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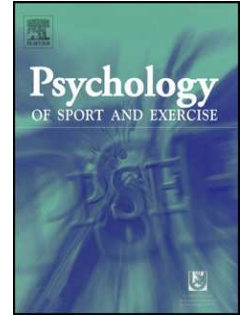
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- This article reviews studies on stereotypes and gender roles in sport and exercise
- Past studies are mostly based on the models of Bem (1981) and Eccles et al. (1983)
- We argue that other models of stereotypes would be relevant in sport
- Two perspectives are proposed: the situational and stereotype content approaches

ACCEPTED MANUSCRIPT

The influence of sex stereotypes and gender roles on participation and performance in sport and exercise: Review and future directions

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The influence of sex stereotypes and gender roles on participation and performance in sport
and exercise: Review and future directions

Abstract

The role of sex stereotypes and gender roles in the sex differences observed in sport and exercise has been extensively investigated in sport psychology, past studies showing that stereotypes are internalized into the self during the socialization process. Although this research has provided clear evidence of the psychosocial roots of sex differences in athletics, focusing exclusively on an internalization explanation may not allow a complete understanding of the influence of stereotypes in this domain. This article presents two approaches that have been developed in mainstream psychology and discusses their relevance in sport psychology: (1) the situational approach, which considers that the mere presence of stereotypes in the environment is sufficient to affect individuals (e.g., stereotype threat theory); (2) the content of stereotypes approach (e.g., stereotype content model), which suggests that stereotypes about a particular group may be ambivalent, and that this ambivalence may serve to legitimize the status quo.

Keywords: sex stereotype; gender role; sport; exercise; performance; participation.

The influence of sex stereotypes and gender roles on participation and performance in sport and exercise: Review and future directions

Introduction

Differences between men and women exist in many domains. Some are considered as unfair and unacceptable, but others appear as legitimate. For example, whereas the lower scores females obtain in math classes relative to males are considered a major social issue (e.g., Spencer, Steele, & Quinn, 1999), the fact that they run on average slower than males seems to go without saying (e.g., Messner, 2002). Why are the sex differences observed in athletics less questioned than in other areas? A possible reason is that these differences are perceived as resulting from natural biological factors. During the pubescent development, physical capacities develop more among males than females. As a result, from puberty on, males perform better in motor tasks that require strength or speed (e.g., Knisel, Opitz, Wossmann, & Keteihuf, 2009).

Although biological factors may in part explain these sex differences, other factors may be involved. First, sex differences are not as important as they appear: sex has been shown to predict only 5% of the variance in physical abilities (e.g., Eagly, 1995). Second, observing sex differences does not inform us on their origin, which may be natural but also environmental (e.g., Wood & Eagly, 2012). Indeed, since childhood males participate more in motor activities than females (e.g., Hines, 2004). In addition, there is evidence of sex differences in important psychological determinants of performance: boys are more motivated than girls to participate in sport (e.g., Knisel et al., 2009) and physical education classes (e.g., Chen & Darst, 2002), and hold higher perceptions of sport competence (e.g., Biddle, Atkin, Cavill, & Foster, 2011; Fredricks & Eccles, 2005). Therefore, although natural physical differences do exist between women and men, they are not sufficient to explain the sex

differences observed in sport performance and participation, and psychosocial determinants should also be considered.

The current review examines these psychosocial factors through the lens of the social psychology of stereotypes, defined as shared beliefs about the personal characteristics, generally personality traits, but also behaviors, of a group of persons (Leyens, Yzerbyt, & Schadron, 1994). The central hypothesis of this approach is that social reality is to some extent produced by social beliefs. Put differently, sex differences in sport exist in part because people believe they exist. Research in sport psychology has classically pursued two purposes: (1) identifying how people perceive the gender appropriateness of sporting activities (i.e., whether sports are considered as more appropriate for males, females, or both); (2) understanding how these gender stereotypes determine males' and females' self-perceptions, motivations, and sport participation. The latter question has been primarily examined within two models: Bem's model of gender (Bem, 1974, 1981) and the expectancy-value model of Eccles et al. (1983). These models share the assumption that stereotypes affect individuals through their internalization into the self during the socialization process. In other words, stereotypes are assumed to affect how individuals perceive themselves, and subsequently how they behave.

Overall, sport psychology studies have provided insightful evidence of the psychosocial roots of the sex differences observed in athletics. Nevertheless, the present article aims at making the case that these studies provide an incomplete picture of the role of stereotypes in sports, as several questions remain unexplored. For example, although the internalization of stereotypes into one's self-concept is an important pathway through which stereotypes may affect individuals, other pathways exist. Research on stereotype threat (Steele, 1997) indeed indicates that stereotypes may affect behaviors even among females who feel competent and value a "masculine" activity (i.e., females who have not necessarily

internalized the negative stereotypes into their self-concept) (e.g., Chalabaev, Sarrazin, Stone, & Cury, 2008). Relying on stereotype threat theory is interesting also because this model investigates the effects of stereotypes on performance, whereas classic sport psychology studies have mainly focused on sport participation. Another unexplored question concerns the causes of the counter-stereotypical effects sometimes observed. For example, Nicaise, Bois, Fairclough, Amorose, and Cogérino (2007) found that girls receive more positive feedback than boys in physical education classes. These counter-stereotypical effects are generally considered as showing an evolution of stereotypes in favor of females. However, models on the ambivalence of stereotypes such as the stereotype content model (e.g., Fiske, Cuddy, Glick, & Xu, 2002) or the shifting standards model (Biernat, 2003) suggest that these effects actually illustrate the maintenance of pro-masculine stereotypes in athletics.

The goal of this article is to present models of stereotypes rarely used in sport psychology that could provide answers to these unexplored questions. Specifically, we develop models on the situational influences of stereotypes (e.g., Bargh, Chen, & Burrows, 1996; Steele, 1997) and models on the ambivalence of stereotypes, such as the stereotype content model (e.g., Fiske et al., 2002), and the shifting standards model (Biernat, 2003). Before developing these approaches, we begin by presenting contemporary evidence of the existing sex differences in the athletic domain.

Sex differences in performance

In the case of competitive sport, comparing males' and females' performance is not easy, as usually men and women do not compete against each other (only equestrian is currently mixed in the Olympic Games). This comparison is made possible when performance is measured based on objective units (e.g., time, distance). In such activities, men perform generally better than women. For example, although the gaps between the sexes tend to decrease (e.g., Tatem, Guerra, Atkinson, & Hay, 2004), male world records are systematically

higher than female ones in sports that require strength, speed, or endurance, such as athletics (e.g., 100m: 9.58s for men vs. 10.49s for women) and swimming (e.g., 100m freestyle: 46.91s for men vs. 52.07s for women). However, males do not necessarily achieve better in activities that require concentration, calmness, or accuracy. For example, a woman (Zhang Shan) won the Olympic skeet event (i.e., shooting) in 1992, just before this event was demixed. In biathlon, although men ski faster than women, they do not perform better in shooting (Bletsou, Gerodimos, & Pollatou, 2006).

In the case of *physical education*, although mixed classes exist, it is difficult to compare girls and boys because their performance is assessed based on different grading scales. Moreover, grades do not reflect performance only, as teachers also evaluate students' investment and improvement. These elements notwithstanding, boys have been found to obtain better grades than girls (e.g., Flintoff & Scraton, 2001).

Sex differences in participation

Sex differences in sport and exercise overall. Females' sport involvement has considerably increased these latter decades. In the USA for example, female participation in high school sports rose from 294,015 to 3,665,367 participants between 1972 and 2007 (Dufur & Linford, 2010). Despite this dramatic growth, males still participate more in sports than females. Indeed, sex differences have been observed in many countries, including the USA (e.g., Fredricks & Eccles, 2005), China (e.g., Lau, Cheung, & Ransdell, 2007), and Turkey (e.g., Koca, Aşçi, & Kirazci, 2005). Although there are a few European countries where women report exercising more than men, such as the Netherlands and Scandinavian countries, differences in favor of males are also observed in most European countries (e.g., Van Tuyckom, Scheerder, & Bracke, 2010).

Sex differences depending on the type of sport. The sex differences observed at a general level mask important disparities according to the type of activity: while some sports

are practiced mostly by men, others are practiced almost exclusively by women. In France for example, men are overrepresented in soccer (92%) or rugby (94%) whereas women are overrepresented in gymnastics (78%), dancing (98%), and ice skating (71%) (French Department of Sport, 2000). Given these specificities, one may wonder whether it is accurate to consider sport as a male domain. The fact that "male" sports are more prestigious than "female" ones suggests that this is indeed the case. This hierarchy is illustrated by the differential media coverage of male and female sports. In the USA, sports media generally dedicate from 5% to 8% of coverage to women's sports even though 40% of sports participation is by women (e.g., Hardin & Greer, 2009). This suggests that sports belong to men (Messner, 2002) and that male sports are more representative of what sport should be than female sports. For example, Colley, Berman, and Van Millingen (2005) found that a majority of boys and girls drew a male playing soccer when they were asked to draw a sportsperson.

To conclude, there is strong evidence that sport and exercise are dominated by men. But should it be considered as a social inequality or as a mere difference between men and women? We consider it a social inequality because not exercising may have negative health consequences (e.g., Brustad, Babkes, & Smith, 2001). Given that more males than females reach adequate levels of daily physical activity (e.g., Knisel et al., 2009), these gaps could lead to sex inequalities in health. It is thus crucial to identify the factors leading to these inequalities. The current article rests on the hypothesis that sex differences may be generated by the cultural milieu, and the following part presents psychosocial studies that have empirically examined this question.

The classic psychosocial approach of sex differences

Stereotypes, gender roles, sex, and gender: Definitions and clarifications

We start by defining core concepts that are close but distinct: sex and gender on the one hand, stereotype and gender role on the other hand. The concepts of sex and gender are sometimes used interchangeably whereas they can be distinguished. Some authors reserve sex for biological differences between males and females, and gender for the endorsement of traits and behaviors that characterize males (e.g., leadership, independence, aggressiveness) and females (e.g., sensitivity, sweetness, child care) (Bem, 1981). Others consider that the distinction between these terms is more complicated. For example, Butler (1990) argued the following:

Gender is not to culture as sex is to nature; gender is also the discursive/cultural means by which "sexed nature" or "a natural sex" is produced and established as "prediscursive," prior to culture, a politically neutral surface on which culture acts. (p. 10)

Although sex stereotypes and gender roles also share similarities, they are not identical: stereotypes refer to descriptions (e.g., men participate more in sport than women) and gender roles refer to prescriptions (e.g., men *are supposed to* participate more in sport than women). However, stereotypes and gender roles are often used indistinctly in the literature, as illustrated by the terms *gender role stereotype* or *sex-typed social role*. In the current article, we reserve the term stereotype for descriptive beliefs and gender role for prescriptive norms (e.g., Eagly & Karau, 2002). Whereas gender role studies generally investigate how gender identity determine sport participation and choices (e.g., Guillet, Sarrazin, Fontayne, & Brustad, 2006), stereotypes studies focus more on how they affect sport performance (e.g., Stone & McWhinnie, 2008).

Now that we have delineated these core concepts, we next describe the content of stereotypes and gender roles in the sport domain.

The perceived gender appropriateness of sports

In general, sport is considered as a male domain (e.g., Riemer & Visio, 2003), but more specifically, activities may be perceived as masculine, feminine, or neutral. Although differences may occur – basketball is either masculine (Hardin & Greer, 2009; Matteo, 1988) or neutral (Koivula, 1995; Riemer & Visio, 2003) – a noteworthy consistency has been found. Expressive activities (e.g., dancing, gymnastics) are consistently categorized as feminine, tennis or swimming as neutral, and fighting sports as masculine. Moreover, findings are consistent across countries, including the USA (Hardin & Greer, 2009; Metheny, 1965; Riemer & Visio, 2003), Sweden (Koivula, 1995), and France (Fontayne, Sarrazin, & Famose, 2001), and across different age populations: adolescents and college students (e.g., Koivula, 1995), and kindergarten children (e.g., Riemer & Visio, 2003). This strong consensus suggests that the stereotypes and gender roles associated with sports are highly shared in western countries, and that they are internalized early during childhood.

A question arising from these studies concerns the reasons that make a sport masculine or feminine. One could argue that activities that require strength or speed are masculine because males are stronger and run faster than females. However, this analysis is in part inaccurate: swimming is perceived as neutral whereas males swim on average faster than females. Instead, sports' sex-typing depends on the degree of masculinity and femininity of their characteristics: masculine sports involve masculine characteristics, including physical contact, face-to-face opposition, strength, or aggressiveness; feminine sports involve feminine characteristics, such as expressivity, grace, or esthetics (e.g., Hardin & Greer, 2009). Although not the focus of the present review, many studies conducted in sport sociology (e.g., Messner, 2002) and sport history (e.g., Hall, 2002), as well as cultural studies (e.g., McGannon & Busanich, 2010) have investigated why perceived gender differences exist in sports and how they are perpetuated and reinforced. For example, Messner (2002) proposed that despite the exploding athletic participation rates of females observed these latter decades,

the sport domain continues its longtime conservative role in gender relations. He notably attributed the gender segregation to “soft essentialism”, an unspoken belief that girls and boys deserve equal opportunities but are naturally different.

How do these beliefs about the gender appropriateness of sports result in sex differences in participation and performance? Two models have been primarily used to investigate this question: Bem’s work on gender (1974, 1981) and the expectancy-value model of Eccles et al. (1983). The next section summarizes the major advances provided by these models (for a review see Gill, 1994).

Studies on Gender

Two assumptions underlie classical research on gender socialization. First, sex differences are due to the internalization of the gender identity defined by the expectations and ideals of the cultural milieu. For example, boys learn very early that it is inappropriate to cry because emotionality is not a characteristic they are expected to have (e.g., Bem, 1974; Spence, Helmreich, & Stapp, 1975). This social modeling leads males and females to differ in their choices and preferences. Second, gender identity is a stable personality component, which remains stable over situations and over time (e.g., Ruble & Martin, 1998). Among the numerous scales that measure gender identity, the *Bem Sex Role Inventory* (BSRI, Bem, 1974) and the *Personal Attribute Questionnaire* (PAQ, Spence et al., 1975) are the most often used. The BSRI is one of the first instruments that considered masculinity and femininity as independent dimensions, resulting in four possible gender identities: individuals are masculine when they endorse masculine characteristics, feminine when they adopt feminine characteristics, androgynous when they endorse both, and undifferentiated when they adopt neither of these characteristics.

Past studies have shown that gender identity is related to sport participation: female participants are mostly androgynous and masculine (Clément-Guillotin & Fontayne, 2011; for

a review see Gill, 1994), and these females engage more in masculine sports (Fontayne et al., 2001) and dropout from their activity less frequently (Guillet, Sarrazin, & Fontayne, 2000; Guillet et al., 2006). Moreover, masculinity is positively related to endorsement of athletic identity whereas femininity is negatively related to it (Lantz & Schroeder, 1999). These studies confirm that sport is a masculine domain and that participants are those who endorse masculine traits.

Beyond gender identity, Bem (1981) considered that the degree of individuals' conformity to social norms could determine their behaviors, through the concept of gender schema. Gender schema acts as a cognitive filter that leads people to interpret events and orient their behaviors based on the distinction between males and females as defined by their culture. *Sex-typed* individuals (i.e., masculine males and feminine females) use gender to encode and organize information and have been shown to choose activities that conform to their sex more than non *sex-typed* individuals (i.e., androgynous and undifferentiated males and females). *Cross sex-typed* individuals are the third type of this classification, and refer to feminine males and masculine females.

In sports, Koivula (1995) showed that sex-typed individuals perceive masculine activities as more masculine than other individuals (see also Hardin & Greer, 2009), and feminine activities as more feminine. Sex-typed individuals were also found to associate more masculine traits to individuals participating in masculine sports, and more feminine traits to those participating in feminine sports, than non sex-typed individuals (Matteo, 1988). This study also examined why people reject sports that are inappropriate to their sex. Results indicated that sex-typed individuals gave more reasons based on gender. For example, sex-typed females reject American football because "it is not a sport for females" (see also Koivula, 1999). Overall, these studies confirm that compared to others, sex-typed individuals

are likely to use sex stereotypes when judging others, to conform to these stereotypes and to avoid behaviors that are inappropriate to their sex.

The Expectancy-Value Model of Eccles et al. (1983)

The role of sex stereotypes and norms has been investigated within a second framework: the expectancy-value model of Eccles et al. (1983). This work differs from studies on gender in two key respects: first, it focuses more on the environmental factors through which stereotypes and norms affect individuals, and notably the socializing individuals (i.e., parents, teachers, peers). Second, this approach considers that people interact with their environment in an active manner. In other words, they are not passive recipients who systematically endorse the beliefs and norms of their cultural milieu¹.

Specifically, the expectancy-value model assumes that cultural stereotypes and norms determine behaviors through two core variables: success expectancies (i.e., perceived probability of success in a particular task) and subjective task value (i.e., extent to which a task provides intrinsic interest and is perceived as useful and important by the individual). Research in sport showed that girls feel less competent and attach less value to sport than boys, and that these lower perceptions result in sex differences in participation in favor of boys (e.g., Fredricks & Eccles, 2005; Slater & Tiggemann, 2011). Studies also confirmed that these sex differences may be due to the internalization of stereotypes and gender roles. Indeed, gender identity (e.g., Guillet et al., 2006) and sport sex-typing (e.g., Schmalz & Davison, 2006) have been shown to determine perceived competence and subjective value. Finally, masculinity and stereotype endorsement have been shown to positively predict females' performance in a masculine activity, through the mediating role of perceived ability (Chalabaev, Sarrazin, & Fontayne, 2009).

¹ To illustrate this idea, one may note that the majority of participants in Koivula's studies (1995, 1999) were not sex-typed: Sex-typed individuals – those who conform the most to gender norms – represented from 30.8% to 47.6% of participants.

There is also considerable evidence of the mechanisms through which stereotypes and cultural norms may generate the above-mentioned sex differences. A mechanism that has been particularly examined in the literature is the socializing influence of parents (e.g., Bois, Sarrazin, Brustad, Trouilloud, & Cury, 2002; Fredricks & Eccles, 2005). Parents may influence children's sport involvement through different processes, including social modelling, perceptions of their children's competence and of the value of sport participation, or the emotional support and positive sport experiences they may provide to their children.

Several studies support the view that parents play a role in the transmission of stereotypes and gender roles to their children. For example, compared to parents of girls, parents of boys hold higher perceptions of their child's sport competence and consider sport as more important, even after controlling for children's actual physical ability (Fredricks & Eccles, 2005). Moreover, parents seem to provide fewer encouragements and sport opportunities to girls than boys (e.g., Fredricks & Eccles, 2005). One study further showed that the more mothers adhere to pro-masculine stereotypes relative to sport, the less they perceive their own daughter as competent for athletics (Jacobs & Eccles, 1992). Although these studies suggest that parents have an important role in the transmission of sex stereotypes to their children, other investigations did not corroborate these results, suggesting that the role of parents is more complex than one can imagine (e.g., Babkes & Weiss, 1999; Bois et al., 2002).

Other significant others have been shown to favour boys in their judgments in the sport domain, notably physical education teachers (e.g., Chalabaev, Sarrazin, Trouilloud, & Jussim, 2009). This study showed that teachers' expectations relative to their students' performance in gymnastics favored boys independently of real sex differences, both in an experiment and in a naturalistic study.

Future directions

To conclude, a considerable amount of research has provided evidence of the cultural origins of the sex differences observed in sport and exercise. However, we believe that focusing exclusively on an internalization explanation of these differences may not allow a complete understanding of the stereotypes' dynamics operating in athletics. Indeed, there is evidence that individuals who have not internalized stereotypes into their self-concept (i.e., who feel competent despite being negatively stereotyped) may underperform when they are reminded of the stereotypes (e.g., Chalabaev, Sarrazin et al., 2008). Another unexplored question concerns the causes of the counter-stereotypical effects may also emerge (e.g., Biernat & Vescio, 2002; Nicaise et al., 2007). We present in the next section stereotypes models rarely used in sport psychology that may address these results: models on the situational influence of stereotypes and on the ambivalence of stereotypes. Importing these approaches to sport psychology would shed a new light on the role of stereotypes in sport and exercise.

Alternative Models of Stereotypes

The situational influences of stereotypes

The situational perspective considers that it is not necessary to believe a stereotype is true for oneself to be affected by it. The mere presence of the stereotype in the environment may be sufficient to influence cognitions, motivations, and behaviors. Although hundreds of studies have examined this situational influence, very few have been conducted in the athletic domain. We believe this approach would complement the internalization perspective for at least two reasons. First, this line of research examines a mechanism of stereotype influence that differs from the internalization pathway: whereas most sport psychology research has studied how stereotypes determine self-perceptions and motivation, the situational approach argues that even individuals who have not internalized stereotypes into their self may be negatively affected by them. For example, females who feel competent in a masculine sport

may still perform poorly following stereotype activation. Bringing this situational approach to sport psychology would thus underline the existence of multiple pathways of stereotype influence.

Second, this perspective mainly focuses on performance. Yet, performance is an outcome that has been rarely investigated, as the stereotype internalization approach focuses on engagement-related outcomes (e.g., choices, preferences, dropout). A possible reason of this lack of interest for performance may lie in the pervasiveness of the biological explanation of sex differences in physical abilities. While one may easily conceive that stereotypes affect motivations and self-perceptions, it might be less straightforward to consider that they may influence athletic performance. However, as we will see in the next part, there is evidence that stereotypes may generate sex differences in performance.

Stereotype threat theory. In recent years, research on the situational approach of stereotypes has considerably increased in mainstream psychology, and notably within the *stereotype threat theory* (Schmader, Johns, & Forbes, 2008; Steele, 1997). Stereotype threat is a situationally induced identity threat that occurs when an individual fears being judged negatively based on a negative ingroup stereotype. In turn, this threat may lead to the confirmation of the stereotype. This phenomenon was first demonstrated by Steele and Aronson (1995), who showed that performance of African American students was lower when a test was described as diagnostic of intelligence – activating thus the stereotype relative to the poor intelligence of African Americans – than when it was presented as nondiagnostic of intelligence.

Importantly, stereotype threat does not result from the internalization of cultural stereotypes into one's self during the socialization process. Indeed, a core premise of the theory is that it is not necessary to perceive one's abilities and motivations in accordance with existing stereotypes in order to suffer their negative consequences: the mere knowledge of

their existence may be sufficient to detract performance. Many studies have corroborated this assumption, showing that individuals who are the most susceptible to stereotype threat are those that highly value the stereotyped domain (e.g., Leyens, Désert, Croizet, & Darcis, 2000), (i.e., those who have resisted the stereotype's processes described in the expectancy-value model of Eccles et al). This situational explanation of group differences adds to the internalization hypothesis, showing that stereotypes may affect individuals through different mechanisms.

Since the seminal work of Steele and Aronson (1995), over a hundred studies have explored this phenomenon. They revealed that stereotype threat is a robust effect that may concern different social categories, such as sex (e.g., Spencer et al., 1999), race (e.g., Steele & Aronson, 1995), or socioeconomic status (Croizet & Claire, 1998), and various tasks, such as math tests (e.g., Spencer et al., 1999), verbal tests (e.g., Steele & Aronson, 1995), or social tasks (e.g., Bosson, Haymovitz, & Pinel, 2004). There is also convergent evidence of the mechanisms through which stereotype threat detracts performance, through motivational (e.g., motivation to avoid failure), affective (e.g., increased anxiety), cognitive (e.g., reductions in working memory capacity), and physiological (e.g., stress) processes (see Schmader et al., 2008, for a review).

In sum, research on stereotype threat has shed a new light on the processes through which stereotypes may generate differences between social groups. However, despite its potential to explain sex differences in the athletic domain, very few studies have explored stereotype threat in this area. The first study investigated racial stereotypes (Stone, Lynch, Sjomeling, & Darley, 1999). When a golf test was described as diagnostic of natural athletic ability – thus activating the stereotype about the poor athletic ability of European Americans – European American participants performed lower than in the control condition. In contrast, when the test was presented as diagnostic of intellectual abilities – which primed the

stereotype about the poor intelligence of African Americans – African American participants performed lower than in the control condition. Given that stereotype threat may affect motor tasks and that sex stereotypes have been shown to generate stereotype threat effects in the academic domain, it is likely that sex stereotypes may also decrease sport performance through this phenomenon.

Evidence of this effect has been first demonstrated on males. Beilock, Jellison, Rydell, McConnell, and Carr (2006) showed that telling male golfers that males underperform relative to females on a golf-putting task decreased their performance on this task. Following studies revealed that females are also susceptible to stereotype threat when performing a golf-putting task (Stone & McWhinnie, 2008) or a soccer-dribbling task (Chalabaev, Sarrazin et al., 2008), which is sex-typed as highly masculine in Western Europe, where the study was conducted. The latter study notably showed that framing a soccer-dribbling task as diagnostic of soccer ability impaired the performance of female expert soccer players. This study confirmed that stereotype threat may affect females' performance in masculine sports. Moreover, this effect occurred on expert soccer players, who have presumably not internalized the stereotypes that females are not competent and should not participate in masculine sports. This clearly indicates that stereotypes may impact females through other processes than those identified within the internalization approach, illustrating the necessity to further investigate situational effects of stereotypes. This necessity is reinforced by evidence that activating negative stereotypes about females may also affect males by boosting their motor performance, through increased self-confidence and motivation (Chalabaev, Stone, Sarrazin, & Croizet, 2008). This phenomenon, called stereotype lift (Walton & Cohen, 2003), suggests that stereotypes may lead to sex differences in performance through two separate mechanisms: by decreasing females' performance and by increasing males' performance.

One could argue that the results observed with academic tasks are sufficient to

understand the role of stereotype threat in sports. However, the fact that stereotype threat occurs in various domains does not mean that its mechanisms are similar across domains. Although some processes observed on motor tasks may also apply to cognitive tasks, such as avoidance motivation (Chalabaev, Sarrazin et al., 2008) and self-handicapping (Stone, 2002), other processes differ depending on the nature of the task: whereas sensorimotor skills are mostly proceduralized and run off automatically, cognitive skills require controlled attention and effortful processing (e.g., Schmader et al., 2008). This has important implications for stereotype threat mechanisms. Indeed, stereotype threat harms cognitive performance by impairing executive processing (Schmader et al., 2008). However, given that execution of motor tasks run off outside of consciousness, working memory impairments cannot account for stereotype threat effects on motor performance. Instead, drawing upon the choking under pressure literature (e.g., Baumeister, 1984) and based on a dual-task paradigm, Beilock et al. (2006) showed that stereotype threat effects on motor tasks are due to an increased conscious monitoring of task execution. These findings provide evidence that some stereotype threat processes are specific to motor tasks and confirm the need to further investigate stereotype threat in this domain.

Priming effects. Stereotype threat is not the only situational influence stereotypes may have. Studies on priming have shown that stereotype activation may have automatic effects on behaviors, without being mediated by conscious processes (e.g., Bargh et al., 1996). For example, the mere exposition to words related to aging is sufficient to make participants walk slowly (Bargh et al., 1996). In the athletic domain, Follenfant, Légal, Dinard, and Meyer (2005) primed sports students with stereotypes related to older people or to basketball players, by asking them to think of words describing each category. Results showed that priming the stereotype related to older people impaired participants' performance on a throwing task. By showing that stereotypes may affect individuals who do not belong to

the stereotyped group, these studies suggest how prevalent the situational influences of stereotypes may be. To our knowledge, no study has primed sex stereotypes relative to sport using this framework.

The malleability of gender schema. The role of situations in determining people's cognitions, motivations, and behaviors may also be applied to gender identity. This may seem surprising as gender has been generally conceptualized as a stable personality characteristic. However, past studies have demonstrated that people's self-reported masculinity and femininity may be influenced by the social context (e.g., Deaux & Major, 1987). This malleability of gender may be explained in a gender schema perspective. Gender beliefs systems (i.e., descriptive and prescriptive elements associated with men and women) are linked in memory via a schema, which refers to a cognitive network of associations that organizes and guides perception once it is activated (Macrae, Milne, & Bodenhausen, 1994). Activated gender schema provides in particular more efficient information processing, in terms of speed and memory (e.g., Mills, 1983).

Deaux and Major (1987) argued that contextual cues that make gender salient increase the accessibility of gender beliefs systems. Given that sport is gendered, it is likely that when this context is salient, this may affect gender schema, and more particularly the masculine dimension. This hypothesis has been recently confirmed in the sport context (Clément-Guillotin & Fontayne, 2011). This study showed that the accessibility of participants' masculinity in their cognitive network was more important in a competitive sport context relative to a neutral context. As suggested by the authors, other sport contexts (e.g., cooperative aspects) and other characteristics of gender schema (e.g., memory) have yet to be examined to assert more firmly the place of the association between sport and masculinity in one's gender schema.

The Ambivalence of Stereotypes

There are also unexplored questions within the stereotype internalization perspective. While studies based on Eccles et al.'s (1983) model have shown that parents provide fewer encouragements and sport opportunities to girls than boys (e.g., Fredricks & Eccles, 2005), other studies instead found counter-stereotypical effects (e.g., Biernat & Vescio, 2002; Nicaise et al., 2007). For example, Nicaise et al. (2007) observed that PE teachers provided more praise combined with technical information to girls than to boys. Why are these counter-stereotypical effects observed? Do they reveal an evolution of sex stereotypes in sport? We believe that these effects reveal instead the maintenance of traditional stereotypes. This assumption is based on two recent models, the stereotype content model (Fiske et al., 2002) and the shifting standards model (Biernat, 2003). They are detailed below.

The stereotype content model considers that in evaluative situations, helping others may be the result of perceiving them as incompetent (see Cuddy, Fiske, & Glick, 2008). Indeed, the model argues that social judgments are bidimensional, the stereotypes we hold about social groups referring to two dimensions: warmth (e.g., kindness, sincerity, trustworthiness) and competence (e.g., efficacy, skill, intelligence). Generally, stereotypes are ambivalent: they are positive on one dimension and negative on the other one. Their valence notably depends on the social status of the group: high-status groups are perceived as competent but not warm (e.g., Asians, rich people) and low-status groups as incompetent and warm (e.g., women, the disabled or the elderly) (Fiske et al., 2002). As a low-status group, females are generally perceived as warm but not competent (for a review see Cuddy et al., 2008). This ambivalence could also exist in sport, with the stereotype that girls have poor athletic ability being counter-balanced on the warmth dimension (i.e., girls are less competent than boys but more likable). One study has recently corroborated this hypothesis, showing that PE teachers associate masculinity with competence and femininity with warmth in the classroom (Clément-Guillot et al., in press).

Thus, observing positive behaviors toward females in sport does not necessarily mean that stereotypes are evolving in favor of females. As pointed out by Cuddy et al. (2008), attributions of high likability and low competence to females convey patronizing attributions that justify the status quo. In other words, positive perceptions of females on the warmth dimension may serve to pacify intergroup relationships, resulting in an insidious maintaining of the status quo. This assumption has been confirmed at a societal level (see Glick et al., 2004) but remains to be tested in the sport field.

In addition, there is currently a social discourse decrying social inequalities (e.g., Stromquist, 2004). People may therefore not be willing to explicitly express negative views of females. To this respect, a recent study has shown that the mixed stereotype content of disabled persons that is observed at an explicit level is not found when implicit measures are used (Rohmer & Louvet, in press). While participants explicitly judged disabled persons as warmer but less competent than non-disabled persons, they associated disability not only with low competence but also with low warmth at an implicit level. Because the stereotype content of disabled people and traditional females is relatively similar (Cuddy et al., 2008), such discrepancies between implicit and explicit measures could also be observed with regard to the sex category in sport. In any case, using implicit measures to investigate whether stereotypes are still pro-masculine in the sport field could be insightful. To our knowledge, only one study (Clément-Guillotin, Chalabaev, & Fontayne, 2012) did so in sport psychology, showing that the self-reported associations between sport and psychological masculinity were not correlated to the associations observed using an implicit test.

Another theoretical framework may help to explain the counter-stereotypical effects sometimes reported: the shifting standards model (Biernat, 2003). According to this model, perceivers judge others by using a within-group standard of comparison (e.g., males are judged relative to a male standard while females are judged relative to a female standard).

Consequently, judgments of male and female targets may not be directly comparable, resulting in patterns that may be non-stereotypic (e.g., a female may be judged as more aggressive than a male because of the different standards of comparison that are used). These non-stereotypic patterns are likely to emerge on subjective response scales (e.g., ranging from “not aggressive” to “very aggressive”), but not on scales that are based on objective units (e.g., height).

Similarly, this shifting standards phenomenon may be observed on perceivers’ “non-zero-sum” behaviors, which are behaviors that can be bestowed on a limitless number of persons (e.g., nonverbal cues, verbal praise, or punishment), as opposed to “zero-sum” behaviors, which restrict the behavioral options available toward others (e.g., hiring, promotion, assignment to high-level positions, allocation of money). Similar to Nicaise et al. (2007), Biernat and Vescio (2002, Study 2) found that undergraduates playing the role of co-ed softball team managers provided more positive feedback and nonverbal responses to a successful performance when it was obtained by a female as compared to a male. However, they did not interpret these results as illustrating an evolution of the pro-masculine sport stereotype, but instead as revealing a shifting standards effect on “non-zero-sum” behaviors. This was confirmed by results obtained on “zero-sum” behaviors, which showed that females were less likely to be assigned to important infield positions or to be selected for a team (i.e., zero-sum behaviors).

In sum, while counter-stereotypical results in favor of females may lead to the conclusion that traditional pro-masculine stereotypes are declining, models on the ambivalence of stereotypes suggest that this may not be the case. These models have been rarely used in sport psychology, and the present section was aimed at demonstrating the relevance of using such models in future research.

Conclusion: Toward a multiple-route model of sex stereotypes influence in sport and exercise?

The goal of this article was to review evidence of the role of stereotypes and gender roles in explaining the sex differences observed in performance and participation in sport and exercise. Most prior studies have examined this question by considering that stereotypes affect individuals through their internalization into one's self during the socialization process. There is indeed ample evidence that individuals learn stereotypes and gender roles during childhood through the socializing influences of significant others, notably their parents (e.g., Fredricks & Eccles, 2005). These social beliefs then affect their self-perceptions of competence and value attributed to sports, predicting in turn their sport participation (e.g., Guillet et al., 2006) and performance (e.g., Chalabaev et al., 2009).

Although this internalization pathway explains a significant amount of the sex differences observed in athletics, this article aimed at making the case that there may be other routes through which stereotypes exert their impact, and notably situational routes. Drawing upon stereotype threat theory, a few studies indicate that the mere presence of stereotypes in an evaluative situation may be sufficient to detract females' sport performance (e.g., Chalabaev, Sarrazin et al., 2008; Stone & McWhinnie, 2008). This situational effect differs from the internalization pathway in the mechanisms involved – avoidance motivation (Chalabaev, Sarrazin et al., 2008) and explicit monitoring of task execution (Beilock et al., 2006) – and because it mainly concerns individuals who have not internalized the stereotypes into their self. As such, situational effects of stereotypes represent an additional route through which stereotypes may lead to sex differences in athletics. This suggests how pervasive stereotypes may be in leading to differences between males and females in this domain: even females who have resisted stereotype internalization may in the end confirm the negative stereotypes toward them.

Moreover, sport psychology studies have classically examined the assimilative effects of stereotypes, whereas a few studies indicate that counter-stereotypical effects may also emerge (e.g., Biernat & Vescio, 2003; Nicaise et al., 2007). Although one could argue that these results suggest that traditional stereotypes are declining, research on the ambivalence of stereotypes (e.g., the stereotype content model, the shifting standards model) suggests that positive stereotypes about females may in fact reflect the maintenance of pro-masculine stereotypes, reinforcing the need to better understand the mechanisms of stereotypes effects in order to alleviate them.

In sum, the situational approach as well as the ambivalence of stereotypes approach appear as interesting complements to the classic internalization perspective mostly adopted in the field of sport psychology (Figure 1 summarizes these different approaches). However, very few studies have utilized these alternative approaches, and we believe that further research is needed. For example, although the mechanisms of stereotype threat have been clearly established in the academic domain (for a review see Schmader et al., 2008), it seems that these mechanisms differ depending on the nature of the task (i.e., academic vs. motor task) (e.g., Beilock et al., 2006). It is therefore necessary to conduct more studies in sport in order to identify the mechanisms of these effects in this domain. The same comment can be made with regard to shifting standards effects, which could be different in sports relative to other contexts (Biernat et al., 2003; Biernat & Vescio, 2002)

Finally, drawing upon these alternative approaches could be useful in terms of intervention programs. Indeed, a practical assumption underlying situational effects of stereotypes is that they may be eliminated by modifying the situation or by providing individuals with appropriate coping strategies. A growing body of research in social psychology focuses on identifying these strategies. These studies have shown that stereotype threat effects may be “turned off” under several conditions, and notably when stereotyped

individuals are presented with positive role models (e.g., McIntyre, Paulson, & Lord, 2003) or when they adopt a malleable theory of ability (Aronson, Fried, & Good, 2002). Interestingly, females have been shown to adopt this theory of ability less than males in the sport domain (i.e., they do not believe that sport performance depends on effort and training as much as males do) (e.g., Li, Harrison, & Solmon, 2004). This suggests that intervention programs aimed at developing this incremental theory of ability in females would reduce the situational effects of stereotypes in sport.

To conclude, females and males may both be susceptible to stereotypes effects, whether they have internalized them or not, suggesting how pervasive these effects may be. Future research is needed to reveal whether some routes of stereotype influence may be more influential than others, in order to identify appropriate strategies that could alleviate them.

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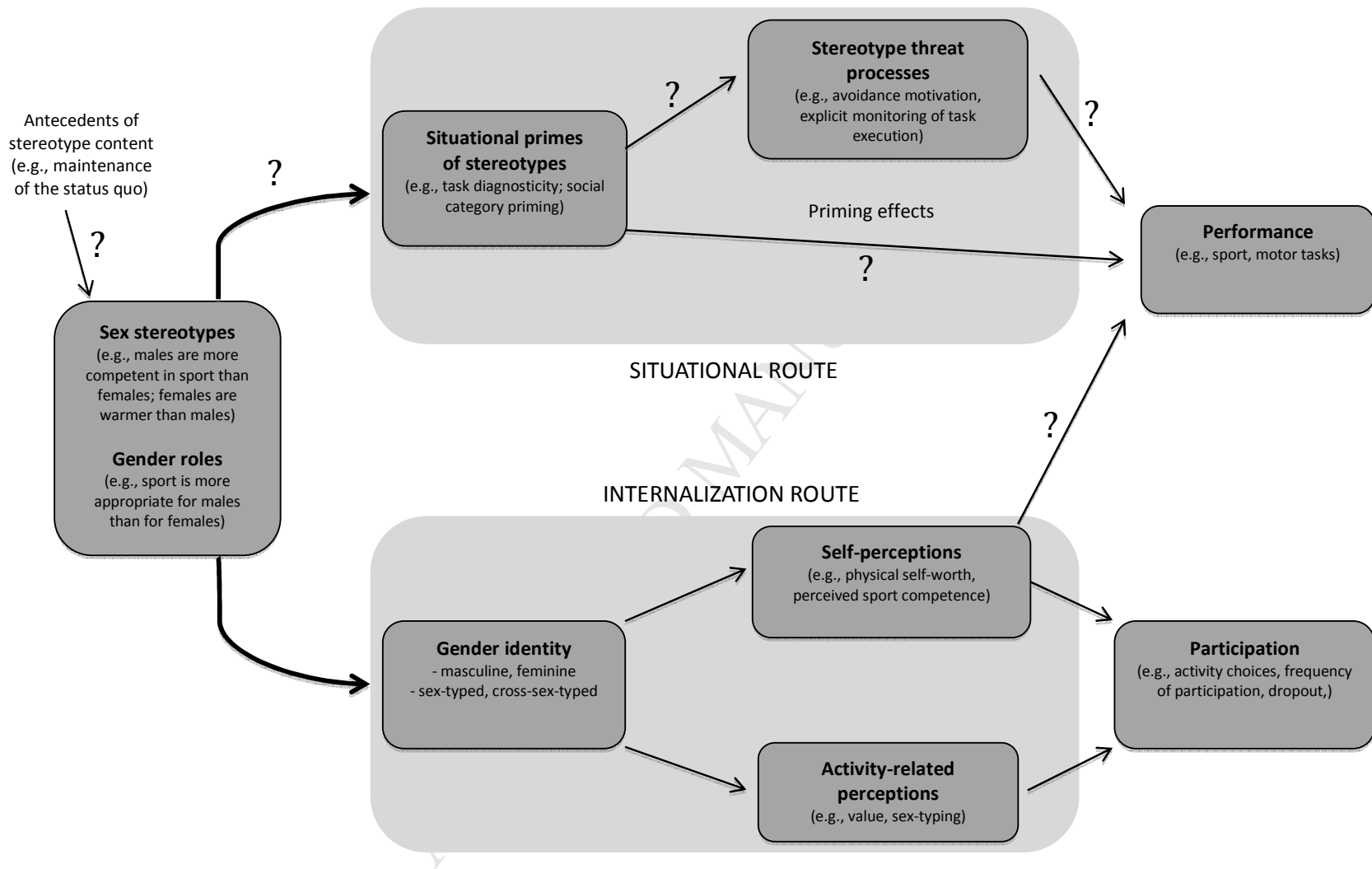


Figure 1. Multiple-Route Model of Stereotypes and Gender Roles Influences on Participation and Performance in Sport and Exercise
Note. Question marks refer to theoretical questions that need further empirical investigation.