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Interpersonal dominance-warmth dimensions of hostile and benevolent sexism: Insights from the self and friends

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ABSTRACT

Ambivalent sexism theory conceptualizes sexism as comprised of two distinct yet complementary attitudinal views of women: hostile sexism (HS) and benevolent sexism (BS). HS is an antipathy toward women; BS is an ostensibly positive view of women as pure and warm yet weak and incompetent. The current research adds to extant models of individual differences and sexism by capturing a wider range of interpersonal warmth-dominance measures associated with both BS and HS. Four studies were conducted that featured online and student samples (N = 772; 55.7% female) as well as self (Studies 1–4) and friend-reports (Study 4). We found that men's HS correlated positively with interpersonally dominant characteristics and negatively with interpersonal warmth. In contrast, men's BS correlated positively with both interpersonal dominance and warmth measures. For women, HS positively correlated with one interpersonal dominance measure (i.e., Machiavellianism) and negatively with warmth measures. However, the relationships between BS and dominance-warmth measures were less consistent or clear for women. Furthermore, preliminary evidence suggests that BS (but not HS) was associated with apparent biases in self-perception. Extending prior research on prejudice and personality, this research provides a comprehensive examination on the relationships between ambivalent sexism and interpersonal dimensions of dominance and warmth.

If asked to define or describe sexism, most people would likely provide a description akin to hostile sexism. Hostile sexism is antipathy toward women, and it is in line with traditional definitions of prejudice (Glick & Fiske, 1996; 2001). It is rooted in fear of women attempting to overthrow men's power via feminism or sexuality, and it asserts male dominance in society through derogation and defamation of women who do not conform to gender stereotypes. Yet sexism is ambivalent in nature, and it can also take an ostensibly agreeable, helpful form known as benevolent sexism (Glick & Fiske, 1996; 2001). Benevolent sexism is a subjectively positive view of women as pure and warm yet helpless and incompetent. Though benevolent sexism can be mistakenly conflated with kindness and warmth, it too is harmful as it legitimizes male dominance through paternalistic affection, thereby incentivizing women to be content with traditional gender roles and the status quo of inequality (Glick & Fiske, 2001). However, it remains unclear if those who endorse benevolent sexist views are indeed nicer and more agreeable. As such, this research seeks to elucidate on the personality correlates of sexism.

Personality psychologists have long spoken on the trait dynamics of prejudice. Allport (1954) conceptualized prejudice as an enduring and trait-reflective characteristic, noting that "prejudice is more than an incident in many lives; it is often lockstitched into the very fabric of personality" (p. 408). Though Allport and many of his contemporaries failed to extend their models of individual differences and prejudice to sexism specifically, the past few decades have seen a surge in this research topic (for a review on both historical and contemporary accounts, see Hodson & Dhont, 2015). Theorists and empiricists who have paid mind to the connection between sexism and individual differences have typically taken one of two theoretical approaches: the five factor model (i.e., the traits of agreeableness, neuroticism, openness to experience, extraversion, and conscientiousness) or the dual process model (i.e., the traits of Social Dominance Orientation and Right-Wing Authoritarianism).

In the current research, we supplemented these two existing theoretical approaches by drawing influence from the interpersonal dominance-warmth circumplex model (Leary, 1957; Wiggins, 1979). We defined warmth traits as those characteristic of a communal and friendly disposition, including agreeableness and humanitarianism. We

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defined dominance traits as those characteristic of superiority and agency, including narcissism and Machiavellianism. In Studies 1 to 4 we collected self-reports of a wide range of warmth and dominance traits and meta-analyzed the correlations with sexism across samples. Additionally in Study 4, we collected informant reports to examine potential biases in self-perception.

1. Ambivalent sexism theory

In their theory of ambivalent sexism, Glick and Fiske (1996; 2001) argued that sexism can embody two distinct yet complementary forms: hostile and benevolent sexism. Hostile sexism (HS) is antipathy toward women based on the belief that they wish to overthrow men's power via feminism or sexuality. Benevolent sexism (BS) is the belief that women have a unique capacity for providing love and support to men, yet are also weak and in need of protection. HS is easily identifiable and viscerally unappealing given its overt negativity, while BS is often perceived as flattering rather than prejudicial, and can be conflated with or mistaken for courtesy or agreeableness (Barreto & Ellemers, 2005; Bohner, Ahlborn & Steiner, 2010; Goh & Hall, 2015; Gul & Kupfer, 2019; Kilianski & Rudman, 1998). As a result, BS (relative to HS) is more difficult to resist and leads women to accept the status quo of gender inequality (Becker & Wright, 2011; Gul & Kupfer, 2019; Jost & Kay, 2005).

Although HS and BS differ in valence, the two are positively correlated. Both forms of sexism contribute to gender inequality by subjugating women, while simultaneously promising them that men's power will be used to their advantage if they remain within traditional gender roles (Glick & Fiske, 2001; Glick et al., 2000). Most notably, HS rebukes non-traditional gender roles (e.g., feminists) while BS celebrates traditional ones (e.g., housewives; Glick, Diebold, Bailey-Werner & Zhu, 1997; Sibley & Wilson, 2004). This juxtaposition is reflected in the behavioral expressions of men's sexism during interactions with women they have not met before and within intimate relationships (Goh & Hall, 2015; Hammond & Overall, 2017; Shnabel, Bar-Anan, Kende, Bareket & Lazar, 2016): When interacting with women, men with more BS exhibit more positive and affiliative behaviors (e.g., more smiling and positivity), but HS is inversely related to affiliative behaviors (e.g., less smiling and more aggressive behaviors).

2. Extant models of sexism and individual differences

2.1. The Big Five

One popular framework for examining prejudice and individual differences is the Big Five model of personality (e.g., Akrami, Ekehammar & Yang-Wallentin, 2011; Ekehammar, Akrami, Gylje & Zakrisson, 2004). Decades of research in this tradition have shown prejudice (broadly construed) to be primarily associated with two key personality dimensions: low openness to experience and low agreeableness (Sibley & Duckitt, 2008; cf. Brandt & Crawford, 2019). These studies, however, centered on generalized prejudice (aggregated prejudice toward multiple out-groups, such as racial and sexual minorities) rather than sexism specifically (e.g., Ekehammar & Akrami, 2007; Ekehammar et al., 2004; Sibley & Duckitt, 2008), or have utilized unidimensional measures of sexism that frame all sexism as hostile (e.g., Ekehammar & Akrami, 2003; Sibley & Duckitt, 2008). As such, it is not clear how ambivalent sexism is reflected in the Big Five. To our knowledge just two studies have examined the Big Five in conjunction with both BS and HS, and these studies produced conflicting results (Christopher, Zabel & Miller, 2013; Krings & Facchin, 2009). Furthermore, and on a more conceptual level, the Big Five captures only a portion of the interpersonal dynamics that may be associated with BS and HS. While this model partially captures interpersonal warmth in the form of agreeableness, it does not capture any negatively-valenced and interpersonally dominant traits such as narcissism and Machiavellianism, which are trait types that have been implicated as playing a role in prejudice and sexism specifically (e.g., Duckitt & Sibley, 2010; Hammond, Sibley & Overall, 2014; Sibley, Wilson & Duckitt, 2007). Rather, the Big Five's core dominant trait is the relatively desirable trait of extraversion (McCrae & Costa, 1989).

2.2. The dual process model

Another theory explicating individual difference predictors of prejudice is the Dual Process Model (Duckitt, 2001). This model states that many different forms of prejudice can be described using the distinct yet complementary motivational traits of Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO). RWA captures deference to authority and a rigid distinction between ingroups and outgroups (Altemeyer, 1981; 1998), and SDO measures preference for maintaining a hierarchical society (Pratto, Sidanius, Stallworth & Malle, 1994; Sidanius & Pratto, 2001). Individuals high in both of these traits exhibit aggression and prejudice toward outgroups, such as Black people, gay people, and feminists (e.g., Altemeyer, 1998; Sidanius & Pratto, 2001; Whitley, 1999). Yet the two traits exert their effects differently. Whereas RWA promotes prejudice via a willingness to submit to ingroup authoritative figures and traditional values, SDO promotes prejudice via beliefs that one's ingroup is superior and opposes policies that promote equality (Sidanius & Pratto, 2001; Whitley, 1999).

The Dual Process Model has been utilized to examine the antecedents of HS and BS. HS is primarily predicted by tough-mindedness, competitive worldview, and SDO. BS, in contrast, is predicted by social conformity, dangerous worldview, and RWA (Austin & Jackson, 2019; Sibley et al., 2007). Furthermore, higher SDO predicted increases in HS (but not BS) and higher RWA predicted increases in BS (but not HS) over a 5-month period (Sibley et al., 2007). These findings are useful in that they determined the differential underpinnings of BS and HS.

3. Current research: interpersonal dominance-warmth and ambivalent sexism

This research seeks to supplement and extend these two extant models by measuring the relationships between HS and BS with a wider variety of interpersonal dominance *and* interpersonal warmth measures. Drawing influence from the interpersonal circumplex model of personality (Leary, 1957; Wiggins, 1979), we define interpersonal dominance as personal views of superiority and the desire for power, captured by measures of agency, narcissism, and Machiavellianism. Though conceptually similar to SDO, this interpersonal dominance dimension captures broader traits, values, and beliefs (and agency is relatively less negative in valence compared to SDO). We define interpersonal warmth as positive and caring attitudes and behaviors directed toward others, captured by agreeableness, positive relations with others, communion, and humanitarianism-egalitarianism. Though this dimension exhibits conceptual overlap with Big Five models of prejudice in that it includes agreeableness and the RWA dimension of the dual process model, it also encompasses a broader collection of beliefs, values, and traits not captured by agreeableness or RWA alone.

3.1. HS as high-dominance, low-warmth

HS, as measured by the Ambivalent Sexism Inventory (ASI), includes items such as “Women are too easily offended” and “Women seek to gain power by getting control over men.” These items convey antagonism and sense of superiority. As such, we expect HS to be associated with higher levels of interpersonal dominance and lower levels of interpersonal warmth as observed in studies of generalized prejudice (e.g., Austin & Jackson, 2019; Ekehammar & Akrami, 2007; Hodson & Dhont, 2015; Sibley & Duckitt, 2008):

H1a. : HS is positively associated with interpersonal dominance.

H1b. : HS is negatively associated with interpersonal warmth.

Research specifically investigating HS from multiple perspectives provides initial justification for these predictions. Relationally, HS is associated with attachment avoidance, or, a view of romantic relationships as threatening (Fisher & Hammond, 2019; Hart, Hung, Glick & Dinero, 2012). Behaviorally, men's HS is associated with power-maintenance within romantic relationships, exhibited by aggression toward female partners and poor relationship satisfaction (Hammond & Overall, 2017). Men with higher HS are less affiliative toward women (Goh & Hall, 2015), and they are more likely to sexually harass others at work (Krings & Facchin, 2009).

3.2. BS as high-dominance, high-warmth

BS is indexed by ASI items such as "Women should be cherished and protected by men" and "Men should be willing to sacrifice their own well-being in order to provide financially for the women in their lives." On the surface, these items convey positive interpersonal attitudes: Individuals who endorse these statements appear to be communicating a strong desire to help others, and a communal orientation. Yet implicit in these statements is the belief that women are weak and inferior to men, and thus in need of men's protection and care. In this way, BS represents a dualistic belief system: one that conveys interpersonal caring and nurturing tendencies, while simultaneously harboring assumptions of women's inferiority. As such, we expect BS to be positively associated with high levels of dominance, as has been observed in studies of other forms of prejudice, while additionally being associated with high levels of interpersonal warmth:

H2a. : BS is positively associated with interpersonal dominance.

H2b. : BS is positively associated with interpersonal warmth.

This dualistic assumption has been documented in previous research on BS. Higher BS in men tends to be associated with greater dependency-oriented helping behavior toward female partners; while ostensibly helpful, this form of direct assistance tends to undermine the recipients (Hammond & Overall, 2017; Shnabel et al., 2016). Outside of their romantic relationships, men higher in BS exhibit more affiliative behaviors toward women (Goh & Hall, 2015). Among women, BS is positively associated with kindness and supportiveness toward their romantic male partners (Hammond & Overall, 2015). BS is also positively associated with entitlement (Hammond et al., 2014) and agentic values such as power (Hammond & Overall, 2017) and dominance (Austin & Jackson, 2019).

3.3. Beyond self-reports

The studies featured in the above literature review have exclusively relied on self-report data. Correlating self-report measures with other self-report measures, though useful for answering questions of discriminant and convergent validity, can obscure any biases that may exist in participants' self-perceptions. For a clearer picture of the individual, personality psychologists recommend comparing self-reports to informant-reports obtained from friends or family members (Funder & Colvin, 1997; Kim, Di Domenico & Connelly, 2019). We addressed this limitation in Study 4 and recruited close friends of participants to provide personality ratings. We are only aware of one study that has used informant reports in examining the correlates of generalized prejudice (Cohrs, Kämpfe-Hargrave & Riemann, 2012), and no studies that have utilized informant reports in examining the correlates of ambivalent sexism.

Broadly, one may expect HS to exhibit similar patterns to generalized prejudice (Cohrs et al., 2012), resulting in a correspondence between self- and informant-reports. Conversely, it is possible that BS could be associated with biases in self-perception, due to its dualistic nature. Perhaps individuals (in particular, men) who score highly in BS truly believe that they are being kind and considerate, but their friends see through this communal exterior in similar fashion to narcissism (Park & Colvin, 2014). Given the dearth of research comparing the self- and informant-reported correlates of ambivalent sexism, we do not offer any explicit hypotheses.

3.4. Gender differences

Sexism research has primarily focused on how men treat and perceive women. Nonetheless, it is important to note that women can also hold sexist attitudes as well. Although women are less likely to endorse HS as compared to men, cross-cultural data confirm that women are equally (and sometimes more) likely to endorse BS (Glick et al., 2000). Women's benevolently sexist views hold important behavioral and attitudinal implications that often qualitatively differ from those of men. For instance, women with higher levels of BS are more likely to modify their own behavior in the interest of pleasing men (e.g., Hammond & Overall, 2017; Harris, Hornsey & Barlow, 2016), and are more likely to accept gender-based behavioral restrictions given to them by their significant others (Moya, Glick, Expósito, De Lemus & Hart, 2007). Women with higher levels of BS also hold more psychological entitlement, while men's BS is weakly associated with entitlement (Hammond et al., 2014). Although some have documented gender differences in the relationships between sexism and personality traits, the evidence is limited in number and scope (Sibley et al., 2007).

As prior research is limited, we do not offer concrete predictions regarding gender differences in the correlates of BS and HS. One might expect men's and women's HS to display similar patterns of correlates, given HS's overtly antagonistic nature. On the other hand, prejudice toward one's own ingroup may represent a more antagonistic viewpoint. The result may be interpersonally dominant correlates for both men's and women's HS, but with stronger effects for women.

For BS, our hypotheses presented above may or may not hold for women, particularly in respect to 2b. The hypothesized positive relationship between BS and interpersonal warmth may be more likely to occur in men, given that the conceptual core of BS is the belief that men should treat women chivalrously and offer women protection. If women strongly endorse BS, it would not necessarily entail any warm interpersonal orientation (cf. Hammond & Overall, 2017). For women to endorse BS highly is to say that they think their own ingroup ought to be cared for by men, perhaps implying an attitude of superiority and entitlement (Hammond et al., 2014).

4. Studies 1–4: mini meta-analyses of self-reports

The current research presents a comprehensive examination of the individual differences correlates of ambivalent sexism. Individual difference variables were grouped into two dimensions: (1) interpersonal dominance and (2) interpersonal warmth. All measures utilized a 7-point scale and were presented in a randomized order. Some studies featured additional questionnaires, administered for use in other research.[2] For ease of presentation and interpretation, only self-reported

[2] Variables that were only used in one study and were not analyzed included: Diagnostic Analyses of Nonverbal Accuracy (Study 1), the Paternalistic Chivalry Scale (Study 2), The Personal Feelings Questionnaire (Study 4; collected for use in an unrelated study on affect and personality), and the Test of Self-Conscious Affect (Study 4; collected for use in an unrelated study on affect and personality). The Interest in Personality Scale was used in Studies 1 and 2; because data associated with this scale were presented in another article, we do not include these results herein. In the initial versions of this manuscript, we additionally presented correlations between ambivalent sexism and prejudicial and political beliefs (Studies 1, 2, and 4), but removed them as suggested by reviewers. These measures included acceptance of stereotyping, system justification, traditional beliefs about gender, liberalism, and intention to vote for Hillary Clinton in the 2016 presidential election. All data are available in the

variables that were measured in at least two studies were included and meta-analyzed using procedures outlined by Goh, Hall and Rosenthal (2016). Data for all four studies are on OSF: https://osf.io/747se/

5. Method

5.1. Participants and procedures

In Study 1, participants were 83 undergraduates (50 women; M_{age} = 19.29 years; 47% White) at a private university in the United States.

In Study 2, participants were 179 Amazon Mechanical Turk workers (116 women; M_{age} = 36.74 years; 84% White) from the United States who were paid $1 for completing the study. Originally there were 183 participants but four were excluded for not indicating gender or identifying as "Other."

Participants in Study 3 were 410 Amazon Mechanical Turk workers (209 women; M_{age} = 34.83 years; 77% White) from the United States who were paid $1.50 for completing the study.

Participants in Study 4 were 100 students from a large private university in the United States (55 women; M_{age} = 18.92 years; 48% White).

Our total sample is 772 participants (N_{women} = 430; N_{men} = 342).

5.2. Ambivalent sexism inventory (ASI; Glick & Fiske, 1996)

A shortened version of the ASI was used in all four studies, which contained six items assessing HS and six items for BS. The shortened scale has been shown to correlate highly with the full 22-item ASI (Hammond & Overall, 2013). One sample HS item is "Women exaggerate problems they have at work." One sample BS item is "Women should be cherished and protected by men."

6. Interpersonal dominance

Interpersonal dominance was measured using Agency, narcissism, and Machiavellianism.

6.1. Agency (12-item; Trapnell & Paulhus, 2012)

Studies 1, 2, and 3 used the 12-item Agentic Values Scale: Participants indicated the extent to which they value agentic traits such as wealth, achievement, competence, autonomy, and superiority. In Study 4, agency was measured using 10 items taken from the California Adult Q-Sort (CAQ), which is described more extensively in the next section on informant reports. Example items include "has high aspiration level for self" and "is productive; gets things done." This 10-item scale has been used in previous research (e.g., Park & Colvin, 2014; Vogt & Colvin, 2003).

6.2. Narcissism (NPI-16; 16-item; Raskin & Terry, 1988)

Narcissism is characterized by a sense of superiority, a desire for power and authority, and excessively positive self-views. Sample items from the NPI include: "I like to be the center of attention," and "I think I am a special person." Although the original NPI utilizes a forced-choice format, in the current research we employed a Likert scale. This Likert response format has been used in previous research (e.g., Jordan, Spencer, Zanna, Hoshino-Browne & Correll, 2003; McGregor, Nail, Marigold & Kang, 2005). This measure was used in all four studies.

(*footnote continued*)
provided OSF link.

6.3. Machiavellianism (Christie & Geis, 1970)

In Studies 1, 2, and 3, participants indicated the extent to which they endorse deceit, cynicism, and a lack of concern for conventional standards of morality using the 20-item Mach-IV scale.

7. Interpersonal warmth

Interpersonal warmth was measured using agreeableness, communion, positive relations with others, and humanitarianism-egalitarianism.

7.1. Agreeableness

Individuals who score highly on agreeableness report experiencing positive interpersonal interactions, and are patient, kind, willing to compromise, and show compassion. Studies 1, 2, and 3 used the agreeableness subscale of the NEO-PI-R (48-items; Costa & McCrae, 1992). This scale assesses six facets of agreeableness (8 items each): trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness. Participants' scores on these facets are then averaged to create one overall agreeableness score. In Study 4, agreeableness (without facets) was measured using established factor loading in the CAQ (McCrae, Costa & Busch, 1986); these procedures are described more extensively later.

7.2. Communion (12-item; Trapnell & Paulhus, 2012)

In Studies 1, 2, and 3, participants indicated the extent to which they value communal traits such as politeness, equality, altruism, harmony, and civility using the 12-item Communal Values Scale. In Study 4, communion was measured using 10 items from the CAQ (Park & Colvin, 2014; Vogt & Colvin, 2003); examples include "behaves in a sympathetic and considerate manner" and "is sociable, gregarious; emphasizes being with others."

7.3. Ryff positive relations with others subscale (14-item; Ryff, 1989)

The Positive Relations with Others scale is a subscale of the multidimensional Ryff Well-being battery. People who score highly on this scale report having warm and satisfying relationships with others, and possess a thorough understanding of human affection and intimacy. This measure was used in Studies 1, 2, and 3. Though this measure is not explicitly a trait measure, it is relevant in that it captures one potential consequence of possessing positive interpersonal traits.

7.4. Humanitarianism-Egalitarianism (10-item; Katz & Hass, 1988)

The Humanitarian-Egalitarianism scale assesses individuals' adherence to the ideals of equality and care. People who score highly on this scale have empathy for those in need, and exhibit concern for others' well-being. A sample item from this scale is "Those who are unable to provide for their basic needs should be helped by others." This measure was used in Studies 1, 2, and 3.

8. Results

Cronbach's alphas and descriptive statistics for all self-report measures administered in Studies 1 through 4 are presented in Table 1. Full correlation tables for all self-report measures in each study are available in the OSF appendix: https://osf.io/747se/

For the self-report data here, we conducted "mini" meta-analysis of our four studies (see tutorial in Goh et al., 2016; download resources and Excel template on https://osf.io/6tfh5/). This analytical method allows us to quantitatively synthesize results across multiple studies and calculate the weighted means of correlations across all relevant studies

Table 1
Cronbach's Alphas (α), Means (M), and Standard Deviations (SD) for all Scales Utilized in Studies 1–4.

Measures	Study 1 α	Study 1 *M* (*SD*)	Study 2 α	Study 2 *M* (*SD*)	Study 3 α	Study 3 *M* (*SD*)	Study 4 α	Study 4 *M* (*SD*)
Hostile sexism	.68	3.59 (0.96)	.87	3.12 (1.27)	.88	3.14 (1.42)	.83	3.34 (1.18)
Benevolent sexism	.68	3.86 (1.00)	.84	3.81 (1.30)	.83	3.60 (1.30)	.62	3.84 (0.88)
Agreeableness (total scale)	.88	4.62 (0.53)	.93	4.93 (0.71)	.94	4.80 (0.83)	.51	5.87 (0.55)
Communion	.90	5.87 (0.81)	.87	5.74 (0.78)	.93	5.47 (1.12)	.62	6.55 (0.84)
Positive relations with others	.86	5.36 (0.84)	.89	5.13 (0.96)	.90	4.86 (1.15)	—	—
Humanitarianism	.84	5.51 (0.82)	.91	5.44 (0.99)	.92	5.43 (1.14)	—	—
Agency	.80	5.31 (0.71)	.85	4.48 (0.92)	.89	4.48 (1.12)	.66	5.88 (0.91)
Narcissism	.85	4.05 (0.83)	.92	3.60 (1.11)	.94	3.50 (1.26)	.84	4.27 (0.80)
Machiavellianism	.75	3.60 (0.61)	.83	3.40 (0.76)	.86	3.52 (0.86)	—	—

Note. Study 1 $N = 83$; Study 2 $N = 179$; Study 3 $N = 410$; Study 4 $N = 100$.
— indicates a scale that was not administered in that study.
Means for Agreeableness, Communion, and Agency differ in Study 4 as these traits were assessed in this study using the California Adult Q-Sort, which utilizes a semi-normal distribution from which items are assigned a score of 1–9. This range differs from the 1–7 Likert scale utilized in Studies 1 through 3.

(i.e., correlations with smaller variance and larger sample size are weighted more because they are considered more accurate estimates).

Results from individual studies were analyzed using semi-partial correlations that controlled for the other form of sexism, as suggested by Glick and Fiske (1996) due to the positive correlation between HS and BS. These semi-partial correlations were used as the effect size units in our mini meta-analyses, and meta-analytic results are presented as the weighted mean correlation coefficient (*M r*). Across all four studies, BS and HS were significantly positively correlated, $M\ r = 0.35$, $Z = 10.20$, $p < .001$, two-tailed. Though we present all correlations obtained in each individual study in our tables, here we only discuss our meta-analytic findings, as these represent the most comprehensive summary of our studies.

8.1. HS, BS, and interpersonal dominance

Correlations between HS and dominance measures are shown in Table 2. Hypothesis 1a predicted positive associations between HS and interpersonal dominance, and this was supported for men: HS positively correlated with agency, narcissism, and Machiavellianism. Hypothesis 1a was only partly supported for women - only Machiavellianism showed positive and significant relationship.

Correlations between BS and dominance measures are shown in Table 2. Hypothesis 2a predicted positive relationships between BS and interpersonal dominance, and this was mostly supported. BS significantly, positively correlated with agency and narcissism for both men and women. However, BS was negatively and significantly correlated with Machiavellianism for men, and this relationship was not significant for women.

Table 2
Semi-partial correlations between sexism and interpersonal dominance measures.

Measures	Study	Men Hostile Sexism[a]	Men Benevolent Sexism[b]	Women Hostile Sexism[a]	Women Benevolent Sexism[b]
Agency	1	.38*	.13	.22	.07
	2	.17	.31**	.02	.37***
	3	.21**	.11	.05	.29***
	4	.09	−.11	.15	−.22
	M r	**.20***	**.12***	**.07**	**.23***
Narcissism	1	.25	.22	.18	.26+
	2	.30*	.25+	.14	.23**
	3	.28***	.11	−.02	.37***
	4	.03	.05	.25+	.29*
	M r	**.25***	**.13***	**.08**	**.31***
Machiavellianism	1	.06	−.09	.14	.11
	2	.14	−.11	.27**	.05
	3	.42***	−.22**	.21**	−.06
	4	—	—	—	—
	M r	**.33***	**−.18****	**.22***	**.00**

Note. M *r* = fixed-effects weighted mean semi-partial correlation across studies (bolded).
[a] Correlations in this column are semi-partial correlations, controlling for Benevolent Sexism.
[b] Correlations in this column are semi-partial correlations, controlling for Hostile Sexism.
+ $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

8.2. HS, BS, and interpersonal warmth

Correlations between HS and interpersonal warmth measures are presented in Table 3.[3] Hypothesis 1b predicted negative associations between HS and interpersonal warmth and this was supported for men. Men's HS was negatively correlated with overall agreeableness, communion, positive relations with others, and humanitarianism-egalitarianism. For women, hypothesis 1b was mostly supported. Women's HS was negatively and significantly correlated with agreeableness, positive relations with others, and humanitarianism-egalitarianism (but not communion).

As for Hypothesis 2b (BS would be positively correlated with interpersonal warmth), this was only supported in men's data. Men higher in BS self-reported higher levels of agreeableness, communion, humanitarianism-egalitarianism, and positive relations with others. Women on the other hand exhibited few significant correlations between BS and interpersonal warmth. Only positive relations with others exhibited a significant positive correlation with women's BS. In fact, as noted in Footnote 2, two of the agreeableness facets (straightforwardness: $M\ r = -0.16$, $p = .003$ and modesty: $M\ r = -0.28$, $p < .001$) exhibited negative correlations with women's BS.

9. Discussion

Across four samples, we examined the self-reported interpersonal warmth-dominance dimensions of hostile and benevolent sexism. For men, all four hypotheses were supported: higher HS was associated with higher levels of interpersonal dominance and lower levels of interpersonal warmth; however, more BS was associated with a stronger

[3] Correlations with the six facets of agreeableness (i.e., trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness) are presented in the Appendix on OSF. HS correlated negatively with almost all agreeableness facets for men and women. Men's BS correlated positively with trust, altruism, compliance, and tender-mindedness. Women's BS correlated negatively with modesty and straightforwardness.

Table 3
Semi-partial correlations between sexism and interpersonal warmth measures.

		Men		Women	
Measures	Study	Hostile Sexism[a]	Benevolent Sexism[b]	Hostile Sexism[a]	Benevolent Sexism[b]
Agreeableness (total scale)	1	−.28	−.05	−.13	−.34*
	2	−.48***	.10	−.38***	−.09
	3	−.47***	.21**	−.22***	−.04
	4	−.38**	.26+	−.16	.20
	M r	**−.45*** **	**.18****	**−.25*** **	**−.06**
Communion	1	−.01	.22	.18	−.11
	2	−.32**	.39**	−.20*	.13
	3	−.20**	.34***	−.02	.07
	4	−.48***	.28+	−.09	.12
	M r	**−.25*** **	**.33*** **	**−.05**	**.07**
Positive relations with others	1	−.02	.19	−.10	.02
	2	−.31*	.18	−.21*	.16+
	3	−.28***	.29***	−.23***	.18**
	4	—	—	—	—
	M r	**−.26*** **	**.26*** **	**−.21*** **	**.15****
Humanitariansim-egalitarianism	1	−.22	.01	−.22	−.17
	2	−.54***	.20	−.47***	−.06
	3	−.45***	.20**	−.31***	−.06
	4	—	—	—	—
	M r	**−.45*** **	**.18****	**−.35*** **	**−.07**

Note. M r = fixed-effects weighted mean semi-partial correlation across studies (bolded).

[a] Correlations in this column are semi-partial correlations, controlling for Benevolent Sexism.

[b] Correlations in this column are semi-partial correlations, controlling for Hostile Sexism.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

warmth orientation and higher levels of dominance (men's Machiavellianism was the only correlation that was significant in the opposite predicted direction). These findings demonstrate the importance of differentiating HS from BS when examining sexism in conjunction with personality and individual differences. Men's sexist attitude is more than hostile antipathy; rather, it can bear positive associations with agreeableness and communion if operationalized using ambivalent sexism theory.

Our findings concerning women were mixed. Hypotheses 1a and 1b were partly supported. Women's HS was positively correlated with Machiavellianism, similar to men's data; women's HS was negatively correlated with most interpersonal warmth measures. Women's BS, in contrast, produced a number of conflicting findings. Women's BS was associated with a dominant interpersonal orientation (agency and narcissism), once again aligning with our findings for men. On the other hand, evidence was fairly weak to support any association between women's BS and interpersonal warmth. Most of the correlations between women's BS and warmth individual differences were not significant, and two agreeableness facets were significant in the negative direction (modesty and straightforwardness). These conflicting findings could be a result of the complexities associated with women's BS being a patronizing belief directed at their own in-group. Whereas men's BS implies a nurturing orientation (at least on the surface), women's BS implies both a belief in women's deservingness of protection while additionally suggesting a degree of entitlement (Hammond et al., 2014). In fact, narcissism showed the strongest positive relationship with women's BS in our data.

10. Study 4: Self- vs. Informant-reports

Our meta-analyses of four studies explicated the connections between self-reported interpersonal dominance-warmth and ambivalent sexism. Still, these results are limited by their nature; self-reports leaves researchers vulnerable to potential self-perception biases (Vogt & Colvin, 2005). Study 4 sought to address this limitation and offered preliminary evidence on potential differences and similarities when comparing self and informant reports. Additionally, Study 4 widened the scope of our correlates of interest and examined all the Big Five traits as well as general psychological adjustment.

11. Method

11.1. Participants

As mentioned above, participants in Study 4 were 100 undergraduate students (55 women; M_{age} = 18.92 years) who participated in exchange for partial course credit. We were able to obtain at least one complete informant report data for 97 of the 100 participants.

11.2. Self-reports of sexism and personality

In addition to the Ambivalent Sexism Inventory and the self-report personality traits from the mini meta-analyses, participants completed a computerized version of the California Adult Q-sort (CAQ; Block, 2008). The computerized CAQ provides participants with a virtual deck of 100 "cards," each labeled with a high-level descriptive personality statement or tendency. Participants were instructed to read each card and then sort them in a way that best represented their own personality. Sample cards from the CAQ include: "Is dependable and responsible," "Is a talkative person," and "Has a wide range of interests." Though many constructs can be assessed using the CAQ, in the current research we utilized it to provide ratings of the Big Five personality traits as well as profile correlations for the "optimally adjusted individual." In the interest of directly comparing self- to informant-reports, subjects' self-reports of agreeableness are utilized in the analyses for this study but note that this scale was also included in our earlier mini meta-analysis.

Participants were asked to sort these cards into nine piles following a quasi-normal distribution. The five cards placed to the far left end of the distribution represent those that are most uncharacteristic of the individual, and are given a score of one. The five cards placed to the far right end of the distribution represent those that are most characteristic of the individual; these cards are given a score of nine. The 18 cards placed in the center of the distribution are classified as "neutral," and given a score of five. This distribution is useful in that it helps curb self-presentation biases by limiting the number of high and low scores that can be given. In analysis, the CAQ may be used as a profile (i.e., all cards are considered as a profile, and that profile is correlated with the participant's responses), or individual cards can be analyzed similarly to Likert style items. In the current research we utilize both methods. First, we draw upon prior research to create agency-communion (Vogt & Colvin, 2003) and Big Five scale scores from subsets of the cards (McCrae et al., 1986). These studies have established the CAQ as valid in assessing the Big Five, agency, and communion, and have identified mappings between individual items and the traits they assess. Second, we use a clinical psychologist-created prototype of the "optimally adjusted person," which considers all CAQ cards. Both approaches are employed frequently in studies utilizing Q-sort methodologies (see: Park & Colvin, 2014). Further details are given in the Analytic Procedure section of Results.

11.3. Informant reports of personality

All participants were asked to recruit up to three close friends to provide personality information about them. These friends were emailed an online version of the CAQ, adapted to a 5-point Likert-type scale (1 = strongly disagree; 5 = strongly agree), and were asked to complete the questionnaire about their friend. Informants who

completed over 75% of all questions asked were considered complete responses. All complete responses for each participant were then averaged together to create one informant profile for that individual. An average of 2.3 informants completed this questionnaire for each participant, and informants reported having known participants for an average of 4.6 years. At least one complete informant report was obtained for 97 of the 100 participants surveyed.

11.4. Procedure

Participants completed all self-report questionnaires in the laboratory. Prior to leaving the laboratory, participants provided the email addresses for up to three friends as informants. These informants were sent their survey via email within two weeks, and each received a chance to win a $25 gift card as compensation.

12. Results

12.1. Analytic procedures

Results obtained using the CAQ were analyzed in two ways: using factor scores in the case of the Big Five and profile correlations in the case of optimal adjustment. Big Five factor scores were created using the factor structure put forth by McCrae and colleagues (see Table 2 in McCrae et al., 1986). These researchers factor analyzed all 100 CAQ items, and identified a five factor structure that closely mirrors the Big Five. To create the scale for each of the Big Five using McCrae and colleagues' factor structure, any CAQ item with a factor loading greater than 0.30 was retained as indicative of that Big Five trait. If two CAQ items both loaded onto one of the Big Five, and both had loadings greater than 0.30, the item with the stronger loading was retained. Any negative loadings stronger than −0.30 were retained then reverse-keyed. Scores on all items indicative of each of the Big Five, as determined via the above factor analysis results, were summed to create a factor score for that individual. Scores on each CAQ item were determined via their position in the Q-sort: items that were placed in the "extremely characteristic" pile were given a score of 9; items placed in the "extremely uncharacteristic" pile were given a score of 1.

Following these rules, 18 items were retained as indicative of agreeableness, 11 items were retained as indicative of openness to experience, 17 items were retained as indicative of extraversion, 24 items were retained as indicative of neuroticism, and 12 items were retained as indicative of conscientiousness. These self- and informant-reported factor scores were then correlated with ambivalent sexism ratings, controlling for the other type of sexism and gender. In Study 4 we opted to control for gender rather than separating our analyses by gender due to our relatively low sample size. Because our meta-analyses showed some gender differences in self-reports, results herein should not be seen as conclusive.

To investigate optimal psychological adjustment, profile correlations were conducted using the optimally adjusted person prototype (Block, 1961). The optimally adjusted person prototype is intended to serve as the model of the ideally psychologically healthy individual. This prototype was created by a group of nine clinical psychiatrists and psychologists, each of whom sorted the CAQ to describe the optimally adjusted person, and has been used successfully in personality research using self- and informant-reports (e.g., Park & Colvin, 2014). Two CAQ items that these psychologists rated as being exemplary of optimal adjustment are "Has warmth; has the capacity for close relationships," and "Is dependable and responsible." Two CAQ items that these psychologists rated as indicative of poor optimal adjustment are "Feels cheated and victimized by life," and "Has a brittle ego defense system." In this profile method, once again scores on each CAQ item were determined via their position in the Q-sort: Items that were placed in the "extremely characteristic" pile were given a score of 9 and items placed in the "extremely uncharacteristic" pile were given a score of 1.

Table 4
Self and Informant-Reported Correlates of Hostile and Benevolent Sexism.

Measures	Hostile Sexism		Benevolent Sexism	
	Self-Report[a]	Informant-Report[a]	Self-Report[b]	Informant-Report[b]
Agreeableness	−.26**	−.27**	.22*	.03
Extraversion	.07	−.03	.04	−.19+
Neuroticism	.07	−.02	−.09	.25*
Openness	−.22*	−.12	−.04	−.14
Conscientiousness	−.11	−.15	.12	−.17+
Optimal adjustment	−.14	.00	.03	−.25*

Note. $N = 100$ for self-reports, $N = 97$ for informant reports.
[a] Correlations in this column are semi-partial correlations, controlling for Benevolent Sexism and gender.
[b] Correlations in this column are semi-partial correlations, controlling for Hostile Sexism and gender.
+ $p < .10$.
* $p < .05$.
** $p < .01$.

This profile approach to using the CAQ is unique in that it utilizes all 100 CAQ items. A participant's scores on each of the 100 CAQ items are transformed to a column, then aligned with the psychologists' scores on those same 100 items. Each participant's score for optimal adjustment is calculated by correlating these two columns, thereby creating profile correlations between the psychologists' average scores for each of the 100 CAQ items and a participant's self-rated or informant-rated CAQ scores on these same 100 items. Thus, individuals' personality scores on optimal adjustment may range from −1.00 (indicative of a low level of adjustment) to 1.00 (indicative of a high level of adjustment). These profile correlation scores were then correlated with participants' scores for BS and HS, controlling for both gender and the other form of sexism. Correlations showing self- and informant reports are presented in Table 4.

12.2. Self-reports

As has been shown in previous research, HS exhibited significant negative correlations with two of the five self-reported Big Five traits: agreeableness ($r = -0.26$, $p = .010$) and openness to experience ($r = -0.22$, $p = .031$).

Consistent with our findings in Studies 1–4 and Hypothesis 2a, BS was positively correlated with agreeableness ($r = 0.22$, $p = .031$).

Optimally adjusted prototype scores, as calculated using the CAQ, did not correlate significantly with either HS ($r = -0.14$) or BS ($r = 0.03$).

12.3. Informant-reports

We correlated participants' HS or BS scores with the informants' personality ratings of the participants. Friends of individuals higher in HS reported those individuals as being lower in agreeableness ($r = -0.27$, $p = .009$). Though the correlation between friend-reported openness and HS did not reach significance as it did for the self-report, the effect size was in the expected direction ($r = -0.12$).

Friends of individuals higher in BS rated them as being marginally lower in extraversion ($r = -0.19$, $p = .072$), lower in conscientiousness ($r = -0.17$, $p = .093$), and higher in neuroticism ($r = 0.25$, $p = .015$). Importantly, friends did not perceive individuals higher in BS as more or less agreeable ($r = 0.03$, $p = .759$).[4]

[4] We compared the self-reported vs informant-reported correlation coefficients for BS and agreeableness but this did not yield significant results, $Z = 1.34$, $p = .180$, two-tailed. While in the predicted direction, the statistical power is too low to make conclusive statement.

Informant-reported optimal adjustment was not significantly correlated with HS ($r = 0.00$). In contrast, friends of individuals higher in BS rated these individuals as being lower in adjustment ($r = -0.25$, $p = .015$).

13. Discussion

Study 4 extended our previous findings by utilizing both self- and informant-reports of the Big Five traits and adjustment, and it offered preliminary evidence of potential biases in self-perception associated with ambivalent sexism. These analyses controlled for gender due to the low number of women and men in this study, and the conclusions should be drawn with great caution. Nonetheless, we speculate on potential self-perception bias for people higher in BS.

We found divergence between how individuals with more BS perceived themselves and how their friends perceived them. Though individuals with more BS perceived themselves as agreeable, their friends did not agree; friend-reported agreeableness was unrelated to self-reports of BS. Moreover, friends of individuals with more BS rated them as more neurotic and less optimally adjusted, but these attributes did not correlate significantly for self-reports.

Such biases in self-perception were not observed for HS. Correlations between HS and personality remained consistent between self- and friend-reports, even when such reports did not paint a flattering picture. People with more HS rated themselves as lower on agreeableness and openness to experience and their friends agreed, though the correlation between informant-reported openness to experience and HS did not reach significance. These patterns confirm meta-analytic evidence on generalized prejudice and Big Five traits (Sibley & Duckitt, 2008). These results suggest that HS, as compared to BS, is associated with a more straightforward and consistent alignment in beliefs (e.g., Hammond & Overall, 2017). BS, however, is marked by nurturing attitudes and behaviors that carry paternalistic undertones. Our findings align with this dualistic characterization, as observers did not attribute the same positive characteristics to individuals high in BS as they attributed to themselves. These individuals may think they are warm or agreeable, but their friends observed a more neurotic and maladjusted nature.

14. General discussion

This research illuminates a constellation of correlations between interpersonal warmth-dominance measures and ambivalent sexism, using data from both participants and friends who know them well. Meta-analyzing across all four studies, men higher in HS were more dominance-oriented and less warmth-oriented. These findings confirm that, as far as individual differences are concerned, HS manifests itself similarly to other types of prejudice (Austin & Jackson, 2019; Sibley & Duckitt, 2008). The results for BS were more complex, displaying interesting gender differences. Men's BS was positively associated with both dominance and warmth as predicted. Women's BS, though also positively associated with dominance, displayed mixed and mostly non-significant associations with interpersonal warmth. These findings suggest that women's prejudice toward their own group may not be easily understood through a dominance-warmth individual differences perspective, and perhaps may manifest in other ways not examined in the current work. Nonetheless, men's correlates underscore the need for a dominance-warmth model by demonstrating that prejudice is not always dominant, close-minded, and disagreeable; in the eyes of those high in BS, it can be interpersonally warm as well.

Friend-reports from Study 4 offered preliminary evidence of potential self-perception bias. People with more BS viewed themselves as more agreeable, but friends' agreeableness judgments exhibited no relationship with these individuals' BS ratings. In fact, friends generally viewed participants with more BS in a fairly negative light, perceiving them as more neurotic and less adjusted. This study was limited in that our sample size did not allow us to examine gender differences, and thus its conclusions should be interpreted with care. Nonetheless, we hope it provides insights for future research on self-perception biases in ambivalent sexism.

15. Limitations and future directions

Although we provided a comprehensive examination of the interpersonal profiles associated with sexist beliefs, it is not without limitation. First, our list of dominance-warmth measures examined was by no means exhaustive. Future research could additionally examine other interpersonal individual differences. For example, commonly used measurements of empathy such as the Interpersonal Reactivity Index (IRI; Davis, 1983) could provide potentially interesting insights into the relationship between sexism and empathic concern or perspective taking, the latter of which has been shown to be particularly effective in reducing prejudice (Todd & Galinsky, 2014). Future research could also encompass more negative interpersonal warmth (such as submissiveness) and more positive dominance (e.g., charisma) measurements.

Second, we were only able to gather informant-reported personality in one of our four studies, and these informant reports were gathered from friends only. Though this one study is informative, it is not enough to make definitive statements regarding how observers judge others' ambivalent sexism. Future research should seek to replicate and extend these results with greater statistical power. In addition, future research could gather data from other types of informants, such as romantic partners. These reports may be particularly telling, especially given the pivotal role that benevolent sexism plays in romantic attraction, relationship maintenance, and sexual intimacy (e.g., Gul & Kupfer, 2019; Hammond & Overall, 2017; Harris et al., 2016).

Moreover, as is typical with research using informant reports, the validity of our informant reports is not guaranteed. Although friendship provides a unique perspective into perception and evaluation of individuals with prejudice, it is unclear if the divergence between self- and informant-reports are due to biased perception on the part of the participants or the informants. In other words, who is more accurate? To more fully hone in on where the accuracy lies in a design such as this, self-reports, informant-reports, and behavioral data must be thoroughly integrated (Vogt & Colvin, 2005). More broadly, in the currently research we did not collect informant-reports of ambivalent sexism, and thus could not examine agreement between self- versus other-perceptions of sexist beliefs. Accuracy in detecting HS and BS has been found in strangers and people with no prior relationships (Goh, Rad & Hall, 2017), but no research to date has determined how accuracy in detecting sexism relates to impression formation and personality judgment. Future research could potentially track friends' accuracy in detecting participants' sexism and how such accuracy relates to personality judgments.

Finally, though we examined the moderating role of gender in our studies, future research should investigate the impact of other demographic variables, such as education, religion, and ethnicity. As the results presented herein were conducted using primarily White, educated young or middle aged adults, they may not hold for adults of other demographics.

16. Conclusion

Our findings demonstrate that hostile sexism conforms to the typical interpersonally high-dominance and low-warmth patterns associated with generalized prejudice. In contrast, benevolent sexism does not adhere to these same interpersonal orientations. While men with more benevolent sexism are more agentic and narcissistic, they simultaneously describe themselves as more agreeable and communal. This dualistic nature of benevolent sexism likely plays a pivotal role in perpetuating the status quo of gender inequality by coating sexism in an interpersonally warm and communal façade (Barreto & Ellemers, 2005;

Glick & Fiske, 2001). Together, these findings underscore the need for disentangling the intricate dimensions of sexism and interpersonal orientations.

Declaration of Competing Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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