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ORIGINAL ARTICLE

Situational Malleability of Gender Schema: The Case of the Competitive Sport Context

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Abstract In this research we examined the situational malleability of gender schema and specifically the association between competitive sport and masculinity at the intraindividual level. Based on Deaux and Major's (1987) interactive assumption, we predicted that a competitive sport context would activate the masculine dimension in gender schema. Participants were 64 French undergraduate students who evaluated themselves on the Bem Sex Role Inventory in general, in a competitive sport context, and in a cinema context. In addition to femininity and masculinity scores in each context, response latencies were also collected. The results indicated that participants responded higher and faster on masculine items when the competitive sport context was presented, showing that this association is well anchored in gender schema.

Keywords Gender schema · Masculinity · Femininity · Competitive sport

Introduction

Past research on gender identity initially conceptualized femininity and masculinity as relatively stable personality traits that differentiate females and males. This stability was questioned and it was proposed instead that gender self-perceptions (i.e., femininity, masculinity) are somewhat less stable. Deaux and Major (1987) asserted that contextual factors may be important in ascertaining the gender self-perceptions reported by individuals. More specifically, they proposed a model in which gender-related schemata are somewhat malleable and influenced by some social contexts. In the present research, we hypothesized that competitive sport context is one of them and examined gender situational malleability on an intraindividual level. Past research on gender-typing of competitive sport in general has been scarce in sport psychology, as studies in different countries (e.g., Sweden, Norway, Finland, England, France, the United States) mainly examined the gender stereotypes associated with particular sports (e.g., Archer and McDonald 1990; Csizma et al. 1988; Klomsten et al. 2005; Koivula 1995, 1999; Fontayne et al. 2001; Riemer and Visio 2003; Salminen 1990; Schmalz and Davison 2006). However, the former may be important to understand why female sports participation as a whole is still lower than male one (Birrell 1983; Csizma et al. 1988; Fasting et al. 1997; Fontayne et al. 2001; Fredricks and Eccles 2005; Hartmann-Tews and Pfister 2003; Koivula 1999; Pfister 1993; Vilhjalmsson and Kristjansdottir 2003; Wang et al. 2006). Once again, the lower female sports participation was mentioned in different countries. In this article, we tested whether the association between competitive sport and self-rated masculinity would be found in the cognitive network of French undergraduates by investigating not only gender self-ratings but also gender information processing efficiency. This latter aspect concerning information processing efficiency has never been studied, to our knowledge, in such a context.

The above issues are quite recurrent in studies published in *Sex Roles: A Journal of Research*, be it the gender self-

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perceptions malleability (e.g., Miller et al. 1997; Smith et al. 1999), or the suggestion of a link between competitive sport and masculinity (e.g., Clifton et al. 1976; Harrison and Lynch 2005; Klomsten et al. 2005; Koca et al. 2005; Koivula 1995, 1999). Nevertheless, to our knowledge, no study has coupled both of these issues in one research and investigated the implicit route between gender self-perceptions and social context by looking at response latencies. Another contribution of the present study is to directly question the cognitive link between competitive sport and masculinity, which has been only suggested by past research. Furthermore, the origins of the previously mentioned research suggesting a probable link between competitive sport and masculinity are North American (Clifton et al. 1976; Harrison and Lynch 2005), Norwegian (Klomsten et al. 2005), Swedish (Koivula 1995, 1999), and Turkish (Koca et al. 2005). Consequently, we think that this issue is not limited to the scope of France and may be important for readers from many countries.

The Sport as a Masculine Gendered Social Context: A Glance in Different Countries

In the United States, although there has been an increase in female sports participation since the early 1970s (Riemer and Visio 2003), males still practice sports more often (Birrell 1983; Csizma et al. 1988; Fredricks and Eccles 2005) and sport, despite social and legal changes, is generally considered to be a masculine domain (Csizma et al. 1988; Riemer and Visio 2003; Schmalz and Davison 2006). In this cultural context, sport, especially in its competitive form, has been said to provide support for the perpetuation of the ideology of men's dominance and hegemonic masculinity (Bryson 1994), and a link between competitive sport and a variety of "masculine" traits has consistently been found (Aamodt et al. 1982; Clifton et al. 1976). Involving samples of North American students, Richman and Shaffer (2000) also reported that masculinity was positively related to sports participation, and Lantz and Schroder (1999) found that athletic identity was positively correlated with masculinity. Conversely, participation in athletics has been often considered to be incompatible with the feminine role (Ostrow et al. 1981), athletic identity being negatively correlated with femininity (Lantz and Schroder 1999). Sage and Loudermilk (1979) pointed out that "athletic achievement has been equated with a loss of femininity" (p. 89). Similarly, Richman and Shaffer (2000) found that femininity was generally unrelated to either sports participation or physical competence, and Allison (1991) reported that ideals of femininity have conflicted with the ideal images of competitive sport. Thus, it seems that "sport remains highly associated with the so-called 'masculine' elements of our culture, and the female in sport is still considered a woman in man's territory" (Birrell 1983, p. 49), especially when sport is declined in its competitive form. When writing "our culture" Birrell refers to the United States and all the above considerations have been made by research in this cultural context. Can these considerations be extended to another western culture country such as France?

In France, girls and women are also less likely to participate in sport than boys and men (Fontayne et al. 2001; Hartmann-Tews and Pfister 2003; Wang et al. 2006). Similar to Csizma et al.'s (1988) research in the United States, sports in France are categorized as masculine, feminine or neutral (Fontayne et al. 2001). Furthermore, the gender stereotype in favor of males is pervasive in physical activities and sport. It was found operant among competitive females (Chalabaev et al. 2008a), physical education teachers (Chalabaev et al. 2009b), undergraduate students (Chalabaev et al. 2008b), referees (Souchon et al. 2004), and junior high school girls (Chalabaev et al. 2009a). Finally, other studies indicated that adolescent girls practicing a competitive masculine gendered sport were more likely to be higher in masculinity orientation than were dropout athletes and that adolescent girls with a feminine gender orientation were more inclined to drop out their participation (Guillet et al. 2000; Guillet et al. 2006). Thus, the above introductory remarks concerning the United States seems also relevant for a country such as France. In both countries, we can equally notice that the cognitive link between competitive sport as a general construct and masculinity has not been investigated in a direct manner.

Nevertheless, the relation between gender and sport is not limited to these two countries. Several research conducted in other western countries (e.g., Spain, Germany, Great Britain, Sweden, Norway, Iceland) reported that males, compared to females, practice sports more often (Fasting et al. 1997; Hartmann-Tews and Pfister 2003; Koivula 1999; Pfister 1993; Vilhjalmsson and Kristjansdottir 2003). Also, sex-typing of sports was mentioned in Sweden (Koivula 1995, 1999), in Norway (Klomsten et al. 2005), in Finland (Salminen 1990), or in England (Archer and McDonald 1990). Interestingly, Colley et al. (2005) asked English boys and girls from different age groups to draw someone who does a lot of sport. As a whole, a male practicing football was the picture the most drawn especially in adolescents. Like Messner (1992) in the United-States, Theberge (1993) highlighted the social construction of gender and masculinity in Canada through engagement in competitive sport. Bowker et al. (2003) found among a Canadian sample of adolescents that more feminine individuals who participated in competitive sports reported lower levels of perceived athletic competence and global self-worth. However, they reported higher self-

esteem when they participated in more noncompetitive sports. In Turkey, Koca et al. (2005) noted that competitive sport environment requires assertive, competitive behaviors. They found that both female and male athletes exhibited higher masculinity scores than did nonathletes and suggested that it probably reflected an overlap in competitiveness. This overlap and the association between competitive sport and masculine attributes were also noticed in Australia by Choi (2000) or Marsh and Jackson (1986). Taken as a whole, it seems that in many countries a strong and recurrent association between competitive sport and masculine attributes exists and that the competitive sport-femininity association is rather incongruent.

In a large number of countries, previous research has suggested a cognitive link between the overall construct of competitive sport and masculinity but, to our knowledge, none has directly tested it. Also, with regard to legislative and social extensive efforts toward equality in sport, provoking increased media coverage of women performing sports and increased female participation in particular (see Hardin and Greer 2009; Riemer and Visio 2003), this link may be currently more nuanced with some shifting of traditional gender attitudes. However, this shifting may be more apparent than real. For instance, Riemer and Visio (2003) found that American participants gave more egalitarian responses to a questionnaire about sex-typing of different sports, while more covert measures still reflected traditional stereotypes. Similar patterns reflecting self-presentational distortions may be also reported as far as the general construct of competitive sport is concerned. So, measuring the information processing efficiency with implicit indicators, such as response latencies, is also relevant to resisting masking by such concerns. Thus, the purpose of the current research was to directly study whether, cognitively, competitive sport may be nowadays highly associated with masculinity. More specifically, we assumed that the competitive sport-masculinity association would be anchored in our gender schema and that, when a competitive sport context is primed, it would activate in return the masculine dimension of gender schema. These issues will be examined in France with a sample of French undergraduate students.

The Malleability of Gender Schema

A schema is a cognitive network of associations that organizes and guides an individual's perception. Schema lies ready for action in memory until activated. Once activated by encountering certain stimuli or information, schema guides perception, attention, retrieval, behavior, and social judgment (Macrae et al. 1994). Gender schema theories (e.g., Bem 1981; Markus et al. 1982) assert that we learn conceptions of appropriate gender behavior and networks of gender related associations from our culture. People's gender schema includes "gender belief systems" that contain the descriptive and prescriptive elements for men and women (Deaux and Major 1987). Representation of this gender knowledge is linked in memory via the schema and organizes our social perceptions. Activated gender schema provides more efficient information processing, in terms of speed (e.g., Mills 1983), memory (e.g., Rojahn and Pettigrew 1992), and ease of schema-relevant data.

Because gender schematic processing can manifest itself in a number of ways, and in accordance with the initial assumption of Sherif (1982), Deaux and Major (1987) proposed a model of gender and social interaction in which they argued that there are contexts that make gender belief systems more accessible than other contexts. More precisely, they proposed a model in which gender schema may be activated when contextual cues make gender salient. Many situations have fairly clear gender-linked connotations and hence may be apt to make a person's gender schema more accessible than other contexts. Gender-related schema would be thus malleable across situations in which we interact, depending on gender makeup of situations (Dailey and Rosenzweig 1988; Miller et al. 1997; Smith et al. 1999; Uchronski 2008). Taken together, these studies suggest that gender self-description is malleable and varies across situations. We assume that competitive sport does not make exception to this gender marking. In this respect, Harrison and Lynch (2005) presented to American students bogus newspaper articles that described an interview with a successful athlete. These articles manipulated the athlete gender and the type of sport (i.e., football, basketball, or cheerleading). Consistent with social-role theory (Eagly et al. 2000) presuming that when individuals are concentrated in certain roles, they should receive or endorse the gender role orientations that follow from these roles, data did not show a main effect of athlete gender on perceived gender role orientation of athletes. In average, both male and female athletes were perceived higher in masculinity than in femininity. This result is consistent with studies conducted in the United States (e.g. Smith et al. 1999) but also in other western countries such as Germany (Uchronski 2008) showing that, when males and females were included in samples, participant's gender did not singularly influence variations on gender self-perceptions according to social contexts. Although Harrison and Lynch's (2005) study suggests that gender ratings may be affected by the competitive sport context, it did not look at gender self-ratings in this context.

As noted by Uchronski (2008), there are very few studies that have investigated the situational malleability of gender self-ratings on an intraindividual level (for an exception, see Smith et al. 1999). The present research

examined whether gender self-ratings vary in individuals across social contexts. Furthermore, past studies on gender self-ratings have investigated diverse contexts, but never the competitive sport one. However, as previously reported, the gendered context of competitive sport should provide the occasion to test Deaux and Major's (1987) assumption concerning the situational activation of gender schema. We focused particularly on the sport context through its competitive aspect.

The Present Research

As competitive sport generally conveys strong messages about masculinity (e.g., "Sports messages are mediated messages that can employ specific stereotypical gender roles in the form of assumed appropriate behavior for male and female athletes; males are expected to be aggressive and dominant while females are expected to be unassertive yet charismatic"; Angelini 2008, p.127), we presumed that it would be a sufficiently powerful social situation to activate the masculine dimension of one's gender schema. More specifically, the current research addresses three objectives. A first goal was to examine, in line with previous research, the malleability of gender self-ratings. But unlike previous research which compared masculine and feminine contexts to show differences in gender self-ratings, we compared the competitive sport context (i.e., masculine) to a gender neutral context (i.e., cinema). Indeed, we argued that gender is sufficiently salient in the competitive sport context to discriminate differences in self-ratings relative to a neutral context. As Deaux and Lafrance (1998) pointed out, "when the proportion of women and men in a situation is highly skewed, (…) gender is more likely to become an issue" (pp. 789–790). This is exactly what characterises sport in general and competitive sport in particular. Contrary to sporting behaviour, going to the movies is not concerned by Deaux and Lafrance's (1998) citation. Nearly the same percentages of females and males define people who go to the movies (Cardona and Lacroix 2008), and gender stereotypes have not been found to operate in this context (Biernat et al. 1991, Study 3). Hence, we considered the non-sex-linked movie-going behaviour as a gender-neutral context, and consequently unlikely to prime gender. The choice of the competitive sport context was made in line with Harrison and Lynch's (2005) study. This latter study focused on a competitive sport context and demonstrated its influence on targets' gender ratings. The present research focused on its influence on gender self-ratings.

A second goal was to investigate not only gender self-ratings but also gender information processing efficiency. Previous studies have been interested in explicit responses concerning the gender schema (i.e., are individuals higher/lower in one context rather another in masculinity or femininity?) but have neglected the aspects concerning information processing efficiency of gender schema when they activated a social context. With regard to past research (e.g., Bem 1981; Markus et al. 1982; Mills 1983; Rojahn and Pettigrew 1992), this latter aspect is important to assert that a schema has been really activated. In the current research we examined responses and response latencies to provide a more complete and straightforward test of the assumption that gender schema may be situationally activated. Response latencies measuring the information processing efficiency is also relevant because scores on questionnaires may be susceptible to self-presentational distortions (e.g., Greenwald et al. 1998; Riemer and Visio 2003). Therefore, crossing indicators may more easily resist masking by such concerns. Besides assessing the implicit route between gender and social context by looking at response latencies, a final goal was to examine the situational malleability on an intraindividual level, which has been scarcely investigated.

This research was designed to address at the intra-individual level the effects of exposure to a competitive sport context on gender self-ratings and on gender information processing, compared to a "general" context and a "cinema" context. We used the non-sex-linked movie-going behavior (Biernat et al. 1991, Study 3; Cardona and Lacroix 2008) to test Deaux and Major's (1987) assumption that some contexts make one's own gender schema more accessible than other contexts. That is, a gender neutral context such as going to the movies may be unlikely to prime gender schema, contrary to others such as competitive sport context under which gender schema would be more salient. In addition to the traditional "in general" context, the competitive sport context and the cinema context were activated by hypothetical situations in the form of interviews. Participants read interviews and had to imagine being the interviewed person. This procedure is not new with regard to past research on gender self-ratings, which notably asked students to assess themselves in a work context (e.g., Smith et al. 1999). According to Deaux and Major's (1987) assumption, a gendered context may make salient one's gender schema and, consequently, render easily accessible gender schema relevant data. If the competitive sport context is able to make salient one's gender schema as we presume, and the masculine dimension in particular, its activation should make accessible its association with masculinity. As a consequence, participants should respond in a schema-consistent way and rapidly make schema-consistent responses in such a context. Thus, masculinity and femininity should vary across the three proposed contexts according to the tendency they have to prime gender schema. In accordance with previous works of Harrison and Lynch (2005) in the

United States and Uchronski (2008) in Germany, we did not expect that gender would singularly influence variations concerning self-ratings as well as response latencies. However, while both women and men may show the expected reactions, they may differently react in the chosen contexts to variables of the present research. Such possible effects of participants' gender will be examined in the study. Finally, to provide a more complete view of the contexts' connotation and to assess whether the presumed relationship between competitive sport context and masculine dimension could also be found at a sexed level, we conducted a partial replication of Colley et al.'s (2005) study carried out with an English adolescent sample and the Draw a Sportsperson test. Based on their results, we hypothesised that a male would be more likely to be imagined during the reading of the sport interview. Conversely, in the cinema interview, the imagined sex for the interviewed person should be equally distributed among participants as a whole because of the gender neutral connotation of cinema (Biernat et al. 1991, Study 3; Cardona and Lacroix 2008). More specifically, we had three central hypotheses for this experiment.

- H1: We predicted that participants submitted to the three contexts would demonstrate more masculine traits in the competitive sport context as compared to "in general" and the cinema context, whereas femininity scores would be relatively low in the competitive sport context due to the presumed incongruence between competitive sport and femininity.
- H2: We predicted that participants would be faster in making their responses on masculine items (given their congruence with the proposed context) than on feminine items (given their incongruence with the proposed context) when the competitive sport context was activated, compared to "in general" and the cinema context.
- H3: We predicted that participants as a whole would be more likely to imagine a male during the reading of the sport interview than a female. In contrast, during the reading of the cinema interview, because of the gender-neutral aspect of cinema, we predicted that the distribution of the chosen sex would be more balanced, such that participants would be as likely to imagine a male as a female.

Method

Pilot Study

We conducted a pilot study to determine whether the two chosen contexts (i.e., cinema and sport), in addition to the "in general" one, were perceived as two distinct contexts, with sport perceived as more masculine than cinema. Fifty-five students (26 females and 29 males; M_{age}=20.32 years, SD=.45) at the University of Paris-Sud 11 who did not participate in the main experiment were asked to indicate how they perceived cinema and sport domains on a 7-point scale (1=*very feminine*, 4=*feminine as well as masculine*, 7=*very masculine*). They also assessed who engage in these activities on a 7-point scale (1=*typically women*, 4=*women as well as men*, 7=*typically men*). First, a Participant's Gender×Domains Perception (sport, cinema) multivariate analysis of variance (MANOVA) was carried out, the first factor being between subjects and the second within subjects. Results indicated no gender effect, Λ_{Wilk}=.96, F(2, 52)=1.07, p=.35. Then, scores of cinema and sport domains perception were entered into a Participant's Gender×Domains Perception (sport, cinema) repeated measures analysis of variance (ANOVA), the first factor being between subjects and the second within subjects. Results indicated that sport was significantly assessed as a more masculine domain (M=4.42, SD=.49) than cinema (M=3.96, SD=.38), Λ_{Wilk}=.64, F(1,53)=30.44, p<.0001, η^2=.36. The Participant's Gender×Domains Perception did not reach significance, Λ_{Wilk}=1.00, F(1, 53)=.13, p=.72. In addition, mean scores of cinema and sport domains perception were also compared to the midpoint of the scale (i.e., "4"), using independent one-sample t-test. Results indicated that sport (M=4.42) was perceived as "masculine", t(54)=6.35, p<.0001, d=.86, while cinema (M=3.96) was perceived as "neutral", t(54)=−.78, p=.44. Concerning ratings of engagement in sport and cinema activities, a similar Participant's Gender×Domains Engagement (sport, cinema) MANOVA also indicated no gender effect, Λ_{Wilk}=.97, F(2, 52)=.79, p=.46. The following Participant's Gender×Domains Engagement (sport, cinema) repeated measures ANOVA indicated a statistically significant main effect of Domains Engagement, Λ_{Wilk}=.38, F(1,53)=87.43, p<.0001, η^2=.62. Sport was perceived as significantly more typically practiced by men (M=4.85, SD=.59) than cinema (M=3.82, SD=.55). The Participant's Gender×Domains Engagement did not reach significance, Λ_{Wilk}=1.00, F(1, 53)=.12, p=.73.

Participants

Participants were 64 French undergraduate students aged between 17 and 28 years (30 women, M_{age}=20.67 years, SD=3.00 years; 34 men, M_{age}=21.76 years, SD=3.10 years, t(62)=−1.44, p=.16) from Paris-Sud 11 University, recruited on campus and volunteered to participate in the study. The sample contained only White participants. They arrived individually at the laboratory or in same-sex groups of two. However, all participants

completed dependent measures in an individual room. They were submitted to a within-subjects design. They were randomly assigned to one of two presentation order of contexts following the "in general" condition [(1) Sport, (2) Cinema vs. (1) Cinema, (2) Sport]. In the first presentation order of interviews [i.e., (1) Sport, (2) Cinema] participants were 35 (17 women; 18 men). In the second [i.e., (1) Cinema, (2) Sport], they were 29 (13 women; 16 men).

Materials

Interviews

Two fictitious interviews described a person who had successfully competed in an athletic event on the one hand, and a person who liked going to the movies on the other hand. No information about the sex of the interviewed target was available and only the first-person viewpoint was used. Only the specific context in which the interviewed person was located was salient. The English translation of the "sport" interview, inspired by the bogus newspaper article of Harrison and Lynch (2005), is given below:

> "Winning in semi-final in the last moments of the game gave me a more important part in my club. I have played in this club for 3 years and I will continue to play next season. This sport is my life. I practice hard several times a week with the hope of improving myself again and again. I dream of winning this competition... I have chills before competing the final". [Obtenir la victoire en demi-finale dans les derniers instants de la rencontre m'a donné une dimension plus importante au sein de mon club. Je joue dans ce club depuis 3 ans et je continuerai d'y jouer la saison prochaine. Ce sport c'est ma vie. Je m'entraîne dur plusieurs fois par semaine avec l'espoir de m'améliorer encore et toujours. Je rêve de gagner cette compétition... J'ai des frissons avant de faire la finale.]

The English translation of the "cinema" interview is given below:

> "I enjoy going to the movies. Whatever the time slot of session, either on weekdays or weekends, it relaxes me, it helps me to escape and I love the emotions that it provides when movie is good. Moreover, I return gladly seeing a movie that I enjoyed. I have gone out to see movies for 10 years. On average, I go out to see 3 movies per month. The most surprising is that I still feel the excitement before the start of the movie... I love this feeling". [J'aime aller au cinéma. Peu importe les horaires des séances, que ce soit en semaine ou les week-ends, ça me détend, ça me permet de m'évader et j'adore les émotions que cela procure quand le film est bon. D'ailleurs, je retourne volontiers voir un film qui m'a plu. Je vais dans les salles obscures depuis 10 ans. En moyenne, je vois 3 films par mois au cinéma. Le plus fou c'est que je ressens toujours de l'excitation avant le début du film... J'adore cette sensation.]

Questionnaire

We used the Bem Sex Role Inventory (BSRI; Bem 1974) to measure self-rated masculinity and femininity across each of the three contexts. Participants completed three times the 18 items from the French short version for adults of the BSRI (Gana 1995) which includes nine feminine and nine masculine items (see Appendix for the French version with the English translation). On the short BSRI, participants rate each alternate attribute on a 7-point scale to indicate the extent to which they believe they possess it (from 1 "never" to 7 "always"). Self-rated masculinity and femininity scores in each context were obtained by averaging the feminine and masculine items separately. In the "in general" condition, it yielded a Cronbach's alpha of .82 for femininity and .70 for masculinity.

Participants self-rated on the BSRI across the "in general" context, cinema context, and competitive sport context. They completed the BSRI three times on a desktop computer, on which a psychological experiment program was installed to record responses and speed of responding on items. Participants worked at their own pace and answered using the computer mouse.

Procedure

On arrival at the laboratory, participants were greeted by an experimenter and seated in front of a personal computer in an individual room. They were informed that the study would be computer administered and were asked to read instructions attentively. The study was described as a research on person perception. Participants completed the BSRI three times with different instructions each time.

First, participants completed the BSRI with the instructions traditionally used for administration of this questionnaire. They were instructed to rate each of the adjectives according to how well each one described her/himself "in general". Following this baseline measure, participants completed a distractor task in which they were asked to indicate if a small probe was displaced to the left or right of a centered fixation cross using a button press response. After completion of this task, participants were instructed to read the following interview carefully, imagine and form an

impression of the interviewed person. Following the instructions, the interview appeared and remained on the screen until participants indicated that they had formed an impression by pressing a key. Then, participants completed the BSRI by imagining being the interview's person. The instructions indicated that: "You have to respond to the test by putting yourself in the interviewed person's place, as if you were this person". Afterward, the second interview followed with the same procedure as above. Demographic information concerning the participants' age and gender was collected at the end of the survey. They were also instructed to indicate for each interview the sex they attributed to the interviewed person when they imagined him/her. Three response options were proposed (*a man*, *a woman*, *a woman as well as a man*). Finally, participants were thoroughly debriefed, thanked for their participation, and dismissed. All data were collected and instructions and stimuli presented via computer using Inquisit 3.0.3. (2008).

Results

Preparation of Data

Mean self-rated femininity and masculinity scores were computed along with mean response latencies on masculine and feminine items for participants across each of the three contexts. All latencies less than 200 ms and greater than 14,000 ms were considered outliers and omitted from the analyses (.98%). Table 1 displays the mean self-rated femininity and masculinity scores and response latencies for participants across the general, competitive sport, and cinema contexts.

Mean self-rated femininity and masculinity scores and mean response latencies on masculine and feminine items were the dependant variables (see Table 1). A concept overlap between the "competitive" BSRI item and "competition" word used in the sport interview is apparent. Deleting this item in the competitive sport context did not modify the results mentioned below. Nevertheless, scores and latencies in this context when this item is deleted were also presented.

The independent variable of interest was the context (General, Sport, and Cinema). We also controlled for potential effects of participants' gender and order in which contexts were presented (General, Cinema, and Sport vs. General, Sport, and Cinema). Whatever the dependant variables, we conducted the same analysis. To examine whether masculinity and femininity varied across the three contexts to which participants were submitted, we conducted a Participant's Gender×Interviews Order (sport interview presented first, cinema interview presented first)×Context (in general, sport, cinema)×Gender Scores/Latencies (masculinity, femininity) multivariate analysis of variance (MANOVA), the first two factors being between subjects and the second two within subjects.

Concerning gender scores, the predicted Context×Gender Scores interaction was not moderate by the Interviews Order, $\Lambda_{Wilk}=.97$, $F(2, 59)=.80$, $p=.45$. This last factor did not also moderate the predicted Context×Gender Latencies

Table 1 Mean scores, mean response latencies (in ms) on feminine and masculine items, and standard deviations (in parentheses) across general context, sport context, and cinema context

	General context		Sport context		Cinema context	
	Ratings of self as:		Ratings of self as:		Ratings of self as:	
	Feminine	Masculine	Feminine	Masculine	Feminine	Masculine
Scores						
Women(n=30)	5.23(.73)	4.43(.64)	4.00(.92)	5.74(.58)	5.40(.75)	3.44(1.01)
Men(n=34)	5.07(.80)	4.53(.65)	4.04(.93)	5.17(.82)	4.85(1.09)	3.26(.96)
Total sample (N=64)	5.15[a](.77)	4.48[b](.64)	4.02[c](.92)	5.44[a](.77)	5.10[a](.97)	3.35[d](.98)
Latencies						
Women(n=30)	3430.66(1063.21)	3391.03(1395.20)	2858.55(1031.24)	2524.78(1027.84)	2575.18(1112.01)	2733.51(1080.24)
Men(n=34)	3987.45(1160.84)	4002.90(1150.72)	3101.92(1024.60)	2779.38(806.06)	2912.94(806.50)	2898.79(865.99)
Total sample (N=64)	3726.46[a](1142.21)	3716.08[a](1297.83)	2987.84[b](1026.84)	2660.04[c](918.17)	2754.62[c](968.91)	2821.31[c](967.93)

Mean femininity and masculinity scores in each context range from min=1 to max=7

All latencies between 200 ms and 14,000 ms were included; others were omitted from the analyses. Within scores and latencies, means with non-matching superscripts differ at $p<.05$ according to the significant Context×Gender Scores and Context×Gender Latencies interactions

interaction when gender response latencies were entered in the MANOVA, Λ_{Wilk}=.97, F(2, 59)=.84, p=.44. Finally, a significant two-way Interviews Order×Context interaction was found, Λ_{Wilk}=.55, F(2, 59)=23.67, p<.0001, η^2=.44. Follow-up analyses using LSD Fisher post-hoc tests revealed a training effect such that participants responded more quickly overall when a given context appeared later in the order, whatever the interviews order, ps < .01. Response latencies on BSRI in time 1 (i.e., baselines) were not different between the two interviews order. The same patterns were observed for response latencies on BSRI in time 2 and 3.

Hypothesis 1: Variations of Gender Scores according to Contexts

We predicted that participants would score higher in masculinity in the competitive sport context as compared to "in general" and the cinema context, whereas femininity scores would be relatively low in the competitive sport context due to the presumed incongruence between competitive sport and femininity. The four-way MANOVA design revealed a main effect of Gender Scores, Λ_{Wilk}=.75, F(1, 60)=19.89, p<.0001, η^2=.25, with femininity scores on average (M=4.76, SD=1.03) being higher than masculinity ones (M=4.42, SD=1.17), and a main effect of Context, Λ_{Wilk}=.63, F(2, 59)=16.94, p<.0001, η^2=.36, with "in general" (M=4.81, SD=.78) and sport (M=4.73, SD=1.10) scores being not different but significantly (LSD Fisher post-hoc tests; p<.05) higher than cinema (M=4.22, SD=1.31) scores. Also, a main effect of Participant's Gender, Λ_{Wilk}=.90, F(6, 55)=3.57, p=.005, η^2=.28 emerged, with women (M=4.71, SD=1.13) on average scoring higher than men (M=4.49, SD=1.10). The Participant's Gender×Gender Scores and Participant's Gender×Context interactions did not reach significance, Λ_{Wilk}=.99, F(1, 60)=.003, p=.96, and Λ_{Wilk}=.92, F(2, 59)=2.44, p=.10, respectively.

As expected, the Context×Gender Scores interaction was statistically significant, Λ_{Wilk}=.26, F(2, 59)=85.00, p<.0001, η^2=.74 (see Table 1). Follow-up analyses using LSD Fisher post-hoc tests (p<.05) indicated that participants self-evaluated as higher in femininity in the "in general" context (M=5.15) and in the cinema context (M=5.10) than in the competitive sport context (M=4.02) (there were no significant differences in femininity scores in the "in general" and cinema contexts). In contrast, participants demonstrated higher masculinity scores in the competitive sport context (M=5.44; without the "competitive" BSRI item M=5.28, SD=.82) as compared to the "in general" (M=4.48) and cinema (M=3.35) contexts. However, masculinity scores were lower in the cinema context as compared to the "in general" context. Furthermore, masculinity scores were higher than femininity scores only in the competitive sport context. This pattern was reversed in the two other contexts (see Table 1 for descriptive statistics). In other words, femininity scores decreased from "in general" and the cinema context to the competitive sport context while, on the other hand, masculinity scores decreased between the "in general" context and the cinema context, but highly increased in the competitive sport context to such an extent that they overcome femininity scores only in this latter context. Finally, the higher order Participant's Gender×Context×Gender Scores interaction dropped below significance, Λ_{Wilk}=.93, F(2, 59)=2.21, p=.12. In short, the findings support the notion that, whatever participants' gender, masculinity is more accessible than femininity in responses in the competitive sport context compared to "in general" and the cinema context.

Hypothesis 2: Variations of Gender Response Latencies according to Contexts

We predicted that participants would be faster in making their responses on masculine items than on feminine items when the competitive sport context was activated, compared to "in general" and the cinema context. The four-way MANOVA analysis revealed a significant main effect of Context, Λ_{Wilk}=.44, F(2, 59)=37.77, p<.0001, η^2=.56, LSD Fisher post-hoc tests (p<.05) indicating that after answering the BSRI in the "in general" context (M=3721.27, SD=1217.69), participants responded more quickly overall on the subsequent BSRI whatever the presented contexts (i.e., cinema or sport). However, there was no significant difference between response latencies in the competitive sport (M=2823.94, SD=984.04) and cinema contexts (M=2787.96, SD=965.18). The main effect of Participant's Gender was not statistically significant, Λ_{Wilk}=.91, F(6, 55)=.94, p=.47. The Participant's Gender×Gender Latencies and Participant's Gender×Context interactions dropped below significance, Λ_{Wilk}=.99, F(1, 60)=.05, p=.82, and Λ_{Wilk}=.96, F(2, 59)=1.29, p=.28, respectively.

More interestingly and as predicted, the significant two-way Context×Gender Latencies interaction emerged, Λ_{Wilk}=.85, F(2, 59)=4.99, p=.009, η^2=.14. Following LSD Fisher post-hoc tests (p<.05) indicated that participants in the competitive sport context were faster to answer on masculine items (M=2660.04; without the "competitive" BSRI item M=2707.28, SD=863.33) compared to feminine items (M=2987.84), whereas there was no significant difference between response latencies on masculine and feminine items in the two other contexts (see Table 1). Participants were also slower to respond on feminine items in the competitive sport context as

compared to the cinema context (M=2754.62). A near-significant trend (p=.083) also indicated that participants tended to spend less time on masculine items in the competitive sport context than in the cinema context (M=2754.62). Finally, the Participant's Gender×Context×Gender Latencies interaction did not reach significance, Λ_{Wilk}=.98, F(2, 59)=.50, p=.61.

Hypothesis 3: Sex of the Interviewed Person

At the end of the experimental session, participants were invited to indicate the sex they attributed to the interviewed person (i.e., *a man*, *a woman*, *a woman as well as a man*) in each context (i.e., sport, cinema) when they read the two interviews. We predicted that participants would be more likely to imagine a male in the sport interview while in the cinema interview, because of its gender-neutral aspect, the distribution of the chosen sex would be more balanced. First, two (one in sport context, one in cinema context) 2×3 (Participant's Gender×Attributed Sex) contingency Chi-square analyses (p<.01) were performed to test differences in sex attributed to the target depending on participants' gender.

For a long time many statisticians "limited" the use of Chi-square analysis of contingency tables, with the expected frequencies needing to be of at least five. Some authors offered more useful guidelines. To summarize, the recommendations are as follows: the mean expected frequency needs to be at least six when testing with α as small as .05 or 10 when testing with α as small as .01. Since the mean expected frequency is n/rc [r=number of rows; c=number of columns] (i.e., 10.67 for our sample), the minimum number of observations for testing at the .01 significance level should be at least n=10rc=10*2*3=60 for a 2×3 contingency table. In our study, N=64 for the total sample, so we decided to test our Chi-square analysis at p=.01 level (for more details see Zar 2010, pp. 503–504). The two contingency Chi-square analyses between participants' gender and the sex attributed to the interviewed person are non-significant, respectively, χ^2 (2, N=64)=6.95, p=.031, V=.33 for sport and χ^2 (2, N=64)=3.24, p=.20, V=.22 for cinema.

To test our main hypothesis, a series of Chi-square goodness-of-fit analyses (for men and women separately, and for global sample) were performed. We tested differences in sex attributed to the target compared to a "balanced" (i.e., 1/3, 1/3, 1/3) distribution. In the competitive sport context, the three Chi-square goodness-of-fit tests revealed significant differences in the sex attributed among participants, with a disproportionately fewer number of females and higher number of males (see Table 2). As hypothesised, participants as a whole were more likely to imagine a male (75%) than a female (7.8%) or a female as well a male (17.2%) in the sport interview. This was not true for the cinema context in which the sex chosen for the interviewed person was almost equally distributed between participants (see Table 2).

Discussion

In the present research, we examined the association between competitive sport and self-rated masculinity. Based on Deaux and Major's (1987) assumption that some contexts make one's gender schema more accessible than others, it was predicted that a competitive sport context would activate the masculine dimension in one's gender schema. Overall, our findings consistently support this notion. We extended the results of previous research (e.g., Dailey and Rosenzweig 1988; Smith et al. 1999) by showing that, compared to a neutral context, a competitive sport context affects not only gender self-description but also gender self-information processing efficiency.

Specifically, we hypothesised that masculinity would be more accessible in a competitive sport context because of their association supposed to be anchored in gender schema, as compared to "in general" and a cinema context. Contrary to previous studies, we addressed this hypothesis in two ways to provide a more complete test of Deaux and Major's (1987) assumption. On the one hand, we looked at participants' ratings on the BSRI as typically done. We found that participants showed higher masculinity scores when imagining themselves being a successful athlete than "in general" or in a cinema context. In the same way, participants were less likely to demonstrate feminine traits in the competitive sport context as compared to "in general" and the cinema context. Consistent with works of Harrison and Lynch (2005) in the United States and Uchronski (2008) in Germany, gender did not significantly affect these patterns. On the other hand, a unique feature of this research is its emphasis on individuals' speed of response to have a more complete test of the accessibility of gender schema. Participants were faster in making their responses on masculine items than on feminine ones when the competitive sport context was activated whereas no difference appeared in the "in general" context and in the cinema context. Moreover, the speed of responding on masculine items tended to be faster in the competitive sport context as compared to the cinema one. The reverse pattern was observed for the feminine items. Once again, participants' gender did not significantly affect these results.

Thus, this study showed that competitive sport context activated the masculine dimension of males and females'

Table 2 Number of participants in each response option concerning the sex attributed to the interviewed person depending on context (Sport, Cinema) and participant's gender (women, n=30; men, n=34)

	A female	A male	A female as well as a male	χ^2 goodness-of-fit	(df, n)
Sport context					
Women	5	19	6	12.20*	2, 30
Men	0	29	5	42.42**	2, 34
Cinema Context					
Women	16	7	7	5.40^{ns}	2, 30
Men	12	15	7	2.88^{ns}	2, 34
Total sample (N=64)					
Sport context	5	48	11	50.84**	2, 64
Cinema Context	28	22	14	4.63^{ns}	2, 64

ns indicates Chi-square goodness-of-fit significance at $p>.05$; * indicates Chi-square significance at $p<.01$; ** indicates Chi-square significance at $p<.0001$

gender schema. Indeed, female and male participants linked the competitive sport context and masculinity in responses and in response latencies. This suggests that the association between competitive sport and masculinity is cognitively internalized and integrated in the cognitive network of our gender schema. It could explain why American participants in Harrison and Lynch's (2005) study globally perceived athletes as higher on masculine traits than on feminine traits, and why "athletic achievement has been equated with a loss of femininity" (Sage and Loudermilk 1979, p. 89). Nevertheless, other characteristics of gender schema have to be analysed such as memory (e.g., Miller et al. 1997) to assert more firmly the place of the association between competitive sport and masculinity in one's gender schema. Likewise, gender schema is not limited to self-description and includes a large set of associations implying gender (Deaux and Major 1987). It would be interesting in future research to provide another test of the relationship between masculinity and sport context, but this time without implying self-description. Alternate measure testing automatic associations between concepts such as the Implicit Association Test (IAT; Greenwald et al. 1998) could be useful to this respect. This latter test, also based on response latencies, provides a useful measurement tool to challenge self-presentational distortions that may taint scores on questionnaires. In our pilot study, explicit gender connotations of cinema and sport contexts were in the presumed directions and highly significantly different. However, the ratings concerning sport context were close to neutral point of the scale. Some social desirability biases and self-presentational concerns may have attuned ratings (see Riemer and Visio 2003). Adding response latencies in methodology may provide an indicator countering more easily these concerns in addition to providing arguments concerning information processing efficiency.

Moreover, besides being a highly gendered context, we confirmed that competitive sport context was perceived as highly sex-typed. We replicated with a French undergraduate sample and another methodology Colley et al.'s (2005) results showing that English adolescents drew to a greater extent a man as someone who does a lot of sport. In our study, a large majority of participants imagined a man in the sport interview and very few imagined a woman, indicating that competitive sport is still considered as a "man's territory" (Birrell 1983, p. 49). While this pattern was more marked in males (see Table 2), it was also found in females. Thus, results demonstrated that competitive sport context was asymmetric at gender and sex levels. Accordingly, it seems that being a male as well as being masculine is congruent with competitive sport context, whereas being a female as well as being feminine is incongruent with competitive sport context. This assumption is consistent with Harrison and Lynch's (2005) results which showed that whatever the type of competitive sport, labelled as masculine or feminine, the perceptions of masculine gender role orientation of male athletes were not influenced. They also found that approval ratings were equivalent for boys who participated in stereotypically masculine sports and a stereotypically feminine sport, whereas there was higher approval of girls who participated in stereotypical masculine sports than of girls who participated in a stereotypical feminine sport. They argued that results would be different with a "true" sport overwhelming associated with femininity such as gymnastics. Contrary to this latter interpretation, we suppose that results would be the same in such sport, given that competitive sport seems incongruent with femininity as well as being a female. An individual practicing competitive sport needs to be at least associated with one of the two congruent components (i.e., masculine sex and/or masculinity) to fulfil the culture's definition of what a competitive sportive is supposed to be like. We think that these principles act as social gender norms (Cialdini et al. 1991) and individuals who deviate from are likely to be perceived negatively. As a whole, the perspective which followed from our results may appear less optimistic than Koca et al.'s (2005) conclusion according to which sport might have "the

potential to reconstruct traditional conceptualizations of gender roles" (p. 223).

Nevertheless, we know that sport domain is characterised by various ways to conceive, describe and play sports. In the present article, we focused on the competitive aspect of sport. As mentioned in our study, a domain overlap operates between the traditional male gender stereotype and the sport context, when both are partly defined in terms of competitiveness (see Aamodt et al. 1982; Koca et al. 2005). A fruitful extension of the current research would be the emphasis on cooperative aspects of sports behaviour to find out to which degree the present results can be generalizable. Again regarding the generalizability, it would be also interesting to put a gender on sport used in interview and explore the gendered character of sports and its effect on accessibility of gender schema. Furthermore, some variations may also be included in the elements defining the context. For instance, emotions are part of social contexts (see for instance the interviews used in the present study) and the form they take (e.g., positive or negative) may have an impact on accessibility of gender schema. Finally, it would be interesting in future research to investigate whether the present results could be replicated with other samples. The purpose of the present article was not to compare cultural visions of competitive sport. Nevertheless, as noted earlier, in many countries the same issues and concerns surrounding female sports participation arise and the suggestion of a link between masculinity and competitive sport was made. So, activation of the masculine dimension of gender schema may also be found in these ones. Future research led in other countries than France should attempt to test this assumption. This may provide insights of the current state of the sport realm in each country. In particular, we note that parts of the above citation of Birrell (1983) was cited in the introduction of research from different countries such as the United States (Csizma et al. 1988), Norway (Klomsten et al. 2005), Sweden, (Koivula 1995), or France (Guillet et al. 2000). Once again, it illustrates that the issues raised in this article concern not only France. The citation of Birrell (1983) seems still relevant today as far as France is concerned. It would be interesting to examine whether it is still relevant in the United States even with the Title IX provision as well as in the other countries where it was cited.

In the present study, we examined other contexts as compared to competitive sport. In the "in general" context, participants scored on average higher on feminine attributes than on masculine attributes. This result is consistent with the primacy of feminine attributes relative to masculine ones in self-description demonstrated in several studies (e.g., Miller et al. 1997; Uchronski 2008). We found a similar pattern in the cinema context. Participants scored high on femininity and low on masculinity in this latter. This result is consistent with Dailey and Rosenzweig's (1988) study demonstrating with an American sample that social contexts such as going out, getting together with friends, or partying, elicited higher femininity scores than masculinity scores. Consequently, the cinema context appeared less gender-neutral as we supposed but not as strongly gendered as the competitive sport one. Participants did not respond faster on feminine items as it could be expected in such case. In fact, we presumed that in contexts where gender asymmetries are flagrant and traditional gender stereotypes are clearly predominant, gender schema is more likely to be activated in memory. Going to the movies is not considered as one of these (Biernat et al. 1991, Study 3; Cardona and Lacroix 2008) contrary to competitive sport context. Other gendered contexts appear of interest to further test this approach. For instance, work and family contexts seem linked to masculine and feminine traits respectively. American and German participants scored high on masculine traits in a work context (Dailey and Rosenzweig 1988; Smith et al. 1999; Uchronski 2008), whereas in family context feminine characteristics were emphasized by German participants (Uchronski 2008). Interestingly, Nosek et al. (2002) demonstrated robust automatic associations of male with career and female with family using IAT in a large sample of American respondents at an Internet site. Consequently, while work and career are not totally the same concepts, we may suppose that the relationship linking work and family contexts with gender is anchored in gender schema. So that such contexts would be sufficiently strong to also trigger off a particular dimension of one's gender schema. These hypotheses remain to be tested in future research.

In conclusion, the data from this research confirmed that competitive sport environment is still a strongly gendered context and demonstrated that it is able to activate self-rated masculinity in gender schema. This association between competitive sport and masculinity appears to be anchored in gender schema and facilitates the information processing when it is activated. The rather implicit route which apprehends gender schema with response latencies needs to be further examined in other sport contexts and social contexts to better analyze how gender changes across these ones. It may provide important insights into understanding why women and men have significantly different places in sport environment and a good indicator of the current state of the investigated gendered domain.

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Appendix

Items from the French short version for adults of the Bem Sex Role Inventory (Gana 1995) and their English translation

French	English
Autoritaire	Assertive
Affectueux(se)*	Affectionate
Forte personnalité	Strong personality
Va vers les autres*	Sympathetic
Energique	Forceful
Sensible aux besoins des autres*	Sensitive to the needs of others
Apte au commandement	Has leadership abilities
Compréhensif(ve)*	Understanding
Dominateur(trice)	Dominant
Compatissant(e)*	Compassionate
Résolu(e)	Willing to take a stand
Empressé(e) à alléger les peines d'autrui*	Eager to soothe hurt feelings
Agit en chef	Acts as a leader
Chaleureux(se)*	Warm
Compétitif(ve)	Competitive
Tendre*	Tender
Prêt(e) à prendre des risques	Willing to take risks
Doux(ce)*	Gentle

*indicates items belonging to the feminine attributes; the other items belong to the masculine attributes

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