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Sex and Social Dominance Orientation:

**Sex-related invariance across cultures in an online role-playing
game**

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Abstract

This study examines the Social Dominance Orientation of players of the online role-playing game World of Warcraft. The World of Warcraft offers an opportunity to investigate social dominance and biological sex differences in an environment where there is no cultural dominance of one sex over another. Social Dominance Orientation has been found to be different between males and females, with males scoring higher.

However, this might be the consequence of social context. To this end sex differences between male and female players were investigated in the World of Warcraft environment, as well as the effects of chosen character sex. Player sex and character sex were found to have effects on Social Dominance Orientation. These results add further support to claims that Social Dominance Orientation has the characteristics of a sexually selected disposition to acquire resources and out-compete rival groups.

Keywords: Social Dominance Orientation; sexual selection; sex differences; socialization.

Introduction

The Social Dominance Theory (SDT) of Sidanius and colleagues (see Sidanius, Pratto & Bobo, 1994) examines both the individual and structural factors that contribute to group-based oppression. Central to SDT is the concept of an individual's Social Dominance Orientation (SDO):

Social dominance orientation ... is a very general orientation expressing general anti-egalitarianism, a view of human existence as zero-sum and (as a) relentless competition between groups, the desire for generalized, hierarchical relationships between social groups, and in-group dominance over out-groups. (Sidanius et al., 1994, p. 999)

An individual's SDO is not invariant, and may change according to social or situational factors. However, Sidanius et al. claim that there is a relative sex difference in mean SDO which remains invariant over these factors, with males exhibiting greater levels of SDO. This is the Invariance Hypothesis, and is contrasted with the Cultural Determinist paradigm, which sees the difference between male and female SDO scores as culturally contingent and a consequence of patriarchy.

The Invariance Hypothesis rests upon the evolutionary argument that psychological differences between males and females arise whenever reproductive success is optimised by different behaviours for each sex (Buss, 1996; Malamuth, 1996). In relation to social dominance, behavioural strategies can include monopolizing material resources by males, both in order to attract females and to make those females more

dependent upon them. In order to achieve a monopoly, it is often of strategic value for men to form coalitions with allies in order to appropriate resources from other groups (Parker, 1987; Tiger & Fox, 1971). This tendency to coalitional behaviour accounts for male preferences for group-based hierarchical competition. The psychological underpinning of this predisposition is what is assumed to be measured by the SDO scales.

Sidanius and colleagues found considerable empirical support for this position. One study (Sidanius et al., 1994), which compared SDO scores for men and women across a number of covariates, including country of origin, education, and attitudes to abortion, found a reliable sex difference with each covariate, with an almost identical, though relatively small, effect size ($\eta = 0.07$). Also in line with predictions, a later study (Sidanius, Levin, Liu & Pratto, 2000) found the same invariant male-female SDO difference across a number of cultures (such as Americans and Arab-Israelis) with widely varying sex-status disparities. The same study found that the SDO differences between the arbitrary-set groups were contingent on cultural and situational factors, as predicted by the Interaction Hypothesis. The effect size was still found to be small, in the range of 0.07– 0.32.

SDT and its methodology have not gone unchallenged. Schmitt, Branscombe and Kappen (2003) claimed that SDO is misrepresented as an invariant individual characteristic, and SDO is in fact mutable and will change depending upon which particular group is salient in the minds of participants when they are answering the questions on the SDO scale.

Schmitt, et al. (2003) found that while men showed higher SDO scores than women when considering current sex relations as the salient group characteristics, when asked to consider a society in which women dominated, women were found to have higher SDO scores than men. In conclusion, they argued that there is an incompatibility between the claim for a ubiquitous (male) human drive for group-dominance, and individual variability in that drive.

This study was designed to investigate differences between SDO levels of the sexes in a social context which is genuinely gender- or sex-neutral in terms of power differentials, and in which those who are biologically male or female can present themselves as belonging to the sex of their choice.

The social context is that of players of the massively multiplayer online role-playing game World of Warcraft. In the game, players assume control of online avatars who may be of the sex and (fantasy) race of their choice. Players have no way to tell each other's real sex, and the game is designed to be carefully balanced, so that no one race or sex is more powerful than another.

In the game, the races are grouped into two opposing blocks: the 'evil' Horde and the 'good' Alliance. Players are free to choose which race and block they wish to belong to, but once a character has been chosen it remains of the same race and block for the remainder of the game. As players play the game, and defeat enemies, they gain 'experience points' which in turn lead to them gaining levels, from a starting point of 1 to a then maximum of 70. The level of a player's character therefore functions as a strong correlate of time spent playing the game.

We reasoned that, since there is no sex-related power differential in the game, the online environment of World of Warcraft provides an opportunity to test sex differences in SDO in a context in which power differentials between the sexes are neither present nor salient. What is more, the most salient groupings in the minds of the players, given the context at the time of testing (see below), should be their chosen race and block. In line with the Invariance Hypothesis, it was predicted that women playing the game would have a lower mean SDO score than men.

Method

Design

A between-participants quasi-experimental design was used, with sex of player (male or female) and sex of highest-level character (man or woman) as the independent variables and the score of each individual on the 16-item SDO6 scale (Sidanius et al., 1994) as the dependent variable.

Participants

Participants were a self-selected sample recruited using an invitation posted to an online forum dedicated to World of Warcraft. The sample comprised 228 men and 80 women aged 16-52, with a mean age of 21.00 for men and 23.83 for women.

Ethics

This study conformed to the British Psychological Society's code of ethical conduct and was cleared by the ethics board at the University of East London. Participants were informed of their right to withdraw at any point in the procedure and their right to withdraw their data at any time. All data were collected anonymously and were only accessible by the authors.

Materials

A website was constructed (www.warcraftexperiment.co.uk) and a brief introduction on the website explained that participants were taking part in a psychological study of the attitudes of those playing World of Warcraft, and asked them to confirm that they were aged 16 or over. They were then asked to give their sex and age, and the level and sex of their highest-level character. Following this, the website asked participants to complete the 16-item SDO6 scale; this was also done online. This is a reliable and valid scale with Sidanius, Haley, Molina and Pratto (2007) recently reporting a Cronbach's alpha of 0.91. Finally, participants were asked to check a box giving their consent to their data being used anonymously before submitting the completed form. Results of each completed form were automatically tabulated.

Procedure

A message was posted to an online discussion forum, for those who play World of Warcraft, inviting those who play to participate in a study of their attitudes to the game. Potential participants were given the web address of a website containing a questionnaire which they were invited to

complete. The website included a request for informed consent, as per ethical guidelines, as well as notice that the full rationale for the study would be displayed on the website at a later date and announced on the forum used to recruit them. There was no supervision of those completing the questionnaire, which participants were able to do at a time, place and pace of their choosing.

Results

It had been hoped that some analysis could be conducted of the relationship between SDO6 scores and length of time spent playing the game (as indicated by a player's highest character level). However, there was insufficient variance in the results obtained for such an analysis to be performed, with the large majority of participants (91.9%) reporting characters of levels 60-70, the highest levels then obtainable in the game.

In order to explore the effect of player sex in isolation, the mean, standard deviations and 95% confidence intervals for total male and female SDO6 scores across all other covariates were analyzed, and are presented in Table 1 below:

INSERT TABLE ONE ABOUT HERE.

An independent samples t-test was performed on these scores and, as expected, a significant effect of sex on SDO6 scores was found ($t_{306} = 4.82, p < 0.001$), with the 95% confidence interval of the mean difference being 0.467–1.112. The effect size for this SDO6 difference was found,

following the categorization laid out by Cohen (1988), to be moderate to large ($d=0.64$), indicating that 41% of the variance in SDO6 scores can be accounted for by sex of player.

A second analysis was then performed on the data to determine if SDO6 scores showed significance differences across the factors of sex of player and sex of character. The means and standard deviation of SDO6 scores for these conditions are presented in Table 2 below:

INSERT TABLE TWO ABOUT HERE.

A preliminary overview of these figures suggests that, along with the main effect of player sex, there is also some effect of character sex, most obviously among female players.

A two-by-two independent ANOVA found a main effect of player sex ($F_{1,304} = 3.74, p = 0.054$) and a main effect of character sex ($F_{1,304} = 4.17, p = 0.042$). There was, however, no interaction between player and character sex ($F_{1,304} = 2.42, p = 0.12$).

Follow-up t-tests were performed to compare the performance of males playing men against males playing women and of females playing men against females playing women. There was found to be no significant difference in SDO6 scores between men playing as men and men playing as women ($t_{226} = 0.58, p = 0.562$). However, while the difference in SDO6 scores between females playing as males and females playing as females failed to reach the reduced 0.025 significance level of the follow-up analysis ($t_{78} = 2.17, p = 0.033$), it appears that there is a strong trend for women playing as men to score higher on the SDO6 scale than

women playing as women, with the 95% confidence interval for the mean difference being 0.07–1.60. As no such difference was found for males, this is suggestive of a potential interaction between sex of player and sex of character which might not have emerged in the preceding ANOVA due to the uneven sample sizes.

Discussion

This study has confirmed its central prediction regarding the invariance of sex differences in SDO, and thus seems to offer further support for Sidanius et al's (1994) Invariance Hypothesis. The mean male SDO6 score was found to be significantly higher than that of females.

Although we made no predictions about character sex we chose to analyse this. Character sex was also found to have a main effect on SDO6 scores, although there was no interaction between sex and character sex. Follow-up t-tests did find a near significant difference in mean SDO6 scores only between females playing as men and females playing as women, and not between males playing as men and males playing as women, suggesting that a study with larger and more equal samples between these factors might have found a significant interaction between player and character sex. It is difficult to interpret the current findings until more work is done. However, such a finding cannot be used in support of a cultural determinist interpretation for players might have a variety of reasons for character sex choice. For example, females with higher than average SDO might be drawn to an opportunity to play a male role, rather than the role determining SDO; SDO is, after all, a continuum

and the Invariance Hypothesis only makes claims about average population differences.

Overall, these results appear congruent with Sidanius et al's (1994) contention that sex differences in SDO are the consequence of evolutionary sexual selection pressures and therefore invariant across cultural conditions. In particular, the result casts doubt on any suggestion that invariance in sex-based SDO scores is a consequence of invariance in sex-based inequality in the societies in which it has been studied. World of Warcraft was chosen precisely because it is a subculture within which there is no sexual inequality, and players are at liberty to play characters of a different sex from their own.

While it can be argued that World of Warcraft may legitimately be treated as a distinct subculture with its own social norms, it is not the culture within which its players have been raised. Theorists who view SDO as purely culturally determined might claim that players of the game, having been socialized in a patriarchal culture, bring this pre-existing sex-based SDO difference to the game. However, World of Warcraft players of character levels 60-70 (who made up the majority of participants) will have spent many hundreds of hours playing the game, and the influence of its gender- or sex-neutral environment on those who play it should not be entirely dismissed. Indeed, this is a significant immersion and could legitimately be seen as a socializing event itself. Moreover, it might have been anticipated that the sex-neutral environment of the game would attract those with sex-atypical attitudes to social dominance; in fact, players displayed the same sex difference as non-players. There is also a more general argument: the very ubiquity of patriarchy begs the question.

Could patriarchy not itself be, in some measure, a consequence of the same sexual selection pressures that also lead to sex differences in SDO6 scores? We leave this question to future research.

The present study might be used to more strongly counter Schmitt and colleague's (2003) claim that it is the salience of the groups being considered when answering the SDO6 questionnaire – and in particular the sex-based nature of these groups – which accounts for the difference in male and female scores. It seems quite possible that the groups held as salient by those completing the SDO6 questionnaire in this study were the racial groupings of the game. Participants were aware that they had been recruited to the study specifically as players of World of Warcraft, and the SDO6 questionnaire was preceded by several questions about their style of playing the game. In the absence of any other cues suggesting which groups they should hold in mind as they completed the scale, game-based groups seem likely to have been chosen. It certainly seems unlikely that sex-based groupings were considered, as sex groupings have no relevance to the way in which the game is played, and sex itself is a problematic category within the game, since it is known by players that there is no direct correspondence between character sex and player sex. Indeed, roughly a quarter of participants were playing a character whose sex was different from their own. It appears improbable that women players scored less highly on the SDO6 because, when they were completing the questionnaire, they had in mind their own group-based disadvantage as women. It seems equally unlikely that male players, atypical individuals who chose to immerse themselves in a subculture in which their masculinity conferred no higher status and could be disguised

at will, should favour social dominance because of their higher male status in the real world.

Conclusion

This paper offers further support for Sidanius et al's (1994) contention that social dominance orientation shows reliable sex differences across different environments. The effect size of the sex difference found was sufficiently large, and the mean SDO6 scores were sufficiently low, to call into some question exactly how representative the sample was of the general population. However, since male SDO6 scores were also lower than the general population mean, it seems implausible to explain the large sex difference by claiming that World of Warcraft attracts men of exceptionally high SDO and women of exceptionally low SDO.

The paper also offers at least a partial refutation of Schmitt and colleague's (2003) suggestion that it is the salience of the groups held in mind while completing SDO scales which accounts for sex-based SDO differences, since the salient groups here are – given the game's sex-neutral environment – highly unlikely to be groups based on sex. It seems that, even in an environment in which their relevant group membership is of equal status to that of men's, women still display less of a predisposition to social dominance.

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TABLES:

Table 1: Means, standard deviations and confidence intervals for the SDO6 scores of males and females.

Table 2: Mean SDO6 scores and standard deviations factored by player and character sex.

	Mean SDO6	SD	95% CI	
			Lower	Upper
Male	-0.516	1.291	-0.685	-0.348
Female	-1.306	1.164	-1.565	-1.047

Table 1: Means, standard deviations and confidence intervals for the SDO6 scores of males and females.

Player Sex	Character Sex	Mean SD06	SD	No. participants
Male	Man	-0.487	1.300	168
	Woman	-0.600	1.274	60
Female	Man	-0.575	1.643	10
	Woman	-1.411	1.054	70

Table 2: Mean SDO6 scores and standard deviations factored by player and character sex