



Stereotype threat and performance on sport specific motor tests

Jo Ward and Richard M. Buscombe

ABSTRACT

Female tennis worldwide has a participation problem, with severe gender disparity at competitive and older age groups despite a fairly even split amongst the much younger age groups. It seems logical to suggest that gender stereotype threat could contribute to an underperformance, and eventual demotivation, of girls in tennis. Twenty-six girls aged 9-14 were split into equal sized control and experimental groups and underwent a battery of common tennis tests, including forehand accuracy, standing broad jump, and agility 'T' testing. In the case of the experimental group, the participants read a short statement which suggested that females would produce inferior results relative to males. The results showed increases in performance in the experimental group, contrary to the hypothesis; however, the increase still highlights the effect of stereotyping on performance.

Key words: stereotype threat, gender bias, female tennis, performance

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INTRODUCTION

Tennis in the UK has a participation problem, with women and girls comprising just 25% of the competitive player base. In fact, the UK is not alone in this regard, with three out of the four Grand Slam nations reporting similar figures (US data not attained). However, the problem worsens upon closer inspection. Mini tennis entry figures show that 45% of new players are female, so in fact the problem is one of retention more than attraction. In short, we can attract girls into tennis, but some aspect(s) of their early coaching, club membership, or competition experiences are turning girls away from our sport. Evidently, greater measures to understand and remediate the underlying causes of this problem are necessary.

LITERATURE REVIEW

Stereotype threat was first researched in the mid 1990s to investigate whether poor performance results from the psychological effect of a negative stereotype rather than biological or socio-economic factors. In the seminal study, Steele & Aronson (1995) found that black students consistently underperformed academically when the stereotype that blacks are less intelligent than whites was introduced. In the first study, the stereotype was activated by informing the stereotype threat (ST) group that the test determined intellectual ability (the control group (C) were informed that it

did not). By the final study, the researchers discovered that the stereotype, and its harmful effect on performance, was so pervasive that performance worsened when black participants were asked to indicate their race on the pre-test questionnaire. Therefore, being reminded of their race, in an environment with negative racial stereotypes, was enough to activate ST effects. Steele and Aronson also posited that chronic underperformance could lead to a devaluation and disidentification with the domain, and ultimately lead to drop out. Work has shown that three factors need to prevail in order for ST to impact performance:

- Test difficulty - at the limit of participants' ability
- Domain identification - participants must be invested in the domain
- Stereotype salience - participants must be aware of the stereotype (Aronson et al., 1999)

Stereotype threat has been investigated in motor-coordination and sports settings in a number of studies, using tasks ranging from golf putting to basketball shooting (e.g., see Beilock et al., 2006). Given that sport is still considered a male domain (ClémentGuillotin, Chalabaev & Fontayne, 2011), it is unsurprising that the predominant stereotyped group being studied is females (e.g., Beilock & McConnell, 2004).



On this basis, research to ascertain whether negative female stereotypes in sport could be affecting young female tennis players is warranted. If ST effects exist within tennis, this could be a contributing factor to the retention deficit and therefore pave the way for subsequent intervention work to be undertaken in this area.

METHOD

Study 1 was a field-based, mixed factorial investigation with 26 competitive female players aged 9-14. To participate, the girls were required to be British Tennis Members and have competed in county level and above tournaments. To activate ST participants read a short text explaining that the test results would indicate levels of athleticism and that previous tests had shown gender differences. This explicit activation replicated previous studies (see Beilock et al. 2006). The control group were instructed that the tests were simply fact-finding activities to ascertain individual test scores. Participants were randomly assigned to either a stereotype threat group (ST) or a control group (C), and the female experimenter was blind to the conditions. Testing was undertaken individually to remove social facilitation effects.

Three motor tests recorded either tennis performance (forehand accuracy) or movements identified as integral to performance on court (standing broad jump and modified T test; Sassi et al., 2009).

After familiarisation and warm-up, participants hit 15 forehands at a target cross court with depth and width error being captured by two cameras placed at 90 degrees to the target.

Data was subsequently analysed via a software programme (Tracker for Mac) and radial error was calculated. Each of the motor tests were performed three times, with the broad jump being measured using tape measures, and the T-test times using light gates. After collection of pre-test data the condition was activated, and then participants repeated all tasks, in the same order, for the posttest measures.

RESULTS

Counter to the hypotheses for the study, the results indicated that for standing jump (figure 1) and agility (figure 2), performance improved pre to post in the ST condition. The change was small on both occasions but potentially meaningful given the number of times a tennis player is required to display these key motor skills during tennis practice and performance. There were no discernible differences in performance across condition in the forehand accuracy test scores (figure 3).

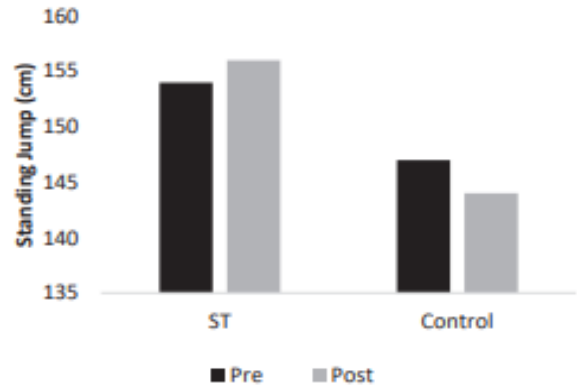


Figure 1. Figure showing pre/post standing jump by condition.

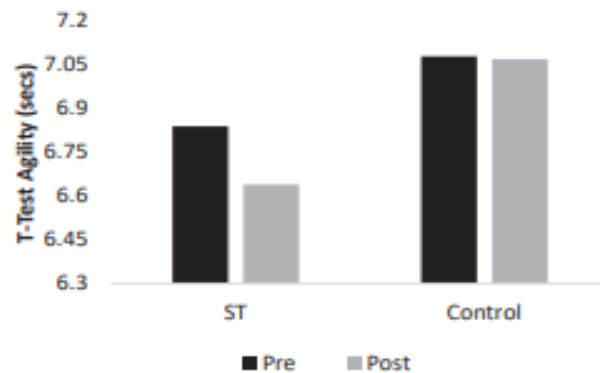


Figure 2. Figure showing pre/post agility by condition.

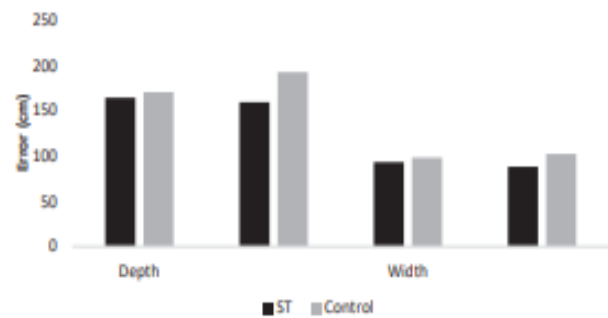


Figure 3. Figure showing pre/post by condition for both depth and width error in the tennis accuracy task.

DISCUSSION

There are several potential explanations for the unanticipated direction of the results with one possible reason being that the tests were not sufficiently difficult to be at the limit of the participants' abilities, which has been established as a necessary factor to elicit ST effects. Previous studies have shown that when test difficulty is not achieved, participants can actually improve performance (e.g., Ben-Zeev, Fein & Inzlicht, 2005). A second possible consideration is that the method of stereotype activation was inappropriate for the age of the participants. Activation via reading a short text is common in studies of adult populations, however there are more diverse, and perhaps more appropriate, methods of engaging a younger audience. For example, Ambady et al., (2001) utilised a colouring in task, and a number of studies have delivered the threat activation verbally (e.g., Alter, et al., 2010; Chan & Rosenthal, 2014). A third potential factor is the nullifying effect of an ingroup experimenter who is both known to participants and also known to actively and explicitly dispel the types of negative stereotypes being used to activate ST. Further studies are planned that will seek to address these considerations and thus continue to explore the potential role of ST in performance and participation outcomes of competitive junior female players.

In conclusion, this research demonstrates that there are small, but potentially meaningful, ST effects on sensorimotor performance. This, combined with the ST research across myriad domains and social groups, suggests that ST warrants further investigation. Indeed, for as long as women and girls in tennis continue to be outnumbered by 3:1 every effort must be made that could ultimately lead to the development of methods to alleviate or eradicate the effects of ST.



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