all alphas $> .78$).

Expertise and socio-demographic information — At the end of the survey, participants reported their alpine climbing expertise (a 12-point scale was presented; 1 *no leading* to 12 *leading the hardest grades*) and socio-demographic details.

Results

Correlations and Gender Differences

Correlations between all measures are provided in Appendix B, Table 2, in the [Supplementary Materials](#). Consistent with prior research using the ASI (Glick et al., 2004), relations between HSc and BSc were positive, but the correlation was not significant, $r(60) = .127$, $p = .326$, 95% CI [-.126, .365]. Feminist attitudes were negatively and significantly correlated with HSc, $r(60) = -.262$, $p = .040$, 95% CI [-.480, -.014], but not with BSc, $r(60) = -.150$, $p = .246$, 95% CI [-.385, -.103]. Expertise was neither correlated with ideological measures nor with leading intentions. It was thus not used as a control variable in any further analyses.

A MANOVA on gender attitudes revealed participant gender differences only for feminist attitudes, $F(1, 60) = 9.702$, $p = .003$, $\eta_p^2 = .139$, showing that female participants (M

= 4.39, $SD = 1.35$) expressed more agreement with feminism than male participants ($M = 3.29$, $SD = 1.40$). Surprisingly, there were no gender differences in sexism (HSc: $M = 2.72$, $SD = 1.14$; $p = .480$; BSc: $M = 3.82$, $SD = 1.01$; $p = .608$). This contrasts with the general literature and Study 1, which revealed differences.

Female Climbers

Manipulation check — We conducted two repeated-measures ANOVAs with hostility (targets high vs. low in HSc) and benevolence (targets high vs. low in BSc) expressed by targets as within-participant factors. One concerned the evaluations of perceived HSc, and the other perceived BSc of the targets as dependent variables (see means in Appendix B, Figure 2, in the [Supplementary Materials](#)). We found that the two targets high in HSc were judged as more sexist than the two targets low in HSc ($M_s = 4.16, 2.16$, $SD_s = 1.19, 1.07$), $F(1, 27) = 31.832$, $p < .001$, $\eta_p^2 = .541$, and the two targets high in BSc were judged as more benevolently sexist than the two targets low in BSc ($M_s = 4.58, 3.34$, $SD_s = 1.03, 1.00$), $F(1, 27) = 19.716$, $p < .001$, $\eta_p^2 = .422$. Finally, in a repeated-measures analysis on perceived feminism, we compared the feminist target with the three targets low in feminism (i.e., the sexist targets) through planned polynomial contrasts. Results showed that the feminist target was judged as more feminist than the three targets low in feminism ($M_s = 4.86, 2.76$, $SD_s = 1.46, 0.72$), $B = -1.815$, $t(27) = -6.954$, $p < .001$, 95% CI [-2.350, -1.279].

Hypothesis testing — We expected that for women high in BSc leading intentions with an ambivalent male partner would not differ from the benevolent partner (H1a), and would be lower compared to a hostile (H1b), or a feminist (H1c) partner. The basic assumption of sphericity was violated in the present data, $\chi^2(5) = 18.537$; $p = .002$, $\epsilon = .67$. Thus, we conducted a MANCOVA with participants' own climbing-specific gender attitudes (BSc, HSc, and feminism) as between-participant predictors (continuous variables, all mean-centred)¹ and three difference scores of leading intentions with targets as outcome variables. Difference scores reflected the predictions of H1: leading intentions with the ambivalent – benevolent target (H1a, $M = 0.14$, $SD = 1.37$), ambivalent – hostile target (H1b, $M = -0.32$, $SD = 1.23$), and the ambivalent – feminist target (H1c, $M = -0.36$, $SD = 1.51$).

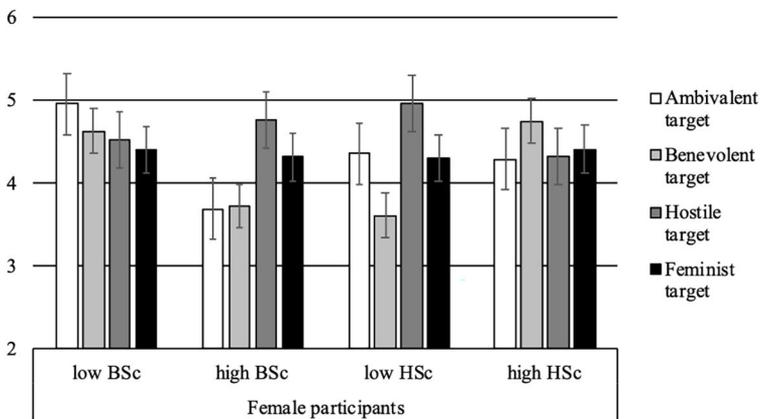
We first tested multivariate effects revealing an expected effect for BSc, $F(3, 22) = 5.871$, $p = .004$, $\eta_p^2 = .445$, and an unexpected effect of HSc, $F(3, 22) = 7.160$, $p = .002$, $\eta_p^2 = .494$. These indicated that differences in leading intentions between targets of distinct gender ideology varied as a function of participants' own endorsement of sexism. All

1) We checked for significant interactions among the three ideological predictors by adding all possible interactions to the model. No significant interaction was revealed for the univariate tests on the difference scores. We thus only report the model without the interactions.

other effects were non-significant ($ps > .148$). In a second step, we looked at simple slopes for BSc, which revealed, for women high in BSc (+1 *SD*), that they adapted their leading intention in response to the targets' attitudes, $F(3, 22) = 7.086, p = .002, \eta_p^2 = .491$, which was not the case for women low in BSc (-1 *SD*), $F(3, 22) = 0.931, p = .443, \eta_p^2 = .113$, thus giving first support to our general argument in H1. Simple slopes for HSc revealed for women low in HSc (+1 *SD*) that they adapted their leading intentions in response to the targets' attitudes, $F(3, 22) = 7.952, p = .001, \eta_p^2 = .520$, which was not the case for women high in BSc (-1 *SD*), $F(3, 22) = 1.465, p = .251, \eta_p^2 = .167$. In the next step, we looked into the univariate effects of BSc and HSc on each difference score (see Table 1 for parameter estimates). Figure 2 shows leading intentions for each target separately.

Figure 2

Estimated Means for Female Participants' Leading Intentions With Cross-Gender Targets as a Function of Targets' and Participants' Climbing Specific Gender Ideology



Note. Error bars indicate standard errors. BSc = climbing-specific benevolent sexism, HSc = climbing-specific hostile sexism; Low = -1 *SD*, High = +1 *SD*.

Women's benevolent sexism. Univariate tests revealed that BSc had no effect on the ambivalent – benevolent difference score, $F(1, 24) = 0.510, p = .482, \eta_p^2 = .021$. In order to test whether the null hypothesis H1a was supported, an approximation of the difference in the Bayesian information criterion (BIC) between the alternative and a null model as well as the probabilities of the two hypotheses were computed (Masson, 2011; Nathoo & Masson, 2016; Raftery, 1995; Wagenmakers, 2007). The null hypothesis is 2.060 times more favoured than the alternative model ($\Delta BIC = 1.445, P_{BIC}(H_0|D) = 0.673$). This BF_{01} value between 1 and 3 only reveals weak or inconclusive support for H0 compared to H1 (Jeffreys, 1961).

Univariate tests further revealed a BSc effect on the ambivalent – hostile target leading intention difference score, $F(1, 24) = 14.840, p = .001, \eta_p^2 = .369$. In support of H1b, women high in BSc (+1 *SD*) indicated lower leading intentions with the ambivalent target ($M = 3.69; SE = 0.70$) than the hostile target, $M = 4.77, SE = 0.34; F(1, 24) = 14.808, p = .001, \eta_p^2 = .382$. No effect occurred for low BS (-1 *SD*) women, $F(1, 24) = 2.446, p = .131, \eta_p^2 = .093$. BSc had no effect on the ambivalent – feminist target score, $F(1, 24) = 4.221, p = .051, \eta_p^2 = .150$, thus H1c was not supported.

Further, a MANCOVA with participants' ideological measures as predictors and leading intentions with each target separately was conducted. Parameter estimates (Appendix B, Table 2, in the [Supplementary Materials](#)) indicated that women's BSc negatively predicted leading intentions with ambivalent, $B = -0.638, p = .026, 95\% \text{ CI } [-1.194, -0.083], \eta_p^2 = .190$, and benevolent targets, $B = -0.456, p = .007, 95\% \text{ CI } [-0.857, -0.056], \eta_p^2 = .187$.

Complementary findings: Women's hostile sexism. A univariate HSc effect occurred for the ambivalent-benevolent target difference score, $F(1, 24) = 5.528, p = .027, \eta_p^2 = .187$. HSc had no effect on the other difference scores (see [Table 1](#)). Women low in HSc (-1 *SD*) differentiated their leading intention in response to the male targets' attitudes. Indeed, low HSc women led more with ambivalent ($M = 4.36; SE = 0.37$) than benevolent targets ($M = 3.61; SE = 0.27$), $F(1,24) = 4.469, p = .045, \eta_p^2 = .157$, but not women high in HSc (+1 *SD*), $F(1,24) = 1.696, p = .205, \eta_p^2 = .066$; and more with a hostile ($M = 4.97; SE = 0.34$) than ambivalent target, $F(1,24) = 4.664, p = .041, \eta_p^2 = .163$, but not women high in HSc (+1 *SD*), $F(1,24) = 0.013, p = .912, \eta_p^2 = .001$.

Finally, parameter estimates from a MANCOVA, on leading intentions with each target separately and as a function of women's attitudes (see Appendix B, Table 2, in the [Supplementary Materials](#)), revealed that women's HSc positively affected leading with the benevolent male target, $B = 0.466, p = .007, 95\% \text{ CI } [0.137, 0.796], \eta_p^2 = .262$.

Sensitivity analysis – We computed the critical population effect size that is realistic given the data collected, using a sensitivity analysis. Considering our sample size, an alpha of 0.05, and power of 0.80, our study was sensitive to detect a minimum effect size of $f^2 = 0.30$ for the univariate effects predicted by H1. Our observed effect size for H1b was larger, $f^2 = 0.58$, however the one for H1c was smaller, $f^2 = 0.18$. This means that the marginal effect we found for H1c may not have reached significance because we did not have enough power to show this effect.

Discussion: Female climbers – Supporting H1b, more benevolent sexist women reported lower leading intentions with a male partner who expressed ambivalent sexism as compared to a male partner expressing HS in isolation. Of importance, it did not matter whether the fictitious partner expressed benevolence in isolation (without expressing HS), or whether it was combined with HS (i.e., ambivalent man), in support of H1a. This suggests that an ambivalent man may successfully hide his ideology of male dominance

from women who adhere to a benevolent sexist ideology. This idea is further supported by the finding that only a male partner who expressed hostility in isolation (i.e., low BSc and low feminism) led to higher leading intentions in women. Hence, women are able to confront overt sexism but not when it is accompanied by benevolence (Barreto et al., 2010). This motivation to confront the hostile man by taking the lead is similar to other reactance findings in negotiation (Kray et al., 2001, 2004) and leadership contexts (Hoyt et al., 2010).

In addition, we did not find a difference in leading intentions with ambivalent and feminist targets. This result did not support H1c, which predicted higher leading intentions with a feminist target. Thus, we cannot exclude that higher benevolent sexist women in general accommodated the positivity in men's attitudes with reduced leading intentions. They may indeed see the positivity in ambivalent and feminist men, without differentiating the benevolent sexist and feminist dimensions. However, this lack of results might be due to the small sample size (reduced statistical power); therefore, no clear conclusions can be made without further research.

Table 1

Univariate Effects – Leading Intentions With Targets as a Function of Participants' Gender Ideology

Gender Ideology	Female participants				Male participants			
	<i>B</i>	<i>p</i>	95% CI	η_p^2	<i>B</i>	<i>p</i>	95% CI	η_p^2
Ambivalent – benevolent target								
Intercept	0.143	.560	-0.356, 0.642	.014	0.368	.066	-0.026, 0.761	.108
BSc	-0.182	.482	-0.708, 0.344	.021	-0.086	.656	-0.475, 0.304	.007
HSc	-0.493	.027	-0.927, -0.060	.187	0.012	.948	-0.374, 0.399	.000
Feminism	-0.196	.312	-0.589, 0.196	.043	-0.030	.839	-0.327, 0.267	.001
Ambivalent – hostile target								
Intercept	-0.321	.111	-0.723, 0.080	.102	0.632	<.001	0.302, 0.963	.337
BSc	-0.767	.001	-1.190, -0.344	.369	-0.027	.870	-0.354, 0.301	.001
HSc	0.238	.172	-0.110, 0.586	.076	-0.287	.082	-0.612, 0.038	.098
Feminism	-0.049	.749	-0.365, 0.266	.004	-0.144	.249	-0.393, 0.106	.044
Ambivalent – feminist target								
Intercept	-0.036	.898	-0.604, 0.533	.001	0.662	.024	0.094, 1.229	.159
BSc	-0.596	.051	-1.195, 0.003	.150	-0.053	.848	-0.615, 0.509	.001
HSc	-0.072	.765	-0.565, 0.421	.004	-0.460	.103	-1.018, 0.099	.086
Feminism	-0.260	.241	-0.707, 0.187	.057	-0.175	.410	-0.604, 0.253	.023

Moreover, women's BS affected leading intentions with targets who also expressed BS. Together these results suggest that women's benevolent sexist attitudes indeed affected

their leadership intentions but only in response to benevolent gender attitudes expressed by a man.

Finally, exploratory analyses of an unpredicted effect of women's hostile sexist attitudes on leading intentions revealed that women who adhered little to HS were, like women high in BS, persuaded by men's BS, as they intended to lead less with ambivalent than hostile sexist men. This implies that the benevolence expressed in the ambivalent profile attenuated the perceptions of HS, thereby persuading lower hostile sexist women to follow – despite the fact that they strongly disagreed with the expressions of dominance. Further, it is of interest to note that the more hostile sexist women were, the higher their leading intentions were with a benevolent sexist man who did not simultaneously hold hostile sexist views. This man could have been perceived as violating gendered expectations of male dominance and was thus treated as a weak man through imposing leadership on him.

Male Climbers

Manipulation check – Using the same analysis strategy as for female participants, we found in the first ANOVA a main effect of hostility, indicating that the two female targets high in HSc were judged as more sexist than the two targets low in HSc, $M_s = 2.85, 2.19$, $SD_s = 1.26, 1.14$, $F(1, 33) = 6.744$, $p = .014$, $\eta_p^2 = .170$. The second ANOVA on evaluations of the benevolence of the targets revealed a main effect of benevolence, $F(1, 33) = 106.388$, $p < .001$, $\eta_p^2 = .763$. Participants judged the two targets high in BSc as more benevolently sexist than the two targets low in BSc ($M_s = 4.63, 2.53$, $SD_s = 0.88, 0.92$). A repeated measures analysis on perceptions of the target as feminist, opposed with polynomial contrasts the feminist to the other three targets. It showed that the feminist target was judged as more feminist than the three targets low in feminism ($M_s = 5.67, 3.44$, $SD_s = 1.38, 1.06$), $B = -1.924$, $t(32) = -7.672$, $p < .001$, 95% CI [-2.435, -1.414] (one participant did not answer this question).

Hypotheses testing – Men were expected not to differ in their leading intentions between the ambivalent and benevolent female targets (H2a), and to intend to lead more with ambivalent than the hostile (H2b), and feminist targets (H2c). Sphericity could not be assumed, $\chi^2(5) = 29.013$; $p < .001$, $\epsilon = 0.60$), thus we conducted a MANCOVA on leading intentions with the three target difference scores and male participants' own climbing-specific gender attitudes (BSc, HSc, and feminism; mean-centred continuous measures)². Difference scores reflected the predictions of H2: leading intentions with the ambivalent – benevolent target (H1a, $M = 0.37$, $SD = 1.08$), ambivalent – hostile target

2) The same model was tested with the addition of all possible interactions. None of the interactions was significant, thus we present here a model without the interactions.

(H1b, $M = 0.63$, $SD = 0.96$), and the ambivalent – feminist target (H1c, $M = 0.66$, $SD = 1.62$).

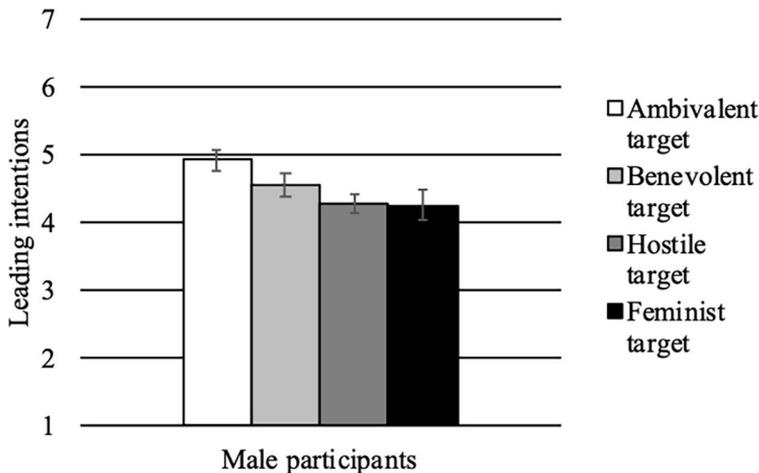
We first tested multivariate effects revealing that the intercept of the multivariate model was significant, $F(3, 28) = 5.149$, $p = .006$, $\eta_p^2 = .356$, indicating that leading intentions differed as a function of the type of target comparison. Moreover, a main effect of HSc, $F(3, 28) = 3.578$, $p = .026$, $\eta_p^2 = .356$, suggested that male participants' own endorsement of HSc affected differences in the leading intentions with targets of distinct gender ideology – however univariate tests for HSc were all non-significant (see Table 1).

Univariate tests showed that male participants did not indicate different leading intentions with ambivalent ($M = 4.93$, $SE = 0.16$) compared to benevolent targets, $M = 4.56$, $SE = 0.16$, $F(1, 30) = 3.642$, $p = .066$, $\eta_p^2 = .108$. However, Bayes analysis revealed that the alternative model is 1.203 times more favoured than the here predicted H0 ($\Delta BIC = -0.370$, $P_{BIC}(H_0|D) = 0.454$), indicating weak or inconclusive support for H1 compared to H0 (Jeffreys, 1961). Thus, support for H1a was weak.

Univariate analyses further showed that men reported higher leading intentions with the ambivalent target compared to the hostile sexist target, $M = 4.29$, $SE = 0.13$; $F(1, 30) = 15.252$, $p < .001$, $\eta_p^2 = .337$, supporting H2b, and compared to feminist targets, $M = 4.27$, $SE = 0.23$; $F(1, 30) = 5.667$, $p = .024$, $\eta_p^2 = .159$, supporting H2c (see Figure 3).

Figure 3

Estimated Means for Leading Intentions of Male Participants With Cross-Gender Targets as a Function of Targets' Sexism



Note. Error bars indicate standard errors.

Our third hypothesis predicted an effect of BSc on men's leading intentions in general (all targets confounded). We thus conducted a between-participants ANCOVA with the same ideological predictors as above and the mean of leading intentions with all four targets confounded ($M = 4.51$, $SD = 0.73$). It did not reveal an impact of men's BSc on leading intentions, $F(1, 30) = 1.036$, $p = .317$, $\eta_p^2 = .033$, thus H3 was not supported. No effects of men's HSc or feminist attitudes occurred ($ps > .577$).

Sensitivity analyses — The study was sensitive to detect a minimum effect size of $f^2 = 0.37$, for the univariate effects testing Hypothesis 2. The observed effect size for testing H2a, $f^2 = 0.12$, and H2c, $f^2 = 0.19$, were considerably smaller. We thus observed an effect for H2c although the study was not sufficiently powered to show it. The observed effect size was larger for the effect tested in H2b, $f^2 = 0.51$. For the test of H3 the study was sensitive to detect a minimum effect size of $f^2 = 0.24$, while the observed effect size was smaller, $f^2 = 0.03$. Thus, the effect expected in H3 may not have been found because the study was not sufficiently powered.

Discussion: Male climbers — Male climbers intended to lead more with women expressing ambivalence than with those expressing HS or feminism, which supported Hypotheses 2b and 2c. Moreover, they seemed to even give more protection to women who supported both types of sexism compared to non-hostile benevolent sexist women — although results on this difference were weak, thus support for H2a is inconclusive.

Men derive positive effects from benevolent sexist relationships (Hammond & Overall, 2015), thus they may comply with an ambivalent woman's expectations and consequently intend to lead more, a behaviour that satisfies gender norms as well as a woman's demands of BS. An alternative interpretation may be that this is a consequence of backlash reactions to feminist women because they violate gender norms, and to hostile sexist women, who are low in benevolence, because they are perceived as violating the gender norm of niceness. Finally, we did not find support for men's own attitudes affecting their leading intentions. A sensitivity analysis suggests that the study had too little power to detect this effect.

General Discussion

The present research investigated the role of sexist attitudes on reported leadership in mixed-gender climbing dyads (Study 1) and leading intentions with fictitious climbing partners whose support of sexism and feminism was experimentally manipulated (Study 2). Overall, women's ideology only played a role in response to the ideology expressed by men, but it did not have an impact on women's intentions in general. Only women's expertise determined reported leadership behaviour (Study 1). However, women adapted their leading intentions to the male partners' sexist preferences, but only when women

themselves endorsed BS, or when they did not endorse HS (Study 2). In contrast, male participants' BS impacted their reported leading in general (Study 1). However, this effect of male BS might depend on women's expectations (Study 2), such that men led more with women endorsing BS (benevolent and ambivalent women), who likely expect to be protected; and least with purely hostile sexist and feminist non-sexist ones, who likely were perceived as violating gender norms.

Previous research has revealed consistent gender social tuning effects in romantic and helping contexts. For instance, women self-defined more in line with female stereotypes when interacting with a sexist partner, compared to a non-traditional partner (Sinclair & Lun, 2006), and women's BS increased in response to their partners' sexist attitudes (Hammond et al., 2016). Moreover, BS was shown to increase engagement in dependency-oriented help (Shnabel et al., 2016). Our research extends these findings by showing similar complementary effects of BS in the masculine leadership context of climbing, suggesting that women may bend to sexist men's wishes, especially if these are cloaked in benevolence. However, at the same time, hostility is clearly confronted, particularly by women who do not share hostile sexist attitudes.

Overall, these results highlight the importance of adopting a dynamic approach in studying leadership, as people's actual intentions might be partly determined by their partners' views as well as their own gender beliefs. Although we could not find effects of men's sexist attitudes on their leading intentions, they tend to be more protective towards women who embrace male benevolence. The present results show that (benevolent) sexist behaviour seems to be partly reinforced by women's own sexist expectations.

Benevolent justifications for men leading may keep women in a follower position. A negative implication of this pattern may be that women let themselves be talked into following and thus miss out on opportunities to challenge themselves and increase their expertise in this masculine domain. Indeed, a tendency of such a negative correlation between women's expertise and BS was observed in Study 2.

On a more positive note, women showed more intentions to lead with a hostile sexist partner, an effect that was particularly strong for low hostile sexist (and to some extent for high benevolent) women. This is consistent with previous literature showing that women find hostile partners less attractive (Bohner et al., 2010; Montañés et al., 2013), and also with research showing that explicit threats to women's identity or freedoms provoke reactance (de Lemus, Bukowski, Spears, & Telga, 2015; Hoyt et al., 2010; Kray et al., 2001, 2004), produce lower life satisfaction (Connelly & Heesacker, 2012), and are more easily confronted (Becker & Wright, 2011).

Limitations and Future Research

Our research extends previous findings by showing how sexist beliefs influence self-reported leading behaviour and leadership intentions, which is strongly related to the perpetuation of the status quo in gender relations. At the same time, this line of research

also calls for new questions to be addressed in future studies. Because this research was built on previous literature on the pervasiveness of (mainly) BS in gender relations (e.g., Barreto & Ellemers, 2005; Barreto et al., 2010; Dardenne et al., 2007; de Lemus et al., 2012; Moya et al., 2007; Vescio et al., 2005), we focused on sexism as a main predictor of leading intentions. Future studies should investigate the role of expertise and a potential interaction with gender attitudes in experimental designs. Moreover, extending previous research on the impact of perceived sexism of male and female targets (e.g., Bohner et al., 2010; Kilianski & Rudman, 1998; Montañés et al., 2013), we analysed the potential preventive impact of feminist beliefs (focusing on egalitarianism) on women's leading behaviour. Future research should aim to get a more nuanced picture of which other dimensions of feminism play a role in determining leading intentions. Furthermore, the use of a feminist target forced participants to make decisions between sexist and feminist targets, not giving them the option of a non-sexist or non-feminist position. Finally, the use of hypothetical scenarios allowed us to establish differences across contexts; however, the results comprise decisions that are made by participants in an evaluative mindset, rather than a real interaction.

Future research may investigate the mechanisms that lead to reduced leading (intentions) following exposure to BS. For example, BS may cause stereotype threat and thus cause mental intrusions such as a decrease in confidence (Dardenne et al., 2007) and thereby undermine leadership aspirations.

Leadership in alpine climbing is very specific; it concerns a dyadic context. However, leadership in larger groups may differ. Also, it is hard to determine what kind of leadership is exerted in a climbing dyad; it may be authoritarian – a leader ordering when to make a break, or whether to turn around, or where to head – but it may also be more democratic when the leader discusses these issues. Future investigations should look into the interaction between leadership style and sexism. Moreover, leader-follower relations in climbing, where both parties are literally bound to each other by a rope, may be more interdependent than in other leadership situations. Although other means of power, such as remuneration or promotion, may also create strong interdependencies.

Study 1 was sent to alpine climbing clubs as well as advertised on online forums. Study 2 was only advertised on online forums. It is possible that some participants – those who saw the advertisement in the online forums – participated in both studies. However, six months elapsed between the two studies, so it is unlikely that participants could remember the exact content of the first study. Study 1 did not include any experimental manipulations. In the debriefing, we informed participants that the survey served to test study materials and was interested in “climbing habits”, “attitudes towards female and male climbers”, and participants’ “views about women and men in society”. Thus, there was no information on any of the hypotheses from the second study.

The within-design allowed to access the population of alpine climbers, which is small and difficult to reach. Although such a design bears several advantages outlined in the

method section, it may also have an undesirable effect on participants, revealing the object of study by showing them the four cases we compare. Moreover, the measure of participants' own sexist attitudes before or after reading the profiles may impact participants' responses. Participants may align their reports of attitudes with their intentions (leading intentions expressed towards profiles), but vice versa if they first respond to the sexism scales and then report intentions. These may be aligned with the attitudes indicated at the beginning (see a discussion of the reciprocal causal relations of attitudes, intentions, and actual behaviour in [Sussman & Gifford, 2019](#); [Ajzen & Fishbein, 2000](#)). One alternative would be to measure participants' attitudes and then present the study after a certain time has passed. However, as attitudes may be modulated by contextual factors, a disparity may occur between attitudes measured at one time and the study taken at another time. Finally, measuring intentions implies investigations one step before actual behaviour. Although intentions may predict behaviour to some extent ([Ajzen & Fishbein, 2000](#)) other factors may interfere. Using reported leading in Study 1 provided some insights into behaviour, however, future research should look at attitudes followed by actual rather than reported behaviour from the past.

Finally, in Study 2, we used actual mean-scores of HS and BS from Study 1. This had the advantage of confronting our participants with realistic HS and BS tendencies. However, means of high HS profiles were in the middle of the scale, while means of high BS profiles were beyond the middle of the scale. This approach thus softened our HS manipulation, making it harder to detect reactance which may be stronger in the face of extremer expressions of HS.

Conclusions

Historically, women have used the mountaineering context to send out feminist signals and to empower women (e.g., [Blum, 1980, 2005](#); [Reinisch, 1995](#)). To this day, female mountaineers are still cited and celebrated as pioneers in the battle for gender equality ([Runggaldier, 2011](#)). As attitudes opposing sexist ideologies have been missing in past research, this context seemed interesting for the investigation of the dynamics that gender attitudes produce on leadership behaviour in mixed-gender dyads.

Overall, the present research suggests that male climbers tend to comply with the sexist ideology held by their female partner. Meanwhile, women who alpine climb can be influenced by the (benevolent) sexism of their male partner, undermining their intentions to lead, especially if they hold BS beliefs themselves. As BS is rather accepted amongst women, it might indeed be "the real barrier holding women back" from leading ([Lang, 2013](#)), particularly if it is reinforced by the partner.

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Data Availability: For this article, three datasets are freely available (see the [Supplementary Materials](#) section).

Supplementary Materials

The following Supplementary Materials are available (for access see Index of [Supplementary Materials](#) below):

Datasets

- The data used in Study 1
- The data of male participants used in Study 2
- The data of female participants used in Study 2

Additional Measures for Study 2

- The supplementary materials present additional measures on attractiveness ratings of the climber profiles rated in Study 2. These ratings are analyzed and compared to the previous literature.

Appendices

- **Appendix A:** This appendix includes tables with descriptive statistics for data from Study 1. It further presents tables with full results for an analysis reported in the article (*Leading in Alpine Climbing as a Function of Partner Gender, Sexist Attitudes (ASI), and Expertise*), as well as tables for the same analysis using a climbing specific sexism measure (*Leading in Alpine Climbing as a Function of Partner Gender, Climbing-Specific Benevolent Sexism (BSc) and Hostile Sexism (HSc), and Expertise*).
- **Appendix B:** This appendix includes additional materials for Study 2: an example of the manipulation materials used (profiles of a climber), a figure which represents the means and standard errors of the manipulation checks, a correlation table of all measures and two tables which report full results of an analysis reported in the article (*Parameter Estimates of Leading Intentions with Male Climbing Targets as a Function of Targets' and Participants' Gender Ideology*).

Index of Supplementary Materials

Kulich, C., de Lemus, S., & Montañés, P. (2020). *Supplementary materials to "The impact of sexism on leadership in female-male climbing dyads"* [Research data, additional measures, appendices]. PsychOpen. <https://doi.org/10.23668/psycharchives.2895>

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