Facing #metoo: the impact of stereotypes on mental representations of sexual predators

Ngozi Anyadike-Danes

Master Science Thesis

Supervised by:
1. Dr. Gijs Bijlstra
2. Dr. Inti Brazil

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Radboud University

Abstract

The widespread identification with the #metoo movement has suggested that sexual violence impacts most people, directly or indirectly. #metoo has drawn greater attention towards how society perpetuates certain stereotypes (rape myths) about sexual violence and sexual predators. The current research project was aimed at investigating (1) the endorsement of rape myths (RMA) and (2) how RMA might affect mental representations of sexual predators. A reverse-correlation task was used to reveal mental representations of participants (N=62) about sexual predators. An independent group of raters (N=31) rated these mental representations. Men endorsed rape myths more than women. Results indicated a non-significant relationship between RMA and negative mental representation but exploratory analysis suggested a potential relationship between RMA and negative mental representations of sexual predators. RMA differs between men and women but it is not clear how this impacts mental representations of sexual predators. RMA may impact juror decision-making, therefore, more research in this area is needed.

Key words: rape myth acceptance; rape stereotypes; reverse-correlation task; mental representation; sexual predators

#notallmen vs #yesallwomen: The impact of stereotypes on sexual predator perception

Sexual violence is considered a global problem, affecting both women and men around the world (World Health Organisation; WHO, 2013). 'Sexual violence' is an umbrella term that refers to acts (often criminal) involving sexual behaviour enacted upon an individual that range from verbal (e.g., sexual harassment) to physical (e.g., rape) acts (WHO, 2011). Women are often considered to be at greater risk with statistics suggesting that, globally, 7% of women have experienced non-partner sexual violence in their lifetime and 30% of women have experienced physical and/or sexual violence at the hands of their partner (WHO, 2013). Despite awareness of this problem, sexual violence continues to affect people on a daily basis (Equality Now, 2017). Previous research appears to focus on understanding victim blaming attitudes (for review, see Suarez & Gadalla, 2010; Grubb, & Turner, 2012; van der Bruggen, & Grubb, 2014) and bystander prevention of rape (Hayes, Abbott, & Cook, 2016) rather than understanding the relationship between stereotyped attitudes and the perception of sexual predators. Understanding this link is important because if stereotyped attitudes bias how individuals interpret evidence, their ability to determine the liability of a perpetrator is flawed which may negatively affect the outcome of a court case (i.e. a guilty perpetrator determined to be innocent). The goal of the current research is to improve understanding of stereotyped attitudes about sexual violence and explore how they might impact mental representations of sexual predators.

A reverse-correlation task (RCT; e.g., Dotsch, Wigboldus, Langner, & van Knippenberg, 2008) can be used to visualize the mental image of a given category (e.g., emotion; Brinkman et al., 2019), these mental images are known as mental representations (Brinkman et al., 2019). Understanding how individuals mentally represent concepts and, more specifically, faces is important because it can provide insight on what information

individuals use, for example, to make social judgements about others (Busching & Lutz, 2016). In a two images forced-choice categorization task (2IFC; a type of RCT), participants view two facial images and are asked to choose the face they most associate with the chosen category. This choice task continues over a number of trials and, by averaging together participants' response patterns, a classification image (CI) can be created that represents their mental representation of the chosen category. CIs are then evaluated by an independent sample of participants who rate each CI against chosen traits. Furthermore, RCT can be used to visualize mental representations on an individual level (i.e. how one individual visualizes a concept) or on a group level (i.e. averaging individual images from participants by a specific group; Dotsch et al., 2008; Brinkman, Todorov, & Dotsch, 2017). For example, Dotsch, and colleagues (2008) visualized stereotypical associations about Moroccans and demonstrated that higher prejudice led to a greater categorization of Moroccans as criminal and less trustworthy; this research demonstrated the influence that prejudice may have on social categorization and mental representations.

To date, only one study has utilized RCT in the domain of sexual violence (Busching & Lutz, 2016). Participants visualized either a thief; a rapist or; a lifesaver and their responses were used to created six group level CIs. A second participant sample read six rape vignettes each accompanied by one of the averaged group CIs (i.e. thief; rapist or; lifesaver) and were asked to rate the individual's liability; this sample also completed a rape stereotype-endorsement questionnaire. The results showed that higher rape stereotype attitudes resulted in an attribution of less liability to the lifesaver face; importantly, this suggests that individuals with stereotyped attitudes about rape attribute less liability to an individual that does not match their mental representation of a criminal. However, this research did not create individual-level CIs nor did it measure the extent to which the CI creators held stereotyped attitudes about rape. By measuring the stereotypes endorsed by the CI creator, we

can explore the extent to which these stereotypes impact how others (i.e. the raters) perceive the creator's stereotype (e.g., Dotsch et al., 2008) thus expanding our knowledge on how rape stereotypes affect mental representations. Therefore, the current research aims to replicate these findings (Busching & Lutz, 2016; Dotsch et al., 2011) by using an RCT (Dotsch et al., 2008) and to add to this research by measuring the endorsement of rape stereotypes by CI creators (Dotsch et al., 2011; Dotsch et al., 2008) and the extent to which it affects how people perceive a sexual predator.

Rape stereotypes are associated with all aspects of sexual crimes (e.g., victimology, perpetrators, criminology) and these are often legitimized and normalized by the media (Lee, Peng & Klein, 2010; Harper, 2016). These stereotypes are sometimes referred to as rape myths (Burt, 1980). Rape myths can be defined as attitudes or false beliefs that limit the amount of blame directed towards the perpetrator and/or maximize the amount of blame directed towards the victim (Burt, 1980; Lonsway & Fitzgerald, 1994). They may, for example, provide the individual with contextual information about the offence (e.g., rape only happens outside; Du Mont, Miller, & Myhr, 2003); describe the victim's behaviour (e.g., acting provocatively; Sheldon & Parent, 2002); provide gender-specific characteristics of women that are more likely to be raped (e.g., single; Frese, Moya & Megías, 2004) and; importantly, prescribe the characteristics that individuals use to qualify rape (e.g., rape by a stranger is "real" rape; McKimmie, Masser, & Bongiorno, 2014). Research has suggested that the more individuals accept (or, endorse) rape myths (i.e. higher rape myth acceptance (RMA)), the more likely they are to rely on the aforementioned contextual information when interpreting sexual situations (e.g., deciding whether to attribute blame to a victim or predator; Klement, Sagarin & Skowronski, 2019) and this often results greater blame towards the victim and decreased culpability for the perpetrator (Bieneck, & Krahé, 2011; Dawtry, Cozzolino, & Callan, 2019; Klement, et al., 2019). However, it appears that a paradox may

exist; on the one hand, higher RMA is linked with reduction in perceived culpability which would suggest that higher RMA individuals would rate faces of sexual predators as less guilty, yet, on the other hand, Busching and Lutz (2016) used negative rape vignettes to demonstrate that higher RMA individuals attributed less criminal liability to lifesaver faces than to criminal faces. Therefore, it seems as if there is some discrepancy between our current understanding of RMA and the impact it has on our mental representations of sexual predators. The current research will explore this relationship by seeking to answer this research question: *how do rape myths impact how people mentally represent sexual predators?*

Rape myths are more likely to be endorsed by men (e.g., Krahé, Temkin, Bieneck, & Berger, 2008; Hayes, Lorenz, & Bell, 2013) and some suggest that this is due to negative attitudes towards women (Lutz-Zois, Moler, & Brown, 2015) and a greater acceptance of traditional gender roles which prescribe male dominance and female subservience (Davies, Gilston, & Rogers, 2012). The current research will seek to replicate previous findings of gender differences in RMA.

We predict that men will endorse rape myths more than women (Hypothesis 1) because men usually hold more stereotyped beliefs about rape (Busching & Lutz, 2016). More importantly for the current research, we predict that a higher RMA score will be associated with a CI that is more negatively rated (Hypothesis 2). It is likely that a high RMA score will result in a more stereotyped image (e.g., Dotsch et al., 2008); it is also likely that an image created by a higher RMA individual will have more negative features (e.g., Dotsch et al., 2011), therefore, the image will be rated more negatively, although, there is little research on this specific topic. On an exploratory basis, we aim to explore the paradox of rape myths and negative mental representations (i.e. criminal faces are associated with more liability (Busching & Lutz, 2016) but RMA is related to reduced perpetrator liability (Krahé,

Temkin, & Bieneck, 2007; Klement, et al., 2019)) using two negative rape scenarios to examine the relationship between RMA and association with an aggressor (similar to Busching & Lutz, 2016).

Little research has concerned itself with the impact of RMA on the perception of sexual predators which, on a surface level, is understandable. However, by understanding how rape myths impact perception, we may be able to begin to understand how to reduce the impact of rape myths in judgements of liability. For example, if higher RMA increases the risk that a juror will blame the victim and exonerate the perpetrator then, perhaps, this risk could be mitigated by the presence of mandatory expert testimony debunking certain rape myths (Ellison & Munro, 2008), providing jurors with clear legal definitions of specific sexual crimes to reduce the risk they rely on biased contextual information (Krahé, Temkin, & Bieneck, 2007) or; asking each jury member to justify their verdict in sexually violent cases (Auld, 2001).

The present research examines the relationship between gender differences and RMA and; using a 2IFC, examines whether higher RMA results in more negatively rated CIs.

Methods

Our sample size, hypotheses, research design and statistical analyses were pre-registered with AsPredicted.org: http://aspredicted.org/blind.php?x=4f5hc2

Part 1: Rape myth acceptance and image creation

The primary purpose for the first part of the experiment was to collect data to create individual and group CIs.

Participants & Design

Participants (N = 62; 42 females; M_{age} = 22.84 years, SD = 4.45) were recruited using Radboud University's research participation system, in exchange for course credit or financial compensation (€7.50). Participants performed a 2IFC RCT (e.g. Dotsch et al., 2008, Busching & Lutz, 2016) and completed an RMA questionnaire. To meet the inclusion

criteria, participants had to have good vision (without correction); be tertiary education students and; English speaking. During the experiment, participants were instructed to choose the image that most resembled a sexual predator from the two presented stimuli. Based on these responses, an individual level CI was created for each participant and, based on participant RMA scores, three group level CIs were created.

Materials & Procedure

The images that were used within the 2IFC task were created using the procedure developed by Dotsch and colleagues (2008). The base image represented a gender neutral Caucasian person with a neutral expression from the Karolinksa face database (Figure 1; Lundqvist & Litton, 1998). Using the R-package 'rcicr' (Dotsch, 2016), a random noise pattern (and its inverse) was created (that varied by stimulus) and superimposed upon the base image. This process resulted in the creation of 500 images, with half the images presenting an inverse image of their respective noise pattern (see Figure 2). Each stimulus represents a variation of the base image as a result of the additional noise pattern.

Figure 1. The base image face sourced from the averaged Karolinska face database.

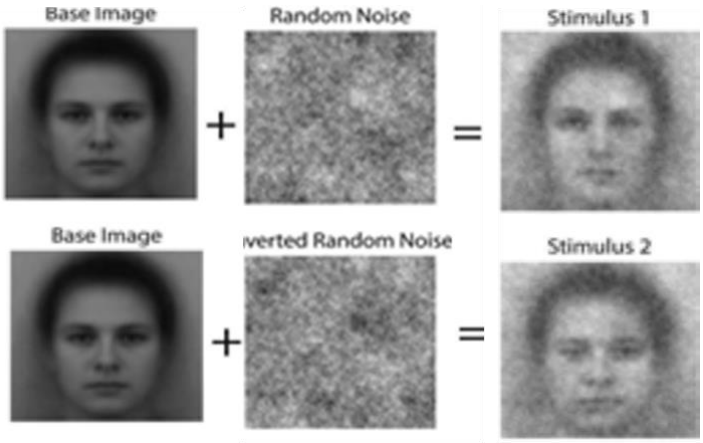

Figure 2. A schematic depiction of how noise was applied to the base image to create two stimuli.

Reverse correlation task. Participants sat in a closed cubicle and completed the experiment using a desktop computer. All participants completed 500 trials of a 2IFC RC task (Dotsch et al., 2008), which was created using Inquisit (Inquisit 4.0.100, 2015) and divided into five blocks with 100 trials per block; after each block, participants had a 20 second break. In each trial, participants viewed two noisy facial images (512x512 pixels) side by side and chose the face that they considered to be most like a sexual predator; the response keys were pre-set and involved keyboard keys ('A' for the left image, 'L' for the right image). The presentation order for the image pairs was randomized. Lastly, participants completed the AMMSA questionnaire and provided demographic information.

Classification images. Individual CIs were created for each participant by taking each chosen stimulus, averaging the associated noise patterns together and superimposing the total average noise pattern onto the original base image. This process was performed using the 'rcicr' R-package (Dotsch, 2016) and yielded 62 individual CIs. Aggregated group CIs were created by grouping the participants by their RMA score (M = 3.47; SD = .37); pre-registered cut-off points resulted in participants with scores greater than one standard deviation ($>1SD$ = 3.84, n = 11) classified as high, participants with scores less than one standard deviation ($<1SD$ = 3.10, n = 8) classified as low and remaining participants classified as medium (n = 43). This method of grouping the participants resulted in highly unequal groups and created quite skewed group CIs (see Figure 3).

Figure 3. From left to right, the classification images representing low, medium and high RMA classification groups.

To rectify this, the RMA scores were first standardized and then z-scores were calculated; new groups were then created using percentile ranges (i.e. 33rd and 66th (Dotsch et al., 2008)) and this resulted in groups that were more equal in size (Low = 21; medium = 27; high = 14). Three group CIs were then created using the same procedure described earlier (see Figure 4).

Figure 4. From left to right, the classification images for the newly formed low, medium and high RMA classification groups.

Acceptance of Modern Myths about Sexual Aggression (AMMSA). To measure RMA, participants completed the Acceptance of Modern Myths about Sexual Aggression (α = .63; Appendix A) which is a 30-item scale that measures the acceptance of rape myths, and other forms of sexual aggression, using slightly more subtle language (Gerger, Kley, Bohner, & Siebler, 2007). Using a scale of 1 (*completely disagree*) to 7 (*completely agree*), participants were asked to rate items such as: "after a rape, women nowadays receive ample support" and "any woman who is careless enough to walk through "dark alleys" at night is partly to be blamed if she is raped". The RMA_1 score was calculated using the first sample participants' mean AMMSA score and RMA_2 was calculated using the second sample participants' mean AMMSA score.

Part 2: Image rating and rape myth acceptance

The primary purpose for the second part of the experiment was to evaluate the CIs using an independent sample of participants.

Participants

We recruited an independent participant sample (n = 31**;** 20 female; M_{age} = 23.87 years, SD = 3.31) to rate the individual and group CIs. This sample size was determined by calculating the budget and time available for the study. Participants provided informed consent prior to the experiment. Additionally, participants either received financial compensation (€5) or class credit for their participation.

Procedure

Participants were asked to perform four tasks: 1. To rate the individual CIs on four dimensions; 2. To rate the group CIs on the same dimensions; 3. To read two scenarios and rate the group CIs on the likelihood that the CI was the aggressor in the scenario and; 4. To complete the AMMSA. As before, participants were seated in a closed cubicle and completed the task using a desktop computer. The task was created using Inquisit (Inquisit 4.1.100, 2015). Each rating task was divided into four blocks of 65 trials (62 individual, 3 group) with each block corresponding to a different characteristic (block 1: aggressiveness; block 2: dominance; block 3: valence; block 4: masculinity). Block order was counterbalanced and fixed. Image order within the blocks was randomized with individual CIs appearing first, in a random order, and then group level CIs, also in a random order. Participants used a 7-point scale ranging from 1 (*not at all*) to 7 (*very aggressive/dominant/masculine/negative*; α = .84).

For exploratory purposes, participants were asked to assess the extent to which they associated each group CI with a sexual aggressor after reading two negative scenarios. Participants were presented with two scenarios (see Appendix B) describing a non-consensual sexual incident between two adults. After each scenario, participants were shown the three group CIs in a random order and asked to rate each image, using a 7-point scale ranging from 1 (*no association*) to 7 (*strong association*), on how much they associated the image with the aggressor in the scenario (α = .73). Lastly, participants completed the AMMSA and provided demographic information.

Results

Data was analysed using R programming language (R Core Team, 2017). To test whether there were gender differences in RMA scores, we will first report the results of the two *t*-tests; the first analysis compared RMA_1 (dependent variable; DV) scores to participant gender (independent variable; IV) and the second compared RMA_2 scores (DV) to participant gender (IV).

Rape Myth Acceptance Scores

Part 1 of the study. 62 participants completed the RCT. One participant was excluded from the *t*-test as they identified as other than male or female. The results of the *t*-test indicated that RMA scores for males (M = 3.69, SD = .41) were higher than females' (M = 3.37, SD = .31), $t(59) = -3.47$, $p < .001$, $d = .95$.[1]

Part 2 of the study. 31 participants rated all CIs (62 individual, 3 group) on four traits (aggression; dominance; masculinity and; valence). One participant was excluded from the *t*-test as they identified as other than male or female. The *t*-test revealed that, again, males (M = 3.89, SD = .36) had higher RMA scores than females (M = 3.34, SD = .32), $t(28) = -4.23$, $p = < .001$, $d = .43$[1].

Individual Classification Images

Main analyses. To test for relationships between the four traits (aggression; dominance; masculinity and; valence) and RMA_1, we first calculated each participant's mean response per image per trait. The average response per image across all the traits against the image creator's RMA score is visualized in Figure 5. This figure suggests a positive relationship between RMA_1 and the total mean response per image that is close to significant, $r(60) = .233$, $p = .069$.

[1]Both participant samples had disproportionately more women than men, thus, following each RMA analysis, scores were standardized; using standardized scores, men still scored higher than women.

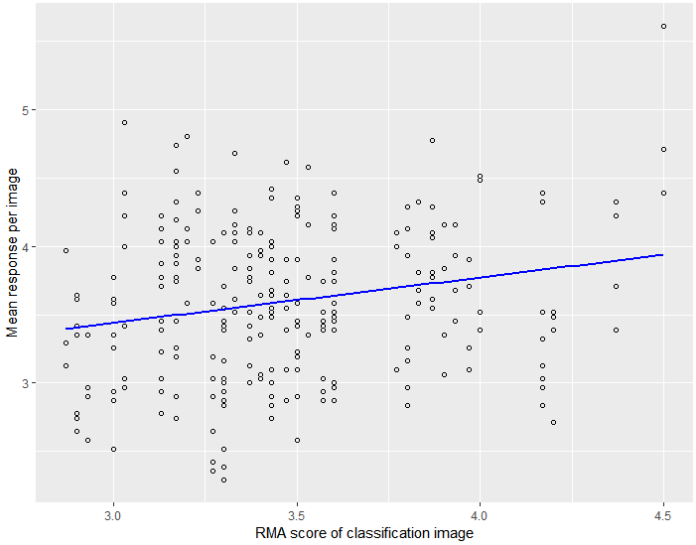

Figure 5. The relationship between RMA score of each individual classification image and the mean response per image.

Results of the Pearson correlation between each trait and the RMA_1 scores are visualized in Table 1 and indicated that there was a significant positive association between RMA_1 and dominance, $r(60) = .321$, $p = .011$. All the traits correlated with each other positively with the strongest correlations between aggression and; dominance ($r(60) = .717$, $p < .001$) and; valence ($r(60) = .781$, $p < .001$) and valence and; dominance ($r(60) = .669$, $p < .001$). There were weak correlations between masculinity and all traits (aggression: $r(60) = .494$, $p < .001$; dominance: $r(60) = .317$, $p = .01$; valence: $r(60) = .483$, $p < .001$).

Table 1
Descriptive statistics for rape myth acceptance[1] and traits for individual images.

Trait	*M*	*SD*
Aggression	3.06	.43
Dominance	3.46	.42
Masculinity	3.98	.49
Valence	3.81	.48
RMA[1]	3.47	.37

Note. n=62

To test the extent that RMA_1 predicted the raters' evaluation, we ran a one-way multivariate analysis of variance analysis (MANOVA) with RMA_1 as IV and the ratings (aggression; dominance; masculinity and; valence) as DVs. No main effect of RMA_1 on these ratings was found, Pillai's Trace = .11, $F(1, 60) = 1.79$, $p = .143$.

Exploratory analysis. The aim of this research was to operationalize negative traits to test whether RMA_1 predicted negative ratings, therefore, as the correlational analysis indicated a lower correlation between RMA_1 and masculinity, $r(60) = .055$, $p = .673$, than the other traits, it did not appear as if masculinity was measuring the same construct; similarly, masculinity correlated the least with the other traits. Thus, we decided to conduct an exploratory analysis that excluded masculinity. A one-way analysis of variance (ANOVA) was conducted with RMA_1 as IV and the average of the three ratings (aggression; dominance and; valence) as DV. The effect was statistically significant, $F(1, 60) = 7.95$, $p = .035$, $\eta_p^2 = .07$, and a subsequent ANOVA analysis showed that higher RMA was significantly related to dominance, $F(1,60) = 6.88$, $p = .01$, $\eta_p^2 = .10$. The relationship between RMA and the other two traits was non-significant (Aggression: $F(1,60 = 2.16$, $p = .15$; Valence: $F(1,60) = 3.15$, $p = .08$).

Group Classification Images

Main analyses. The second analysis, similar to Dotsch and colleagues (2008), focused on the rating of the group CIs. The mean trait ratings per group CI are visualized in Table 2.

Table 2
Descriptive statistics for the mean trait rating by face type.

Trait	Face type	*M*	*SD*
Aggression	Low	4.00	1.55
	Medium	2.87	1.48
	High	3.32	1.96
Dominance	Low	4.23	1.67
	Medium	3.42	1.63
	High	3.58	1.98
Masculinity	Low	4.94	1.26
	Medium	3.55	1.67
	High	4.65	1.62
Valence	Low	4.61	1.52
	Medium	3.94	1.63
	High	4.23	1.61

Note. n=62

To test the extent that RMA_1 predicted a negative evaluation, we ran a repeated measures MANOVA with group CI face type (low; medium and; high RMA) as IVs and the mean ratings per face type (aggression; dominance; masculine and; valence) as DVs. The

effect was statistically significant, Pillai's Trace = .734, $F(8,23) = 4.45$, $p < .001$. Follow-up univariate ANOVAs indicated that the mean ratings of aggression, masculinity and valence significantly differed by face type (Table 3).

Table 3
Summary of one-way ANOVAs between face type and mean trait ratings.

Trait	Sum of Squares	*df*	Mean Square	*F*	*p*	η_p^2
Aggression	20.02	2	12.65	9.01	.001	.23
Dominance	11.29	2	5.65	3.08	.06	.09
Masculinity	33.18	2	16.59	10.43	.000	.26
Valence	7.16	2	3.58	.4.12	.021	.12

Note. n=12

The results of post-hoc pairwise comparisons (with a Bonferroni correction for multiple comparisons) indicated that aggression ratings significantly differed between the low RMA and medium RMA faces ($p < .001$); masculinity ratings differed significantly between the low RMA and medium RMA faces ($p = .001$) and; between the medium RMA and high RMA faces ($p = .01$); and; negative ratings differed significantly between the low RMA and medium RMA faces ($p = .018$). There were no significant differences for ratings of dominance.

Pre-registered exploratory analysis. The third analysis, similar to Busching & Lutz (2016), focused on the ratings given to the group CIs after participants read both scenarios. The mean ratings for each face type across both scenarios are presented in Table 4.

Table 4
Descriptive statistics for the mean trait rating by face type.

Face type	*M*	*SD*
Low	4.87	1.35
Medium	3.50	1.32
High	4.43	1.33

Note. n=12

To test the extent that RMA_1 predicted whether an image would be associated with the aggressor in the scenario, we ran a repeated measures ANOVA with face type (low; medium and; high RMA) as IV and the mean rating for both scenarios per face type as DV. There was a significant main effect, $F(2,58) = 4.91$, $p = .01$, $\eta_p^2 = .15$, of face type on mean rating indicating that the low RMA image was rated significantly higher than the medium

RMA image ($p < .001$) and the medium RMA image was rated significantly lower than the high RMA image ($p = .01$) but no significant relationship was found between the rating of the high RMA image and the low RMA image ($p = .17$).

Discussion

The aim of the current research was to test whether rape myth acceptance (RMA) affects mental representations of sexual predators. A secondary aim was to replicate previous findings that have demonstrated gender differences in RMA. Our results suggested a conflicting relationship between RMA, mental representations and evaluation which will be discussed further below.

Using a two images forced choice reverse correlation task, participants created classification images (CI) visualizing their mental representations of sexual predators and completed the Acceptance of Modern Myths about Sexual Aggression questionnaire. The goal of this part of the study was to collect data to create the individual and group level CIs. In line with Hypothesis 1, we showed that men endorsed rape myths more than women.

This result has been consistently shown in previous research (Suarez & Gadalla, 2010; Hayes et al., 2013; Klement et al., 2019). As rape myths more often dictate negative attitudes towards the victim (who is, typically, considered to be female), this may explain why men often perceive rape victims more negatively than women (Wakelin & Long, 2003; Hockett, Smith, Klausing & Saucier, 2016). Similarly, society often endorses the rape myth that men have sexual urges and women must submit to them (Schwartz & DeKeseredy, 1997; Hayes et al., 2013), therefore, it is unsurprising that men often report higher RMA. Whilst our result represents a replication of a large body of previous research (Suarez & Gadalla, 2010), little research has explored whether these differences exist in a homosexual sample (Worthen, 2017). Therefore, future research should consider exploring whether the same gender bias

affects homosexual men and women's endorsement of rape myths to improve our understanding of rape myths.

Using the data obtained in the first part of the study, individual CIs and aggregated group level CIs, representing low; medium and; high RMA, were created. An independent sample of participants rated both sets of CIs on four traits (aggression; dominance; masculinity and; valence). For exploratory purposes, these participants also read two rape scenarios and, for each scenario, rated each group level image on association with the scenario's aggressor. The goal of this part of the study was to evaluate the individual and group level CIs with an independent sample of participants.

We predicted that individual CIs created by high RMA scoring participants would be rated more negatively than CIs created by low scoring participants (Hypothesis 2). The results indicated a non-significant relationship between RMA and the mean rating of individual CIs across all traits. Although the pre-registered analysis showed a non-significant relationship between RMA and the four traits (i.e. higher RMA did not predict negative mental representations of sexual predators), there were some indicators that a significant relationship might exist between RMA and some of the traits. Previous research has suggested that biased individuals will show a more negative evaluation of faces on negative stereotype-relevant traits (i.e. stereotypical negative traits that match the given category; e.g., criminal Moroccan, Dotsch et al., 2011) but a less negative evaluation for positive stereotype-relevant traits (i.e. positive stereotypical traits that match the given category; e.g., feminine homosexual, Dotsch et al., 2011); additionally, there was evidence for a weaker relationship between masculinity and the other characteristics which suggested that masculinity may not have been operationalized as a negative trait. Therefore, we conducted an exploratory analysis without masculinity as a dependent variable.

The results of this exploratory analysis suggested that higher RMA may be related to higher mean negative individual CI ratings, specifically dominance, which is in line with our hypothesis. However, due to the prior non-significant result, this result should be interpreted with caution and seen as an indicator of a likely relationship between RMA and negative ratings rather than a confirmed relationship.

The results of this exploratory analysis are in line with previous research suggesting that certain facial characteristics (e.g., dominance) are interpreted by individuals using a variety of facial information (Oosterhof & Todorov, 2008). Previous research linked dominance to perceived threatening behaviour and physical strength (Oosterhof & Todorov, 2008; Flowe, 2012; Funk, Walker, & Todorov, 2017) and; criminal appearance (Klatt et al., 2016). Given this association, it does not seem surprising that higher RMA images were associated with dominance but it does seem surprising that the images were not associated with aggression; negativity or; masculinity, particularly as previous research has demonstrated a positive correlation between aggression and masculinity (Geniole, & McCormick, 2013). The lack of association between the images and aggression; masculinity and; negativity may indicate that individuals do not associate these traits with sexual predator faces. Previous research has indicated that individuals are successful at distinguishing between criminals and non-criminal facial images but struggle to accurately identify faces of rapists (Valla, Ceci & Williams, 2011); this suggests that the facial features we associate with rapists differ from those we associate with criminals. Thus, future research should first establish traits that are associated with sexual predators before asking participants to evaluate the images.

Our results seem to follow previous research indicating that there is a contradictory relationship between rape myths and the evaluation of sexual predators. On the one hand, individuals endorsing rape myths attribute less culpability to the perpetrator (Bieneck, &

Krahé, 2011; Dawtry, et al., 2019; Klement, et al., 2019) but on the other hand, individuals with higher RMA attribute less criminal liability to the face of a lifesaver than to criminal faces (Busching & Lutz, 2016). Our result extends research suggesting that RMA impacts how people judge faces; it also contributes to reverse-correlation research suggesting that implicit bias may result in visible explicit bias (Dotsch et al., 2008; Dotsch et al., 2011; Ratner, Dotsch, Wigboldus, van Knippenberg & Amodio, 2014). However, the insignificant result suggests that some aspects of the relationship between RMA and negative mental representation are still unclear. The sample size for this research was quite low compared to previous research (Dotsch et al., 2008; Dotsch et al., 2011; Busching & Lutz, 2016) due to budget restrictions and it is likely this impacted the results. Given that the analysis of the effects of RMA_1 on evaluations of the individual images was approaching significance, future research should aim for larger sample sizes to further understand the paradoxical relationship between rape myths and mental representations of sexual predators.

We also predicted that CIs representing low, medium and high RMA classification groups would be rated according to their classification (i.e. low RMA CI rated less negatively than medium and high RMA CI). The results indicated a significant relationship between RMA and the group level CIs but low and high RMA CIs were both rated significantly higher than the medium RMA CI. This result is contradicted by previous research (Dotsch et al., 2008, Dotsch et al., 2011) and may be explained by the disproportionate size of the classification groups. We recreated the groups using standardized RMA_1 scores to reduce the disparity in group size but the groups were still somewhat unequal, thus increasing the risk that the group level images did not accurately represent each classification. Importantly, it has been suggested that the creation of group images may cause an inflation of type 1 error as each group image represents the combined noise of each individual image used to create it. By amplifying the noise, the risk that group level images are noticeably different than

individual images increases (Brinkman et al., 2018). Similarly, the benefit of the reverse correlation task is that it reduces researcher bias as CIs are created and evaluated against participants' own bias with little input from the researcher (Brinkman, Todorov & Dotsch, 2017); group level CIs increase the risk of the researcher influencing participants as it is the researcher that determines the cut-off scores for the group CIs. Future research should consider whether group level CIs are necessary to answer research questions; if so, group level CIs should be classified using objective measures and should be created using equal samples.

Consistent with research by Busching and Lutz (2016) that showed that higher RMA individuals will judge the liability of a lifesaver face less than criminal faces, we decided to conduct an exploratory analysis to further explore the extent to which the group CIs represented sexual predators (rather than just negative traits). Participants were asked to rate the extent they associated each of the group level CIs with a sexual aggressor in two negative rape scenarios. Previous research has used vignettes to provide participants with contextual information for mock juror decisions of rape trials (Krahé et al., 2008) and for rating CIs (Busching & Lutz, 2016); in line with these findings, we found significant associations between RMA and sexual predator association with the low RMA image associated less with sexual predator more than the medium RMA image and the medium RMA image associated less with the sexual predator than the high RMA image. As with the previous result concerning the group CIs, this result should be interpreted with caution because, as previously mentioned, it is highly likely that the low sample size and unequal groups impacted the results.

Results from rape vignette research have consistently replicated findings indicating that higher RMA is associated with decreased perpetrator blame and culpability (Sleath & Bull, 2010; Sleath & Bull, 2012; Campbell, 2017); conversely, rape vignettes accompanied

by mental representations indicated that higher RMA individuals attributed greater liability to a criminal face, compared to a lifesaver (Busching & Lutz, 2016). Thus, it seems that higher RMA individuals may compare faces against their mental representation of a criminal; if faces are not congruent, then the face is not considered to be criminal, although this mechanism is still not well understood. Rape vignettes present contextual information that may activate rape myths (particularly in individuals who endorse them) that enables further exploration of the relationship between RMA and attitudes towards perpetrators (Sleed, Durrheim, Kriel, Solomon, & Baxter, 2002); additionally, previous research has suggested that contextual information is disregarded by individuals when it is presented with facial images (Olivola & Todorov, 2010a; Olivola & Todorov, 2010b). As only one study has combined CIs with rape vignettes, future research should consider examining the extent to which evaluation of sexual predator faces is affected by contextual information from rape vignettes.

General Discussion

A key strength of our study is that we used the stereotype endorsement rating of the CI creator as a predictor of how the CI will be rated by the independent rater and little reverse correlation research has examined this relationship, particularly on the individual image level. Therefore, future research should consider further exploring this relationship on an individual level, particularly given the current evidence suggesting that group level images may increase type 1 error rates (Brinkman et al., 2018). Creating the CIs can be an arduous task and in this research participants were required to complete 500 trials in the first part. Previous research (Dotsch et al., 2011) included an attention check during the questionnaire but, perhaps, an additional attention check could be including during the image trials to ensure participants are focusing on the task. Our study is not without limitations. The low sample size is likely to have impacted the results; an effective reverse correlation task relies on both the creation of

the CI and the subsequent rating (Dotsch et al. 2008), thus, low sample sizes in either (or both samples) can have severe implications. For example, a low sample size of CI creators will result in too few CIs to be evaluated by raters and influence how well images are rated; conversely, a low sample size of CI raters impacts the conclusions that can be drawn about the relationship between the CIs and the category being studied. Additionally, low sample sizes may have different effects on each part of the reverse correlation task. For example, a low sample of CI creators will have a greater impact on group analysis (as group level CIs are created from individual CIs). Thus, future research should aim for sample sizes more in line with previous research, particularly in the CI evaluation stage if rating of individual CIs are the main research interest.

It has been well-established the extent to which RMA predicts judgements of criminal liability (Grubb & Turner, 2012; Campbell, 2017); similarly, research suggests that stereotypical attitudes predict negative mental representations (Dotsch et al., 2008; Brown-Iannuzzi, Dotsch, Cooley, & Payne, 2017; Lei, & Bodenhausen, 2017). What still remains unclear is the extent to which higher RMA mental representations predict judgements of criminal liability. Though a low sample size is likely to have affected the results of this study, there does seem to be evidence for a likely relationship between RMA and negative mental representations of sexual predators. The practical implications of this relationship can be understood by considering jury decisions; if it is confirmed that higher RMA predicts less attribution of criminal responsibility to a sexual predator, this would suggest that verdicts of court cases may be unjustly influenced by rape myths. Further research is needed to understand this relationship but, perhaps, providing jurors with expert testimony to debunk rape myths prior to the trial could help to reduce the impact of rape myths.

Conclusion

The present research sought to investigate how rape myths affect mental representations of sexual predators. We were able to add to research that has demonstrated that men endorse rape myths more than women (Krahé et al., 2008; Busching & Lutz, 2016; Klement, et al., 2019); additionally, exploratory analysis seemed to indicate the likelihood of a positive relationship between RMA and dominance but future research should explore this further. More broadly, we were able to add to research examining the relationship between biased attitudes and negative mental representations (Dotsch et al., 2008; Dotsch et al., 2011). Future research should consider improving the vignette measure to try and replicate the results of Busching and Lutz (2016) but, as in this research, the RMA scores of the CI creators should be measured to allow for comparisons between RMA and individual mental representations (Dotsch et al., 2011). Sexual crimes are often regarded as the most under reported crime (Belknap, 2010) and, equally, one of the hardest crimes to prosecute (Randall, 2010; Hockett et al., 2016; Davies, 2016); jurors are asked to evaluate the evidence and may find themselves implicitly influenced by rape myths that they endorse (Krahé et al., 2008; McKimmie et al., 2014). These rape myths often blame the victim and exonerate the perpetrator (Ellison & Munro, 2008; Ayala, Kotary & Hetz, 2018), therefore, it is important to not only understand the basis of rape myths but the impact they have on judgements of guilt.

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Appendix A

The Acceptance of Modern Myths about Sexual Aggression

1. When it comes to sexual contacts, women expect men to take the lead.
2. Once a man and a woman have started 'making out', a woman's doubts against sex will automatically disappear.
3. A lot of women strongly complain about sexual infringements for no real reason, just to appear emancipated.
4. To get custody for their children, women often falsely accuse their ex-husband of a tendency towards sexual violence.
5. Interpreting harmless gestures as 'sexual harassment' is a popular weapon in the battle of the sexes.
6. It is a biological necessity for men to release sexual pressure from time to time.
7. After a rape, women nowadays receive ample support.
8. Nowadays, a large proportion of rapes are partly caused by the depiction of sexuality in the media as this raises the sex drive of potential perpetrators.
9. If a woman invites a man to her home for a cup of coffee after a night out this means that she wants to have sex.
10. As long as they don’t go too far, suggestive remarks and allusions simply tell a woman that she is attractive.
11. Any woman who is careless enough to walk through “dark alleys” at night is partly to be blamed if she is raped.
12. When a woman starts a relationship with a man, she must be aware that the man will assert his right to have sex.
13. Most women prefer to be praised for their looks rather than their intelligence.

14. Because the fascination caused by sex is disproportionately large, our society's sensitivity to crimes in this area is disproportionate as well.
15. Women like to play coy. This does not mean that they do not want sex.
16. Many women tend to exaggerate the problem of male violence.
17. When a man urges his female partner to have sex, this cannot be called rape.
18. When a single woman invites a single man to her flat she signals that she is not averse to having sex.
19. When politicians deal with the topic of rape, they do so mainly because this topic is likely to attract the attention of the media.
20. When defining 'marital rape', there is no clear-cut distinction between normal conjugal intercourse and rape.
21. A man's sexuality functions like a steam boiler – when the pressure gets too high, he has to 'let off steam'.
22. Women often accuse their husbands of marital rape just to retaliate for a failed relationship.
23. The discussion about sexual harassment on the job has mainly resulted in many a harmless behavior being misinterpreted as harassment.
24. In dating situations the general expectation is that the woman 'hits the brakes' and the man 'pushes ahead'.
25. Although the victims of armed robbery have to fear for their lives, they receive far less psychological support than do rape victims.
26. Alcohol is often the culprit when a man rapes a woman.
27. Many women tend to misinterpret a well-meant gesture as a 'sexual assault'.
28. Nowadays, the victims of sexual violence receive sufficient help in the form of women's shelters, therapy offers, and support groups.

29. Instead of worrying about alleged victims of sexual violence society should rather attend to more urgent problems, such as environmental destruction.
30. Nowadays, men who really sexually assault women are punished justly.

Appendix B

Scenario 1

Natalie is a student at a local university and enjoys sports and socializing. Natalie had been on a night out with her friends when she spotted someone staring at her from across the bar. To begin with she thought nothing of it, and simply carried on chatting and dancing with her friends. Later on in the night, a man approached her and said 'Hi, my name is Sam. Can I buy you a drink?'.

Natalie was embarrassed by the attention, but accepted the offer. Natalie and Sam spent the rest of the evening chatting and drinking until the bar closed. Natalie's friends checked that she was alright and then went home. Natalie lived a long way from the bar, so they ended up going to Sam's house, with Sam saying that he would drive her home in the morning. Natalie eventually agreed and they got a taxi back to Sam's house.

When they got there, Sam gave Natalie a tour of the house, poured two large glasses of red wine and then put on some music. It was not long before they were kissing on the sofa. Natalie had told herself that she was not going to sleep with Sam, as she was not in the habit of sleeping with men she did not know. Before she knew it, Sam was unbuttoning her shirt and stroking her breasts. They had gone through a bottle of wine and Natalie felt very drunk. Both Natalie and Sam were becoming very aroused. Sam stood up and led Natalie into the bedroom and began undressing her. At this point Natalie told Sam to stop, but Sam ignored her. Before she knew what was happening, Sam penetrated her and began having sex with her. Once he finished, Sam fell asleep. Natalie felt immensely uneasy about what had happened so she got up and left.

Scenario 2

Alicia is a second year at university. After a stressful week, she decides to go to a party with a group of friends. Having had a couple of drinks, Alicia begins to relax and starts

having fun with her friends. She takes a break from the dancefloor to get another drink and one of her classmates, Ryan, comes over and starts talking to her.

Alicia and Ryan generally get on quite well, particularly recently when they worked on a class project. Alicia and Ryan talk throughout the night. Ryan has already had a couple of beers, and after talking for about half an hour, they go to the kitchen where Alicia follows Ryan to the fridge and grabs herself a beer while Ryan mixes himself a drink.

After continued conversation, Ryan asks Alicia if she wants to go upstairs where it is quieter so that they can keep talking. Sensing that Ryan wants to take things further, Alicia mentions that she's supposed to be meeting her boyfriend later. Ryan tells her that he only wants to talk and they go upstairs to an empty bedroom, where they talk and finish their drinks. At one point, Ryan moves forward to kiss Alicia. She tries to push him away but he is quite insistent and continues kissing her. She tells him no and tries to call out but the music downstairs is quite loud. Ryan tells her to be quiet before holding her down as he unbuttons his pants. Alicia tries to push him off and cries out again but he ignores her.

Ryan pushes her underwear to the side and penetrates her. Alicia continues to try to resist, telling Ryan that she doesn't want to have sex with him. He ignores her. Once done, he rolls off of her. Alicia runs out of the room to try and find her friends.