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Aggression, empathy and sexual orientation in males

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Abstract

Homosexual males are reported to be less physically aggressive than heterosexual males (Ellis, Hoffman, & Burke, 1990; Gladue & Bailey, 1995). Previous aggression studies have not, however, compared all forms of direct aggression, indirect aggression and empathy among these populations. Empathy is a significant factor to consider since it both mitigates the expression of aggression (Kaukiainen, Björkqvist, Lagerspetz, Österman, Salmivalli, Rothberg, & Ahlbom, 1998) and differs between heterosexual and homosexual males (Salais & Fischer, 1995). This study therefore evaluated levels of direct and indirect aggression and empathy among homosexual ($n = 91$) and heterosexual ($n = 91$) males. Data was collected from an Internet-based sample of the two groups using self-report psychometric measures in order to reduce social desirability effects. Homosexual males reported significantly lower levels of physical aggression and higher levels of empathy but report similar levels of indirect aggression, and other forms of direct aggression, to heterosexual males.

Keywords: Direct aggression, Indirect aggression, Empathy, Sexual orientation, Internet-based research

1. Introduction

Human males are reported to be more aggressive than females. During both adolescence and adulthood, males are more likely to initiate aggressive acts (Mesquida & Weiner, 1996), score higher on questionnaire measures of aggression (Buss & Perry, 1992; Harris, 1996) and are more likely to commit homicides (Daly & Wilson, 1988).

Björkqvist and Niemelä (1992), however, point out that many previous studies have conceptualised aggression from a masculine perspective, focusing purely on acts of physical (direct) aggression alone. This focus is misleading. Females are reported to share the same levels of aggression as males but use alternative, or indirect, methods of expression (Campbell, 1995). Indirect aggression reflects a strategy in which an individual attempts to inflict pain on another, using social manipulation in such a manner that they cannot be identified, therefore limiting possible counter-aggression (Björkqvist, Lagerspetz, & Kaukiainen, 1992). Additionally, both direct and indirect aggression are not unidimensional domains but should instead be conceptualised as numerous aggression sub-trait (Buss & Perry, 1992; Forrest, Eatough & Shevlin, *in press*). Thus, it is crucial to consider how aggression is operationalised and to select appropriate psychometric tools for its evaluation.

There is considerable within-sex variation in male aggression, in particular that attributed to male sexual orientation. Homosexual males are reported to express significantly lower levels of physical aggression during their childhood and early adolescence, based on both retrospective (Blanchard, McConkey, Roper, & Steiner,

1983; Friedman & Stern, 1980) and prospective (Zucker & Bradley, 1995) studies. These findings may be linked to prenatal androgen theory, which proposes that differences in brain and behaviour between the sexes are under the control of prenatal androgens. Homosexual males are considered to follow sex-atypical lines of differentiation in both brain and behaviour in line with their sex ‘atypical’ sexual preference (Ellis & Ames, 1987; Rahman & Wilson, 2003). While between-sex differences in physical aggression have not been linked to prenatal androgens, physical aggression in males does vary as a consequence of prenatal androgen exposure (Bailey & Hurd, 2005).

Support for this lack of physical aggression among homosexual males is indirectly supported by research into *childhood gender nonconformity* (CGN). This refers to a child’s interest in sex typical games and activities, and their sense of gender identity. These interests are reported to be moderately heritable (Bailey, Dunne, & Martin, 2000) and also vary with prenatal androgen exposure (Berenbaum & Snyder, 1995). Adult homosexual males are reported as having been “feminine” (sex atypical) in these respects, displaying less interest in physically active pursuits such as rough-and-tumble play (Zucker & Bradley, 1995). While high levels of CGN do not directly reflect childhood aggression (aggression involves a desire to cause pain/harm while activities like rough-and-tumble play do not), they suggest a lack of male-typical physicality among homosexual males during development.

Three studies have examined how adult aggression varies as a result of sexual orientation. Ellis, Hoffman, and Burke (1990) report that homosexual males are significantly less likely than heterosexual males to fight to the point of injury and

considered themselves to be less violent (based on a sample of 129 heterosexual males and 29 homosexual males). Ellis et al. (1990) also report homosexual males recalled significantly lower levels of childhood aggression. Gladue (1991), however, reported no differences in adult aggression based on sexual orientation. While both groups were carefully matched on a number of important demographic variables, these findings were based on a comparatively limited sample (21 heterosexual males and 19 homosexual males) and may have lacked sufficient statistical power to detect group differences. Gladue and Bailey (1995) examined levels of physical and verbal aggression and interpersonal competitiveness among heterosexual and homosexual males (using a comparatively larger sample of 82 heterosexual males and 74 homosexual males). While no significant differences were recorded for either verbal aggression or competitiveness, homosexual males reported significantly lower levels of physical aggression.

Based on the extant literature, it appears that homosexual males may display significantly lower levels of physical aggression than heterosexual males during both childhood/adolescence and in adult life. Nonetheless, this relative difference does not appear to extend to other forms of aggression or competitiveness. However no studies have explicitly investigated the levels of indirect aggression in a comparative sample of homosexual and heterosexual males.

A possible mediating factor in the relationship between physical aggression and male sexual orientation is “empathy.” Baron-Cohen (2002) defines empathy as the:

Drive to identify another person's emotions and thoughts, and to respond to these with an appropriate emotion. Empathizing allows you to predict a person's behaviour, and to care about how others feel" (2002: 248).

Females are consistently reported to demonstrate higher levels of empathizing than males (Davis & Franzoi, 1991; Baron-Cohen, Richler, Bisarya, Gurunathan, & Wheelwright, 2003). Indeed Baron-Cohen (2002) posits that the female brain is, on average, specifically orientated towards empathizing rather than systemising (the drive to analyse a system and understand its rules) with sexual differentiation possibly linked to both genetic factors and prenatal androgen exposure. The expression of empathy in men also appears to vary as a result of sexual orientation; Salais and Fischer (1995) report that homosexual males display significantly higher levels of generalised empathy. This may have a significant impact on adult aggression since empathy mitigates the expression of both direct and indirect aggression (Kaukiainen, Björkqvist, Lagerspetz, Österman, Salmivalli, Rothberg, & Ahlbom, 1998). However there are no studies exploring the associations between empathy and multi-component measures of aggression among heterosexual and homosexual males.

The present study, the first of its kind, aims to assess levels of direct aggression, indirect aggression and empathy will be assessed in a large sample of heterosexual and homosexual males. Based on previous research it is predicted that i) homosexual males will report lower levels of physical aggression, ii) homosexual males will report higher levels of empathy, and iii) homosexual males will display a stronger negative relationship between aggression and empathy. No predictions are made concerning levels of indirect aggression reported by heterosexual and homosexual males.

2. Method

2.1. Participants

A total of 91 heterosexual males (mean age = 27.7 years, S.D. = 10.5 years) and 91 homosexual males (mean age = 23.7 years, S.D. = 7.8 years) participated. As a group, homosexual males were significantly younger than heterosexual males ($t_{(180)} = 2.96$, $p < 0.01$).

Sexual orientation was established using a series of four separate Kinsey Scales (Kinsey, Pomeroy & Martin, 1948) designed to assess sexual identity, attraction, behaviour and fantasies. Each scale has a seven-point range, running from 0 (completely heterosexual interest/response) to 6 (completely homosexual interest/response). Mean orientation scores from the four scales were 0.1 (SD = 0.2) for heterosexual males and 5.8 (SD = 0.3) for homosexual males, demonstrating clear differences in self-reported sexual orientation between the two groups. This is consistent with previous research indicating a bimodal sexual orientation in males, unlike the more variable expression of sexual orientation among females (Bailey et al., 2000).

All participants were recruited online. Homosexual males were recruited through a number of student orientated Lesbian, Gay, Bisexual and Transgender (LGBT) organisations in the United Kingdom and the United States. A standardised e-mail was sent to the president of each organisation explaining the goals of the current

research and requesting that a link to this study be distributed to their members. Heterosexual males were recruited via a link posted on two student orientated online research websites, the ‘Social Psychology Network’ (socialpsychology.org) and ‘Psychological Research on the Net’ (psych.hanover.edu/Research/exponnet.html), over a two-month period.

An online method of sampling was selected to gain access to a large sample of homosexual men. The use of an online sample alleviates the substantial problems in recruiting homosexual participants (Sandfort, 1997), somewhat since it affords access to a large and diverse population who may not ordinarily be available for research purposes. However it is possible that an online sample may not be representative of either the wider heterosexual or homosexual populations. Based on the methods of Hewson, Yule, Laurent and Vogel (2003), scores from this research will therefore be compared to existing data collected from traditional (non-internet) samples to assess generality. One criticism of studies using self-report measures of indirect aggression (Österman, Björkqvist, Lagerspetz, Kauaiinen, Huesman, & Fraczek, 1994) and empathy (Kaukiainen et al., 1998) is the influence of social desirability; the privacy offered through online sampling represents an efficient way to alleviate this problem and has been shown to significantly reduce social desirability effects (Joinson, 1999). There was, however, a lack of direct control over participants. To increase researcher control, participants were provided with clear and explicit instructions to follow, IP addresses were recorded to prevent multiple submissions and the online survey-authoring tool was deliberately selected for its presentational consistency across web browsers (see below).

2.2. Materials

The Aggression Questionnaire (AQ). This 29-item scale was developed by Buss Perry (1992) specifically to divide direct aggression into a series of factor-analytically derived sub-trait: physical and verbal aggression (motor components); anger (affective component) and hostility (cognitive component). All sub-trait demonstrate a high level of internal consistency (Cronbach's alphas ranging from 0.72 to 0.85). Given the specificity of previously reported differences in aggression between heterosexual and homosexual males (Gladue & Bailey, 1995), the AQ may detect differences that would otherwise have been missed by more global measures of aggression.

The Indirect Aggression Scale – Aggressor Version (IAS-A). Studies examining indirect aggression in children and adolescents typically rely on peer evaluation scales (i.e., Björkqvist et al., 1992). These methods would be almost impossible to implement with an online adult population. It was therefore decided to use the recently developed IAS-A of Forrest et al. (*in press*). This psychometric tool is specifically designed for the self-assessment of indirect aggression among adults. Based on exploratory factor analysis, indirect aggression is divided into three sub-trait: social exclusion (actively excluding someone from social situations/interactions); use of malicious humour (using humour to harm an individual); and guilt induction (the intentional induction of guilt), which show a high level of internal consistency (Cronbach's alphas ranging from 0.81 to 0.89). Participants are asked to evaluate how often they used an indirectly aggressive

strategy towards someone over the last 12 months, with their responses being evaluated on a 5 point Likert scale (1 = never, to 5 = regularly).

The Empathizing Quotient (EQ). This 60-item scale was developed to assess empathy, defined as the ability to identify mental states and respond with an appropriate emotional reaction (Baron-Cohen et al., 2003). While many previous empathy measures have been developed, they have frequently tapped into emotional arousability, self-confidence, sensitivity or non-conformity rather than empathy per se (Lawrence, Shaw, Baker, Baron-Cohen, & David, 2004). The EQ is both a reliable and valid measure of empathy (Lawrence et al., 2004). It is composed of 60 items, 40 of which are designed to assess empathy and 20 acting as filler items. Participants are asked to say how much they agree or disagree with empathy related statements (i.e., 'I really enjoy caring for other people') using a four-point Likert scale (ranging from 'strongly disagree' to 'strongly agree'). The EQ has demonstrated a high level of internal consistency (Cronbach's alpha of 0.92; Baron-Cohen & Wheelwright, *in press*).

2.3. Procedure

All of the above measures and demographic scales were coded into an online presentational format using the *autoform* system of Nottingham Trent University (<http://ess.ntu.ac.uk/autoform/>). This is an online survey-authoring tool optimised for fast downloading, widespread browser compatibility and clarity of display. A link to the finished survey was then distributed to participants (see above). Before taking part in the study, both groups were required to read an introductory web page that

informed participants of the aim of this study and of all pertinent ethical issues. All participants were required to provide explicit consent that they had read and understood both the nature of this study and were more than 18 years old. All procedures were approved by the Psychology Ethics Committee of the Nottingham Trent University.

3) Results

Mean scores from both orientation groups are displayed in Table I (alongside previous data collected from non-internet based samples). Since scores for physical aggression showed a significant positive skew, a logarithmical transformation was performed on the data. Since heterosexual and homosexual groups differed significantly in age, this was controlled as a potential covariate.

[INSERT TABLE I HERE]

3.1) Univariate analysis

Results of one factor (sexual orientation) ANCOVA analysis for each dependent variable are shown in Table II. Since multiple analyses were made, a minimum p value was established for univariate analyses by multiplying the standard probability ($p < 0.05$) by the number of analyses (in order to decrease the chances of a type 1 family-wise error occurring). This produced a minimum p value of 0.006.

[INSERT TABLE II HERE]

Homosexual males reported significantly lower levels of physical aggression ($F_{(1, 179)} = 37.03, p<0.006$) and significantly higher levels of empathy ($F_{(1, 179)} = 12.55, p<0.006$) than heterosexual males, with no significant differences recorded for other forms of aggression. These differences were maintained for both physical aggression ($F_{(1, 172)} = 35.43, p<0.006$) and empathy ($F_{(1, 172)} = 7.91, p<0.006$) when all other aggression sub-trait, age, and/or empathy were controlled for as covariates. The 95% confidence intervals show no substantial overlap of mean scores between the two groups for either physical aggression (heterosexuals = 20.36 to 23.60, homosexuals = 15.11 to 17.42) or empathy (heterosexuals = 36.62 to 41.38, homosexuals = 42.57 to 46.80).

Age was found to be a significant covariate for several forms of aggression, with younger heterosexual and homosexual males displaying higher levels of malicious humour ($r = -3.63, p<0.05$; and $r = -3.29, p<0.05$ respectively). Younger heterosexual males displayed significantly more physical aggression ($r = -2.18, p<0.05$), while younger homosexual males displayed significantly more hostility and made more frequent use of guilt induction ($r = -2.15, p<0.05$; and $r = -2.42, p<0.05$ respectively).

3.2) Inter-correlation of variables

Partial correlations (controlling for age) were made between each form of aggression. All were significantly inter-correlated, although the correlation in most cases was weak (ranging from $r = 0.20, p<0.05$; to $r = 0.55, p<0.001$). Due to the putative mitigating influence of empathy, partial correlations were made between this variable

and all forms of aggression (see Table III). With the exception of anger (roughly equally correlated in both orientation groups) and hostility (significantly negatively correlated for heterosexual but not homosexual males), empathy was more negatively correlated with aggression among homosexual males. The amount of variance in aggression explained by empathy was higher among homosexual males (though it is roughly equal for anger, and higher among heterosexual males for hostility). This suggests the possible mitigating influence of empathy on aggression was stronger among homosexual males than heterosexual males.

[INSERT TABLE III HERE]

3.3) Comparison of online and offline samples

For heterosexual males, mean scores and variance were almost identical to previous samples for both direct aggression (Buss & Perry, 1992; Bailey & Hurd, 2005) and empathy (Baron-Cohen et al., 2003; Lawrence et al., 2004) (see Table I). Social exclusion scores for heterosexual males were virtually identical to those of Forrest et al. (in press), whereas malicious humour and guilt induction scores were approximately half a standard deviation lower in the current Internet based sample.

4. Discussion

The present study confirmed the hypotheses that homosexual males would report lower levels of physical aggression and higher levels of empathy than heterosexual males. There were no significant differences between the groups for any other form of aggression, suggesting that heterosexual and homosexual males, as with heterosexual

males and females, differ in aggression in a qualitative rather than quantitative nature. These sexual orientation related differences remained after controlling for covariates. Overall, these data are consistent with several previous studies (Ellis et al., 1990; Gladue & Bailey, 1995; Salais & Fischer, 1995).

The difference in adult physical aggression between heterosexual and homosexual males appears similar to differences reported for childhood aggression in these populations (Blanchard et al., 1983) and is indirectly consistent with previous findings on childhood gender non-conformity (CGN) among homosexual males (Zucker & Bradley, 1995). The lack of a significant relationship between age and physical aggression in homosexual males adds further support to this interpretation.

The higher level of empathy found among homosexual males is also consistent with previous research in the area (Salais & Fischer, 1995). Empathy was also more strongly correlated with aggression sub-trait among homosexual males. The exception to this was a noticeably stronger relationship between empathy and the cognitive component of aggression (hostility) among heterosexual males. Since empathy may have a mitigating effect on displays of aggression (Kaukiainen et al., 1998), this suggests stronger mitigation of aggressive responses via an empathy pathway among homosexual males.

Physical aggression could be an inefficient strategy to pursue for homosexual males for similar reasons to heterosexual females. This inefficiency arises due to the lower level of physical strength that is, on average, possessed by females. Adult homosexual males are also reported to have slightly lower body weight and height, in self-report

and objective skeletal measures, than heterosexual males (Bogaert & Blanchard, 1996; Martin & Nguyen, 2004), which may also mitigate the use of physical aggression. This explanation would, however, be dependent on homosexual males having, on average, smaller physiques than heterosexual males during both childhood and adulthood.

The proximate mechanism behind sexual orientation differences in empathy is also unclear but may be linked to established sex differences for this trait. Heterosexual females display significantly higher levels of empathy than heterosexual males across a range of settings (reviewed in Baron-Cohen, 2002). This difference is partially biological in basis and has been linked to several areas of the brain (Baron-Cohen et al., 2003), noticeably the amygdala, which is both sexually dimorphic in humans and, in non-human species, influenced by prenatal androgen exposure (Berenbaum & Synder, 1995). Androgen exposure has also been linked to the development of homosexuality (Ellis & Ames, 1987) and the display of some female typical neuropsychological characteristics in homosexual males (Rahman & Wilson, 2003). It is possible that the effects of androgen exposure on the amygdala would cause the expression of empathy to shift in a more heterosexual female typical direction among homosexual males. It is important to note that mean empathy scores for homosexual males in the current research (44.73; SD=11.75) were similar to those previously reported for heterosexual females (47.70; SD=11.00) (Baron-Cohen et al., 2003). While tentative, this would not only account for differences in empathy but would also be consistent with findings linking prenatal androgen exposure to levels of physical aggression in males (Bailey & Hines, 2005), sex typical play interests in humans (Berenbaum & Snyder, 1995) and the expression of sex-atypical play

behaviour in homosexual males (Zucker & Bradley, 1995). To substantiate this claim, there would have to be direct links between androgen exposure, sexual orientation and amygdalic development. Such evidence is not currently available, though research does link the amygdala and sexual orientation in studies of homosexual rams (Perkins & Fitzgerald, 1997).

Methodological issues

Age was shown to have a significant impact on the display of aggression and varied as a function of sexual orientation. For both male groups there was a significant negative correlation between age and the use of malicious humour, consistent with the findings of Forrest et al. (in press) for heterosexual males and females. However scores from both heterosexual and homosexual males did not show a significant negative relationship for the use of social exclusion and only homosexual males showed a negative relationship between age and guilt induction. With the exception of the latter relationship, all correlational coefficients were similar to those of heterosexual males and females reported by Forrest et al. (in press). Given the weak relationship between age and forms of indirect aggression other than malicious humour use, and the substantial sample used by Forrest ($n = 588$), it is possible the current study lacked the statistical power to detect these age-based effects.

Using an Internet-based sample allowed for access to a comparatively large number of homosexual individuals and provided some degree of control over social desirability effects in responses (Joinson, 1999). However it is possible that both the samples of heterosexual and homosexual males are dissimilar to offline samples, since they were

self-selected participants. This is unlikely since homosexual male participants are usually sampled from an event, organisation or publication in a gay community (i.e., Camperio-Ciani, Corna, & Capiluppi, 2004) and/or through student Lesbian, Gay, Bisexual and Transgender organisations (i.e., Wegesin, 1998). In the current research, all homosexual participants were drawn from similar LGBT organisations and therefore reflect comparable populations. It must be remembered, however, that these individuals have deliberately self-selected to join such organisations and may not be reflective of the wider homosexual population. Obtaining a truly representative sample of homosexual individuals is a near impossible task (Sandfort, 1997).

For heterosexual males, the mean scores and variance were very similar to those produced in studies using offline samples (Buss & Perry, 1992; Baron-Cohen et al., 2003; Forrest et al., *in press*). This suggests the participants used in the current research are comparable to other samples accessed through more conventional means (Hewson et al., 2003). However scores for malicious humour use and guilt induction were slightly lower in the current study. The reason why these specific scores differ while scores for other traits are highly similar among both online and offline samples is unclear. It is unlikely to be due to the anonymity and disinhibitory effects of online research, since it would be expected to see these scores increase rather than decrease. This issue warrants further investigation. While scores for homosexual males could not be directly compared to those from previous samples, the significant differences for physical aggression and empathy in this study were similar to previous research.

Conclusions

Consistent with previous research, homosexual males reported significantly lower levels of physical aggression (Ellis et al., 1990; Gladue & Bailey, 1995) and significantly higher levels of empathy (Salais & Fischer, 1995) than heterosexual males. These higher levels of empathy appear to have a stronger mitigating relationship with aggression among homosexual males. There were, however, no significant differences between heterosexual and homosexual males for other forms of direct or indirect aggression. While the proximate and ultimate mechanisms behind these differences are currently unclear, they are consistent with the prenatal androgen theory of homosexuality.

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Table I. Mean scores for direct aggression, indirect aggression and empathy scores.

Type of aggression	Mean scores from online sample				Data from offline samples	
	Homosexual males		Heterosexual males		Heterosexual males	
	Mean score	SD	Mean score	SD	Mean score	SD
Physical	16.26	5.56	21.98	7.77	24.3 ¹	7.7
Verbal	15.42	4.10	15.34	4.36	15.2 ¹	3.9
Anger	15.36	5.01	16.44	5.87	17.0 ¹	5.6
Hostility	22.15	7.08	21.58	6.60	21.3 ¹	5.5
Social Exclusion	14.70	4.64	15.22	5.64	15.73 ²	5.02
Malicious Humour	14.99	4.99	15.78	6.23	18.86 ²	6.64
Guilt Induction	10.05	3.63	10.30	3.76	12.48 ²	3.88
Empathy	44.66	10.06	39.00	11.44	38.8 ³	12.40

SD = Standard deviation

¹Taken from Buss & Perry (1992)

²Taken from Forrest et al. (in press)

³Taken from Baron-Cohen et al. (2003)

Table II. Results of univariate analyses for aggression sub-trait and empathy

Type of aggression	F
Physical	37.031*
Verbal	0.008
Anger	2.020
Hostility	0.008
Social exclusion	1.165
Malicious humour	4.251
Guilt induction	0.901
Empathy	12.554*

* Significant at the 0.006 level

Table III. Correlations between empathy and aggression scores

Type of aggression	Pearson's correlation for empathy		Effect size of correlation	
	Heterosexual males	Homosexual males	Heterosexual males	Homosexual males
Physical	-0.159	-0.228*	0.025	0.052
Verbal	-0.171	-0.332**	0.029	0.110
Anger	-0.208*	-0.198*	0.043	0.039
Hostility	-0.266**	-0.119	0.071	0.014
Social Exclusion	-0.120	-0.240*	0.014	0.058
Malicious Humour	-0.003	-0.258**	0.000	0.067
Guilt Induction	-0.022	-0.266**	0.000	0.071

* Significant at the 0.05 level

** Significant at the 0.01 level