Beliefs on Sexual Violence in the Context of System Justification Theory: The Role of Hostile Sexism and Beliefs in Biological Origins of Gender Differences

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Abstract

Estimates suggest that around 20% of women may have experienced rape. Various misconceptions about rape (i.e., rape myths) are closely related to victim blaming. In our studies we tested the link between system justification, beliefs in biological origins of gender differences, ambivalent sexism and beliefs concerning sexual violence. Study 1 was conducted among 433 Polish students. The sequential mediation analysis suggests that system justification predicts the level of rape myth acceptance through beliefs in biological origins of gender differences and then hostile (but not benevolent) sexism. In Study 2, conducted among 197 Polish students, we tested the relationship between beliefs in biological origins of gender differences and beliefs concerning sexual violence using experimental design. Contrary to our expectations, students who read the text about social origins of gender differences perceived the survivor of a hypothetical acquaintance rape as less credible, and proposed a lower sentence for a stranger rape perpetrator, compared to participants who read about biological origins of gender differences. We suspect that this is due to experiencing reactance when confronted with social explanations of gender differences. We discuss implications for research and policy.

Keywords Rape · Rape myth acceptance · Rape victim blaming · Ambivalent sexism · System justification theory · Gender essentialism

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Introduction

According to Smith et al. (2017) 36% of women have experienced at least one form of sexual violence involving physical contact, and even around 20% of women may have experienced rape. There are numerous misconceptions about sexual violence, called rape myths. According to data collected by the European Commission (2016), as many as 31% of Europeans believe that rape is more likely to be committed by a stranger than by a person known to the victim, whereas research shows the opposite to be true (e.g., Smith et al., 2017).

Importance of Studying Rape Myths

Even professionals who may have contact with rape survivors during their work are not completely free from misconceptions about rape. Krahé et al. (2008) demonstrated that law students and trainee lawyers are more inclined to victim blaming when the described victim drank alcohol and when she knew the perpetrator before the rape. This suggests that even this group is not completely free from the influence of "real rape" myths according to which a "real rape" is perpetrated by a stranger in a remote place. A study concerning rape cases in Norway (Bitsch & Klemetsen, 2017) seems to confirm this tendency: sentences of rape perpetrators who knew the victims were 18% lower than rape perpetrators who were unknown to the victims. Page (2010) conducted a study among 891 police officers and demonstrated that nearly all of them (93%) believed that any woman can be raped, and yet 19% would not believe a married woman who said she was raped by her husband and 44% would not believe a prostitute who said that they were raped.

There is some evidence that rape myth acceptance may be a predictor of sexual violence perpetration (Abbey et al., 2011; Jewkes et al., 2011; Koss & Dinero, 1988; Malamuth et al., 1995). Moreover, Hudson et al. (2002) demonstrated that a high level of rape myth acceptance is a risk factor for relapse among sexual offenders.

It also seems that women with a high level of rape myth acceptance are less likely to report rape to the police (Egan & Wilson, 2012; Heath et al., 2013). Thus it is worth to conduct studies that may contribute to a better understanding of the sociocultural background of rape myths.

Rape Myths in the Context of the System Justification Theory

One of the first scientific descriptions of rape myths was provided by Martha R. Burt in her work *Cultural Myths and Supports for Rape.* According to her, rape myths are "prejudicial, stereotyped or false beliefs about rape, rape victims and rapists" (Burt, 1980, p. 217). Thus we can treat rape myths as a form of stereotypes. System justification theory can be helpful in explaining rape myths and victim blaming related to these myths. According to this theory, stereotypes and prejudice can be used to legitimize the existing social order—when people do not believe that they can change the system, they legitimize it in order to alleviate negative emotions stemming from inequalities (Jost & Banaji, 1994). There is a link between system justification and rape

myth acceptance (Chapleau & Oswald, 2013, 2014; Papp & Erchull, 2017) which suggests that rape myths may be a tool for legitimizing the social order.

System Justification and Gender Essentialism

Gender essentialism may be helpful in explaining the link between system justification and rape myth acceptance. Some researchers underscore that essentialist beliefs may contribute to rationalization of inequality, which suggests a link between essentialism and system justification (Keller, 2005; Yzerbyt et al., 1997). Essentialism is an attitude that may be associated with both rape myth acceptance and system justification. According to Medin and Ortony (1989) who introduced this notion to psychology, essentialism is a belief that things have essences—inherent properties which are deeper than the surface attributes. This belief may lead to viewing groups as having stable traits, independent of the contextual factors (Coleman & Hong, 2008). Haslam et al. (2000) demonstrated two factors of essentialism—perceiving a category as natural kind and perceiving the category as a coherent entity with an inherent core ("entitativity" or "reification"). The notion of essentialism is often used in the context of gender differences. Belief that the differences between men and women are primarily biological, which is the base of the natural kind factor is positively correlated with sexism and system justification (Studzińska & Wojciszke, 2014). Moreover, previous studies have shown that exposure to essentialist content increases system justification in men (Kray et al., 2017) and acceptance of social inequalities in both men and women (Morton et al., 2009). There is also evidence of a reverse relationship—essentialist beliefs may result from system justification (Brescoll et al., 2013; Morton et al., 2009). Thus, considering rape myth acceptance in the framework of system justification theory, we should also consider gender essentialism. In our studies we check to what extent rape myth acceptance is predicted by beliefs in biological origin of gender differences and whether this is a cause-and-effect relationship.

Gender Essentialism, Gender-Related Stereotypes and Rape Myth Acceptance

Because of beliefs related to the idea that members of certain groups have stable traits, members of those groups tend to be perceived through the prism of stereotypes (Bastian & Haslam, 2006; Haslam & Whelan, 2008). There is a link between gender essentialism and various stereotypes and prejudices related to gender, for example sexism (Keller, 2005; Studzińska & Wojciszke, 2014), lack of support for women's rights (Skewes et al., 2018; Studzińska & Wojciszke, 2014; Wilton et al., 2018), negative attitudes toward politicians who do not fit gender stereotypes (Swigger & Meyer, 2018), stereotyped view of same-sex parenting (Pacilli et al., 2017) and transphobia (Broussard & Warner, 2018; Ching & Xu, 2018; Wilton et al., 2018).

Rape myths (which are also a form of stereotypes) are not an exception here—there is a link between beliefs in biological origins of gender differences and rape myth acceptance (Łyś et al., 2021). Nonetheless, we still do not know what

mechanism is responsible for this relationship, and hostile sexism may be helpful in explaining this link. Hostile and benevolent sexism are components of ambivalent sexism (Glick & Fiske, 1996). Hostile sexism consists of clearly negative beliefs about women, whereas benevolent sexism consists of seemingly positive beliefs about women (e.g., that they are more moral than men). Hostile sexism and rape myth acceptance share negative view of women. Hostile sexism presents women as temptresses who first try to attract men and then reject them. Rape myth acceptance includes an assumption that women often lie (e.g., they accuse men of rape after they consented to sex and then regretted it) and that they often provoke men to rape (e.g., by drinking alcohol or by wearing revealing clothes). Thus we can treat rape myth acceptance as stemming from a broader negative, stereotyped view of women. The link between beliefs in biological origins of gender differences and hostile (but not benevolent) sexism (Studzińska & Wojciszke, 2014) as well as the link between hostile sexism and rape myth acceptance (Angelone et al., 2020; Chapleau et al., 2007; Gerger et al., 2007; Persson et al., 2018; Rebeiz & Harb, 2010; Sakallı-Uğurlu et al., 2007) seem to support this hypothesis. We aimed to test that it in Study 1, where we checked whether the hostile sexism mediates (1) the link between the belief in biological origins of gender differences and rape myth acceptance and (2) the link between the belief in cultural origins of gender differences and rape myth acceptance. In Study 2 we set out to determine whether those relationships were causal. Considering that the link between benevolent sexism and rape myth acceptance is less clear than between hostile sexism and rape myth acceptance (for example, according to Chapleau et al. (2007), protective paternalism, which is one of the subfactors of benevolent sexism, is negatively correlated with rape myth acceptance) we decided to include benevolent sexism as well however we consider it to be exploratory analysis.

Current Studies

Studzińska and Wojciszke (2014) demonstrated that the beliefs in the biological origins of gender differences predict system justification, ignoring the status inequalities between women and men, and the lack of readiness to act to change the system, while the belief in social origins of gender differences provides the opposite effect. They found hostile sexism to be a mediator of those relationships. It is therefore worth analyzing whether beliefs in the biological origins of gender differences also predict attitudes toward sexual violence, and if so, whether hostile sexism can be a mediator of that relationship. We analyzed that in the current studies. Our assumptions are based on system justification theory, thus we included system justification as an independent variable and conducted a sequential mediation where system justification predicts rape myth acceptance through beliefs in biological origins of gender differences and then hostile sexism. The studies have been approved by the Ethical Review Board at the Faculty of Psychology at the University of Warsaw. All the collected data and the previously unpublished tools are available at https://osf.io/wsmpf/.

Study 1: Correlation Between Beliefs in Biological Origins of Gender Differences and Rape Myth Acceptance

In Study 1 we intended to find out whether there is a correlation between beliefs in the biological origins of gender differences and rape myth acceptance and whether hostile sexism mediates this relationship. Thus we decided to test the following hypotheses:

H1 System justification positively predicts rape myth acceptance.

H2 Beliefs in biological origins of gender differences and then hostile sexism are mediators between the system justification and rape myth acceptance.

H3 Beliefs in social origins of gender differences and then hostile sexism are mediators between the system justification and rape myth acceptance.

We took into account hostile sexism in our mediation models because previous studies demonstrated that it is closely related to rape myth acceptance (Angelone et al., 2020; Chapleau et al., 2007; Gerger et al., 2007; Persson et al., 2018; Rebeiz & Harb, 2010; Sakallı-Uğurlu et al., 2007). In the case of benevolent sexism the evidence is less clear. For example, Chapleau et al. (2007) demonstrated that protective paternalism, which is one of the subfactors of benevolent sexism, is negatively correlated with rape myth acceptance. Thus we decided to conduct exploratory analysis of benevolent sexism as a potential mediator in our models. Given the evidence that men have a higher level of rape myth acceptance than women (e.g., Chapleau & Oswald, 2013, 2014; Hantzi et al., 2015) we decided to also control for gender.

Method

Participants and Procedure The sample consisted of 433 students of University of Warsaw, Medical University of Warsaw and Warsaw University of Technology, including 120 men (27.7%), 309 women (71.4%), three participants who did not indicate their gender and one who described themselves as non-binary. The mean age was 21.20 (SD = 3.33). The participants filled out a paper-and-pencil version of the questionnaire. Participation in the study was non-remunerated. Two hundred and ten (49%) participants also took part in a study concerning male rape myth acceptance (Łyś et al. submitted) and sexism toward men (Łyś et al. 2020). The data from this sample were also included in the study concerning psychometric parameters of the Polish version of Updated IRMA questionnaire (Łyś et al., 2021).

Tools and Measures Rape Myth Acceptance: Updated Illinois Rape Myth Acceptance Scale (McMahon & Farmer, 2011) measures four kinds of rape myths: She Asked For It—myths based on the assumption that the victim is somewhat responsible for rape (e.g., *If a girl is raped while she is drunk, she is at least somewhat responsible for*

letting things get out of hand.), He Didn't Mean To—myths based on the assumption that rape is a result of an uncontrolled sexual drive (e.g., *When guys rape, it is usually because of their strong desire for sex.)*, It Wasn't Really Rape—myths based on the assumption that some forms of non-consensual sex are not rape (e.g., *If a girl doesn't physically fight back, you can't really say it was rape.*) and She Lied—myths based on the assumption that false rape accusations are widespread (e.g., *A lot of times, girls who say they were raped agreed to have sex and then regret it.*). The Polish version has been constructed by Debowska et al. (2015). We decided to use a brief, 12-item version (Łyś et al., 2019). The items are scored on a 5-point Likert scale. Its internal consistency in our sample was $\alpha = .87$.

Beliefs in Origins of Gender Differences: Beliefs in Origins of Gender Differences Questionnaire (Studzińska & Wojciszke, 2014) measures the beliefs in biological (e.g., *All the differences between men and women are created by nature.*) and in cultural (e.g., *Men and women differ because they are raised in different ways.*) origins of differences between men and women. The tool consists of 13 items scored on a 7-point Likert scale. Its internal consistency in our sample was $\alpha = .84$ for the Beliefs in Biological Origins of Gender Differences subscale and $\alpha = .87$ for the Beliefs in Cultural Origins of Gender Differences subscale.

Sexism (Hostile and Benevolent): The Ambivalent Sexism Inventory (Glick & Fiske, 1996) measures two dimensions of ambivalent sexism: hostile sexism, based on explicitly hostile beliefs about women (e.g., *Women seek to gain power by getting control over men.*) and benevolent sexism, based on apparently supportive attitudes toward women (e.g., *A good woman should be set on a pedestal by her man.*). The tool has been adapted to Polish by Mikołajczak and Pietrzak (2014). The Polish version consists of 22 items scored on a 6-point Likert scale. Its internal consistency in our sample was $\alpha = .93$ for the hostile sexism subscale and $\alpha = .90$ for the benevolent sexism subscale.

System Justification: System Justification Scale (Kay & Jost, 2003) measures the tendency to support the existing social order (e.g., *Society is set up so that people usually get what they deserve.*). The tool has been adapted to Polish by Klebaniuk (2010). It consists of 8 items scored on a 5-point Likert scale. Its internal consistency in our sample was $\alpha = .72$.

Results

Rape Myth Acceptance and the Sociodemographic Variables Due to the high numbers of women in our sample we decided to use a nonparametric U Mann–Whitney test to compare men and women. Results ($z = -6.192$, $p < .001$) suggest that women ($M = 21.83$, SD $= 6.73$, Mdn $= 21.00$) have a lower level of rape myth acceptance than men ($M = 27.37$, SD $= 8.88$, Mdn $= 26.50$) which is consistent with the results of the previous studies. There were no significant correlations between rape myth acceptance and age ($r = -.07$, $p = .13$).

Correlations The correlations of RMA with other variables are presented in Table 1.

Rape myth acceptance correlated positively with beliefs in biological origins of gender differences, sexism and system justification. While it correlated negatively

Table 1 Correlates of RMA (Pearson's *r*)

	RMA (total)	RMA (SA)	RMA (MT)	RMA (NR)	RMA (SL)
HS	.64**	.59**	.43**	.39**	.61**
BS	.47**	.44**	.33**	.31**	.42**
BO	.48**	.42**	.34**	.31**	.41**
CO	− .18**	− .17**	− .06	− .11*	− .18**
SJ	.30**	.23**	.21**	.24**	.27**

RMA: rape myth acceptance, SA: she asked for it, MT: he didn't mean to, NR: it wasn't really rape, SL: she lied, HS: Hostile sexism, BS: benevolent sexism, BO: biological origins of differences between men and women, CO: cultural origins of differences between men and women, SJ: system justification

*$p < .05$ **$p < .01$

with beliefs in cultural origins of gender differences, except for the He Didn't Mean To subscale.

System Justification, Beliefs in Biological Origins of Gender Differences, Ambivalent Sexism and Rape Myth Acceptance: A Sequential Mediation Model In order to test the sequential mediation model we used model 6 in the Process macro (Hayes, 2013) with Davidson–MacKinnon heteroskedasticity correction (Hayes & Cai, 2007). We controlled for gender. The results are presented in Fig. 1.

Model 95%; boots = 5000; TOTAL EFFECT CI = (.23, .55). The standardized indirect effect of system justification [$\beta = .04$; 95% CI = (.03, .06)] on rape myth acceptance through belief in the biological origin of gender differences and then hostile sexism was significant. The indirect effect of system justification [$\beta = .01$; 95% CI = (.00, .03)] on rape myth acceptance through belief in the biological origin of gender differences and then benevolent sexism was not significant. Thus, the relationship between system justification and rape myth acceptance was mediated
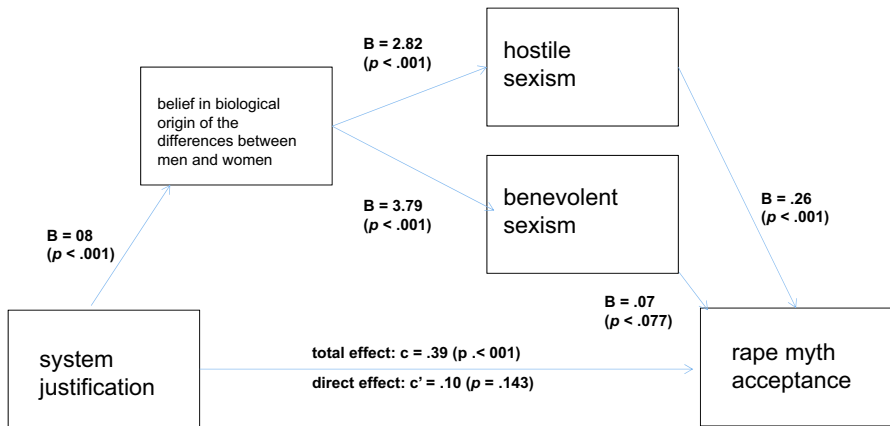

Fig. 1 System justification, belief in biological origin of the differences between men and women, ambivalent sexism and rape myth acceptance—sequential mediation model

by beliefs in biological origins of gender differences and then by hostile (but not benevolent) sexism. When taking the mediators into account the direct effect was no longer significant showing full mediation.

System Justification, Beliefs in Cultural Origins of Gender Differences, Ambivalent Sexism and Rape Myth Acceptance: A Sequential Mediation Model In order to test this model we also used model 6 in the Process macro (Hayes, 2013) with Davidson–MacKinnon heteroskedasticity correction (Hayes & Cai, 2007). We also controlled for gender. The results are presented in Fig. 2.

Model 95%; boots = 5000; TOTAL EFFECT CI = (.19, .53). The standardized indirect effect of system justification [β = .01; 95% CI = (.01, .03)] on rape myth acceptance through belief in the cultural origin of gender differences and then hostile sexism was significant. The indirect effect of system justification [β = .00; 95% CI = (.00, .01)] on rape myth acceptance through belief in the cultural origin of gender differences and then benevolent sexism was not significant. Thus, the relationship between system justification and rape myth acceptance was mediated by beliefs in cultural origins of gender differences and then by hostile (but not benevolent) sexism. When taking the mediators into account the direct effect was still significant showing partial mediation.

Discussion

The hypotheses H1 to H3 were supported: system justification predicted rape myth acceptance through beliefs in biological origins of gender differences and then hostile (but not benevolent) sexism. There was the same relationship in the case of beliefs in cultural origins of gender differences. The results suggest that rape myths may be rooted in beliefs in biological origin of gender differences; nevertheless, an experimental study is needed to draw any conclusions concerning cause-and-effect relationship.
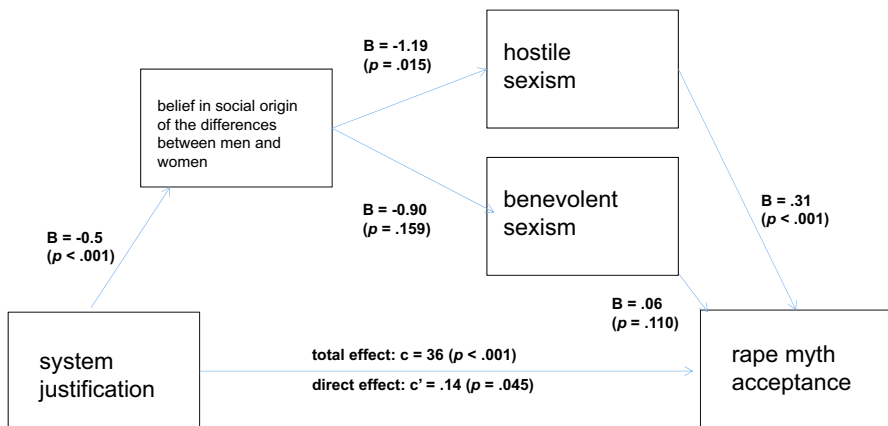

Fig. 2 System justification, belief in social origin of the differences between men and women, ambivalent sexism and rape myth acceptance—sequential mediation model

Study 2: Exposure to Essentialist and Anti-essentialist Content and Beliefs on Sexual Violence

In Study 2 we intended to find out whether exposure to essentialist and non-essentialist content influences beliefs on sexual violence. There are some experimental studies that demonstrate a cause-and-effect relationship between exposure to essentialist (or non-essentialist) content and various gender-related attitudes. For example, Brescoll and LaFrance (2004) demonstrated that exposure to biological explanation of gender differences led to greater endorsement of gender stereotypes, while exposure to social explanation of gender differences increased the belief in mutability of human behavior. Wilton et al. (2018) demonstrated that exposure to information about social origins of gender differences increased support for women's and transgender people's rights and this relationship was mediated by prejudice. Kray et al. (2017) demonstrated that exposure to information about gender roles as something immutable increased system justification in men. According to Morton et al. (2009), exposure to essentialist beliefs increased acceptance of social inequalities among both men and women, support for discriminatory practices among men and self-esteem among men. Ching and Xu (2018) demonstrated that exposure to biological explanations of gender differences increased transphobic prejudices. Thus we hypothesized that biological explanation of gender differences may increase stereotypical view of sexual violence, whereas social explanation of gender differences may decrease it.

The pre-registration for Study 2 is available at https://osf.io/wsmpf/. In this article we focus only on the following hypotheses:

H1 Participants exposed to information about biological origins of gender differences will have:

- a higher level of hostile sexism (H1a) and victim blaming (H1b) than the control group
- a lower level of perpetrator blaming (H1c), perceived trauma (H1d) and perceived credibility of the victim (H1e) than the control group
- propose lower sentences for the rape perpetrators than the control group (H1f)

H2 Participants exposed to information about social origins of gender differences will have:

- have a lower level of hostile sexism (H2a) and victim blaming (H2b) than the control group
- have a higher level of perpetrator blaming (H2c), perceived trauma (H2d) and perceived credibility of the victim (H2e) than the control group
- propose higher sentences for the rape perpetrators than the control group (H2f)

H3 Hostile sexism will mediate the relationship between the experimental manipulation and victim blaming, perpetrator blaming, perceived trauma, perceived credibility of the victim and proposed sentence.

We included rape myth acceptance, system justification, political views, and gender as covariates. As demonstrated in Study 1, rape myth acceptance and system justification are positively correlated with belief in biological origin of gender differences thus we decided to control for it in Study 2. Taking into account the correlation between rape myth acceptance and conservative world view (Barnett & Hilz, 2017; Giovannelli & Jackson, 2013; Hantzi et al., 2015; Łyś et al., 2021) we decided to also control for political views. Given the evidence for the influence of the emotional state on acquisition of information (e.g., Imbir, 2016), as well as the evidence for the link between the mood and blame attribution (Goldenberg & Forgas, 2012), we decided to include mood as a covariate.

Method

Participants We recruited a new student sample which consisted of 348 students from the University of Human Sciences and Economics in Warsaw, Poland. Students who participated in the study obtained class credit. We did not include psychology students because they might have previously had contact with discussions on the origins of gender differences. We excluded 42 students who did not pass the manipulation check, 44 students who filled out the questionnaire for more than 3 h, and 65 students who did not check Polish as their native language. The required sample size was computed with G-Power (Faul et al., 2007). Assuming that the power is .80 and the alpha is .05, the minimum sample size was 158. The final sample consisted of 197 students, including 119 (60.4%) women, 76 (38.6%) men and two persons (1%) who did not indicate their gender. Mean age was 23.72 (SD = 9.15). One third (33.5%) of the participants studied management, 27.4%—finances and accounting, 20.3%—law, 9.1%—IT, 6.6%—administration, 2.5%—social communication and PR and one person did not indicate their field of study. It is also worth taking into account that when asked about their political views concerning societal issues, 44.7% described themselves as "rather liberal," "liberal" or "highly liberal," 35.5% as "somewhat liberal and somewhat conservative" and only 19.8% as "rather conservative," "conservative" or "highly conservative".

Tools and Measures In Study 2 the following measures were used.

Victim Blame, Perpetrator Blame, Perceived Trauma, Perceived Credibility of the Victim, Proposed Sentence for the Perpetrator: We used two vignettes, one presenting a story of stranger rape and the other a story of an acquaintance rape; participants read both of them. The vignettes were presented in a random order using Qualtrics. After reading one vignette the participants replied to the 12 items (each subscale consisted of three items) concerning victim blame (e.g., *Monica is at least somewhat responsible for what has happened.*), perpetrator blame (e.g., *The man should be punished.*), credibility of the victim (e.g., *Monica's story is credible.*) and perceived trauma suffered by the victim (e.g., *Monica will need a lot of time to recover after this incident.*). Then they read the second vignette and once again answered to the 12 items. The internal consistency of the subscales in our sample was $\alpha = .71$ for victim blaming, $\alpha = .92$ for perpetrator's blame, $\alpha = .73$ for perceived trauma and $\alpha = .80$ for perceived credibility of the victim in the case of stranger rape

and $\alpha = .81$ for victim blaming, $\alpha = .90$ for perpetrator's blame, $\alpha = .82$ for perceived trauma and $\alpha = .76$ for perceived credibility of the victim in the case of acquaintance rape. We also asked how many years of incarceration for the perpetrator the participant would choose from 2 to 12 years (the range follows the Polish law; Criminal Code [Poland], 1997, art. 197).

Sexism (Hostile and Benevolent): We used the same measure as in Study 1. Its internal consistency in Study 2 was $\alpha = .88$ for the hostile sexism subscale and $\alpha = .84$ for the benevolent sexism subscale.

Rape Myth Acceptance: We used the same measure as in Study 1. Its internal consistency in Study 2 was $\alpha = .89$ for the total score, $\alpha = .74$ for the She Asked For It subscale, $\alpha = .65$ for the He Didn't Mean To subscale, $\alpha = .71$ for the He Was Just Drunk subscale, $\alpha = .71$ for the It Wasn't Really Rape subscale and $\alpha = .77$ for the She Lied subscale.

System Justification: We used the same measure as in Study 1. Its internal consistency in Study 2 was $\alpha = .80$.

Mood: We used the 9-point version of Self-Assessment Manikin—a pictorial scale where the participants assess their mood by choosing an appropriate picture (Bradley & Lang, 1994).

Sociodemographic Data: We controlled for participants' age, gender, field of studies, native language and political views.

Procedure The study was conducted online using Qualtrics. Participants were told that they were going to participate in two experiments and that the first of them concerned memory. Participants were randomly assigned to one of the three groups (two experimental and one control). We used a Polish version of the experimental manipulation created by Brescoll and LaFrance (2004). The two texts concerning the origins (biological vs. social) of gender differences were translated into Polish, and then back-translated to English by an independent translator, and following the back-translation some minor changes have been introduced. In the "biological" condition participants read a text focusing on the biological origins of gender differences, in the "social" condition—a text focusing on the cultural origins of gender differences and in the control condition—a text concerning the relationship between gardening and mood, written by ourselves. The Polish versions of the texts are available at https://osf.io/wsmpf/. Then the participants answered control questions, to assess whether they read the text carefully. Further they were asked to participate in the second experiment, concerning relationships between men and women and sexual violence. In this part they answered questions concerning mood and next they filled in the questionnaire concerning victim blame, perpetrator blame, perceived trauma, perceived credibility of the victim and proposed sentence for the perpetrator. Then they filled out the questionnaires concerning rape myth acceptance, ambivalent sexism and system justification. The order of the questionnaires was randomized. At the end the participants from the experimental groups answered another control question, assessing whether they agreed with the explanation of gender differences presented in the text and filled out the sociodemographic questionnaire. In order to obtain course credit the participants had to input their student's ID number but it was not connected to their results, thus keeping the study anonymous.

Results

Effect of Experimental Manipulation on the Perception of Rape We compared perception of rape and the level of sexism in the three groups using ANOVA in SPSS. The results are presented in Table 2.

As can be seen, the group who read the biological explanation of gender differences, perceived the credibility of an acquaintance rape victim as significantly higher than the group who read the social explanation of gender differences.

Effect of Experimental Manipulation on the Perception of rape: The Role of Gender, Rape Myth Acceptance, System Justification, Political Views, Mood and Agreeing with the Presented Explanation of Gender Differences In the subsequent analyses we also compared perception of rape and the level of sexism in the three groups using ANOVA in SPSS but we controlled for gender, rape myth acceptance, system justification, political views, mood and agreeing with the presented explanation of gender differences. The results are presented in Table 3.

As can be seen, after taking into account the aforementioned covariates, another significant difference occurred—people who read the biological explanation of gender differences proposed the highest sentences for the strange rape perpetrator.

Gender was a significant covariate of hostile sexism, stranger rape victim blaming, and perceived credibility of the victim of acquaintance rape. Rape myth

Table 2 Sexism and perception of rape—ANOVA (F(2,194))

Dependent variable	Experimental group1 (biological origin)	Experimental group2 (social origin)	Control group	F	Partial η^2
HS	41.30[a] (9.87)	43.94[a] (10.53)	41.86[a] (9.47)	1.239	.013
BS	41.33[a] (10.36)	40.08[a] (9.29)	41.22[a] (9.42)	.337	.003
Stranger rape					
VB	5.54[a] (2.85)	6.12[a] (3.16)	6.38[a] (2.70)	1.349	.014
PB	17.20[a] (2.41)	17.38[a] (1.70)	17.44[a] (1.37)	.282	.003
PT	17.09[a] (2.33)	16.94[a] (1.52)	16.97[a] (1.60)	.115	.001
PC	15.72[a] (2.23)	15.20[a] (2.14)	15.26[a] (2.38)	.943	.010
Sentence	10.67[a] (2.27)	10.27[a] (2.50)	10.36[a] (2.31)	.444	.005
Acquaintance rape					
VB	11.56[a] (3.64)	12.29[a] (3.87)	12.53[a] (3.26)	1.224	.012
PB	15.63[a] (2.88)	15.08[a] (2.79)	14.87[a] (2.99)	1.124	.011
PT	15.57[a] (2.28)	15.02[a] (2.48)	15.25[a] (2.25)	.850	.009
PC	14.65[a] (2.18)	13.23[b] (2.56)	14.00[ab] (2.28)	5.502**	.054
Sentence	7.61[a] (3.28)	7.26[a] (3.52)	7.87[a] (3.57)	.553	.006

Means that not differ significantly from each other (**$p \le .01$) share superscripts

RMA: rape myth acceptance, SJ: system justification, VB: victim blaming, PB: perception of perpetrator's blame, PT: perceived trauma, PC: perceived credibility of the victim, sentence: proposed length of incarceration for the perpetrator (2–12 years)

*$p \le .05$, **$p \le .01$

Table 3 Sexism and perception of rape: ANCOVA ($F(2,194)$)

Dependent variable	Group		Gender		RMA		SJ		Political views		Mood		MC	
	F	Partial η^2	F	Partial η^2	F	Partial η^2	F	Partial η^2	F	Partial η^2	F	Partial η^2	F	Partial η^2
HS	1.409	.015	4.280*	.022	61.889**	.248	.482	.003	13.779**	.068	.031	.000	1.485	.008
BS	1.357	.014	1.751	.009	19.141**	.092	6.121*	.032	3.008	.016	.182	.001	1.681	.009
Stranger rape														
VB	.475	.005	5.574*	.029	27.353**	.127	.001	.000	1.751	.009	.482	.003	.041	.000
PB	.265	.003	.314	.002	3.443	.018	1.691	.009	1.034	.005	.070	.000	.002	.000
PT	.093	.001	.580	.003	7.356**	.038	.738	.004	3.169	.017	.533	.003	.141	.001
PC	.795	.008	2.384	.013	8.663**	.044	.535	.003	.103	.001	1.214	.006	.000	.000
Sentence	4.516*	.046	.390	.002	8.368**	.043	.006	.000	3.512	.018	1.905	.010	8.057*	.041
Acquaintance rape														
VB	.682	.007	.456	.002	45.939**	.196	1.715	.009	6.508*	.033	.300	.002	.906	.005
PB	.204	.002	.327	.002	24.215**	.114	.668	.004	4.971*	.026	.330	.002	.032	.000
PT	.496	.005	.010	.000	14.315**	.071	.314	.002	3.331	.017	.158	.001	.050	.000
PC	6.347**	.063	6.199*	.032	5.748*	.030	1.216	.006	5.163*	.027	.146	.001	2.457	.013
Sentence	.259	.003	2.007	.011	15.591**	.077	2.811	.015	.109	.001	.193	.001	.461	.002

RMA: rape myth acceptance, SJ: system justification, VB: victim blaming, PB: perception of perpetrator's blame, PT: perceived trauma, PC: perceived credibility of the victim, sentence: proposed length of incarceration for the perpetrator (2–12 years), MC: manipulation check (agreement with the explanation of gender differences)

*$p \leq .05$, **$p \leq .01$

acceptance was a significant covariate of all the dependent variables apart from stranger rape perpetrator blaming. System justification was a significant covariate of benevolent sexism. Political views were a significant covariate of hostile sexism, acquaintance rape victim blaming, acquaintance rape perpetrator blaming and perceived credibility of the acquaintance rape victim. Mood was not a significant covariate of any of the dependent variables. Declared agreement with the presented explanation of gender differences was a significant covariate of proposed sentence for a stranger rape perpetrator.

Discussion

As can be seen, none of the hypotheses concerning the effects of experimental manipulation have been supported. Thus we cannot draw any conclusions concerning cause-and-effect relationships between beliefs in biological origin of gender differences, sexism and perception of rape. The results of Study 2 showed that gender, rape myth acceptance, system justification and political views were significant predictors of the perception of rape cases.

General Discussion

The results of Study 1 showed that belief in biological origin of gender differences is a significant predictor of rape myth acceptance and this relationship is mediated by hostile sexism. Nevertheless, because the effect of experimental manipulation in Study 2 was scarce, we cannot conclude that there is a cause-and-effect relationship between these variables. However, exposure to information about social origins of gender differences lowered the perceived credibility of the victim of an acquaintance rape among men, and those exposed to the biological explanation proposed the highest sentences for the strange rape perpetrator.

Limitations and Future Directions

Previous studies show that the experimental manipulation which we used in Study 2 may be effective (Brescoll & LaFrance, 2004; Wilton et al., 2018). Nevertheless, this method is very brief and it may be not strong enough to shift the beliefs concerning origins of gender differences among participants of the study. Thus in further research we should use more complex forms of interventions concerning the beliefs on the origins of gender differences. Further, the topic described in the articles was very narrow—they discussed plant recognition. We should also take into account more general views of gender differences like, for example, in the experimental manipulation used by Ching and Xu (2018). In their study concerning the link between gender essentialism and transprejudice the information that they presented to the participants described gender differences in a more general way, focusing on their impact on the whole life and functioning of people.

We should also take into account that although essentialism is closely related to biological determinism, some forms of essentialism may be based on beliefs concerning social systems. When somebody perceives the influence of society as immutable, this is also an essentialist belief (Ching & Xu, 2018). Moreover, social determinism is related to prejudice and ingroup favoritism as much as the biological one (Rangel & Keller, 2011). The social explanation of gender differences might elicit a social essentialist approach in some participants and that might provoke an unexpected reaction: participants who read social explanation of gender differences perceived the acquaintance rape victim as less credible than participants who read biological explanation of gender differences. People who have a social essentialist view of gender may believe that women are taught to provoke men or to make false accusations. Thus in further studies we should take into account two aspects of gender differences—origins (biological vs. social or interactionist) and changeability (mutable vs. immutable).

The link between gender essentialism and system justification needs further research as well, especially since Morton et al. (2009) suggest that essentialism may not necessarily be a constant belief, but rather that essentialist beliefs may be invoked as a reaction to a threat of one's own privileged status. Thus an experimental study testing the link between the status threat, essentialist beliefs and beliefs about sexual violence would also be interesting.

We also need to take into account the flaws of the studies conducted in academic settings. Cardiff and Klein (2005) demonstrated that among scientists in the USA the democrats highly outnumber the republicans. There is some evidence that rape myth acceptance is negatively correlated with educational attainment (Burt, 1980). While in our Study 2 less than 20% of the participants declared themselves as conservatives. On the other hand, statistics concerning non-student samples are really alarming. For example according to Eurobarometer (European Commission, 2016), as much as 27% of people living in the EU believe that in some circumstances (e.g., being drunk, on drugs, or voluntarily going home with someone) non-consensual sex can be justified. Thus in future studies it is necessary to check the influence of information concerning the origins of gender differences on beliefs about sexual violence on non-student, and preferably representative samples.

Policy Implications

The exposure to information about social origins of gender differences had an adverse effect: it lowered the perceived credibility of the victim of an acquaintance rape. This unexpected result suggests that the information about societal origins of gender differences does not always account for the reduction in prejudice. A possible explanation can be found in the reactance theory—strong persuasion may provoke a feeling of being pressured (Brehm & Cole, 1966). Thus the presentation of the arguments supporting the idea about societal origins of gender differences and not taking into account their biological aspects may provoke resistance and thus it may be counter-productive. Nevertheless, this mechanism needs further exploration. Bosson et al. (2015) demonstrated that persuasive communication concerning

gender equality may provoke a boomerang effect. This should be taken into account when planning interventions concerning gender roles and sexual violence. Possibly, instead of just presenting information about social origins of gender differences it would be better to take into account the interactionist explanation which does not ignore the biological aspects of gender differences but rather integrates them with the societal ones, like in other experimental manipulations (Ching & Xu, 2018; Coleman & Hong, 2008).

It is worth considering using more universal interventions, for example based on building respect and compassion toward other people. Such interventions could be based on the ethics of care in its broader, contemporary understanding (Held, 2006; Kittay, 1999). Future research plans should consider the effectiveness of using educational content based on the ethics of care as a supplement to the interventions described in this article, as well as the effectiveness of using educational content based on the ethics of care as the main core of the intervention. It can be expected that more universal messages based on ethics may cause less resistance for the respondents, because they contain references to the principles underlying basics of the value system in Western cultures. The proposed solution could reduce the risk of a boomerang effect. Nevertheless, we need further experimental research in order to find evidence for the link between exposure to interactionist beliefs and beliefs concerning sexual violence.

Conclusion

There is evidence that beliefs in biological origin of gender differences predict rape myth acceptance and hostile sexism mediates this relationship. However, a cause-and-effect relationship between those variables was not supported by the experimental study we conducted. Nevertheless, we need further experimental evidence in order to conclude whether there is any cause-and-effect relationship between these variables. First of all, due to the liberal bias present in academic settings (Cardiff & Klein, 2005), we need to test it on varied samples, diverse in terms of education and social capital.

Declarations

Ethical Approval The studies have been approved by the Ethical Review Board at the Faculty of Psychology at the University of Warsaw.

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