

## **A systematic review of gender stereotype beliefs and their relationship with youth sport participation and performance**

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# **A systematic review of gender stereotype beliefs and their relationship with youth sport participation and performance**

## **Abstract**

Gender stereotype beliefs are potentially important in determining how well people perform in and engage with sport and exercise. This systematic review provides a critical snapshot of the current research literature to identify the volume of literature available and insights into the relationship between gender stereotype beliefs and performance and participation in youth sport and exercise. The review also considered the evidence to support current theoretical models (stereotype threat, expectancy-value model). The systematic search found only eight studies that explored the topic. The review findings showed that there is a need for more replication studies to allow firm conclusions to be drawn. There was substantial variation in the studies' methodological approaches with a complex impact pathway of gender stereotype shown. A mixed relationship was found between stereotype beliefs and performance, whereas stereotype beliefs were consistently found to relate to participation. Perceived ability and stereotype awareness were found to be potentially important in both performance and participation effects. Situational and individual variables such as extent of stereotype in the sport and internalisation of stereotypes are also likely to determine the impact of a stereotype belief and these need to be explored further, particularly in young people. Limitations that were found in the current evidence-base include a focus on school-based studies, a lack of quantifiable measures of participation, and a need to differentiate between the internalisation and socialisation hypotheses. This review highlights critical gaps in the literature and provides clear questions for further investigation. In particular, the lack of community-based samples, quantitative measures of participation, or replication studies weaken the conclusions that can be drawn. Suggestions for further research include studies that differentiate the theoretical mechanisms.

**Keywords:**; *stereotype threat; exercise; expectancy value model; perceived ability*

## Introduction

The World Health Organisation (WHO) has identified that childhood physical inactivity is a significant risk factor in childhood obesity and the public health challenge that it creates (Gao et al., 2018; World Health Organisation, n.d.<sup>a</sup>). Studies consistently show significantly lower levels of activity for girls as compared to boys and declining activity levels with age in childhood (Collings et al., 2014; Health and Social Care Information Centre, 2013; The Child & Adolescent Health Measurement Initiative, 2016). Globally, the WHO found that 84% of adolescent girls do not meet activity level recommendations and were consistently less active than adolescent boys. This distinction continues into adulthood across countries of all development levels (WHO, n.d.<sup>b</sup>). It is therefore important that barriers to physical activity are understood and removed, particularly for girls.

Stereotypes are shared beliefs about group characteristics that help to explain the world around us (McGarty et al., 2002). They are socially-constructed and as such can be context-dependent and vary between individuals, depending on their previous exposure to the stereotype (Xian et al., 2018). Although often helpful, stereotypes can also create threats to the groups negatively portrayed by them, for example, *black people are less academic than white people; females perform worse at sports than males*. Such negative stereotypes can lead to reduced performance when a threatening gender stereotype is introduced in academic tasks (e.g., Spencer et al., 1999) and sport (e.g., Beilock et al., 2006). Women can underperform in learning (Heidrich & Chiviacowsky, 2015) and sports skills (Hively & El-Alayli, 2014). This reduction in performance can be moderated by the gender typicality of the activity (Gentile et al., 2018), task difficulty (Hively & El-Alayli, 2014), stereotype endorsement (Belcher et al., 2003), and domain value (Leyens et al., 2000). Most gender stereotype research focusses on a negative effect on female participants, but it can also be a problem for males participating in cross gender-typed activities (e.g., Riemer & Visio, 2003).

The mechanisms that drive the negative impact of stereotypes remain unclear; however, Schmader et al. (2008) propose that this *stereotype threat* (Steele & Aronson, 1995) is a result of an imbalance between an individual's concept of their group, concept of the ability domain, and concept of self. For example, "*my group does not have this ability, I am like my group, but I think I have this ability*" (Schmader et al., 2008, p. 339). Any introduction of a negative stereotype to the participant's own-group would disrupt this balance. Alternatively, another explanation is socialisation factors that shape the internalisation of cultural stereotypes. Success expectancies and subjective task-value are crucial, according to the framework of the Expectancy-Value Model (EVM; Eccles et al., 1983) and have been aligned with gender appropriateness beliefs in children (Eccles & Harold, 1991). This model is not mutually exclusive to Schmader et al.'s (2008) mechanisms however, as success expectancies and ability domain concepts are parallel ideas. It is possible that a reduction in working memory availability (as per Schmader et al.) could take place alongside cognitive evaluations of importance and likelihood of success (as per EVM). Or indeed that either can contribute in isolation to reduced performance. The mechanism acting to produce a negative effect may not be consistent in all contexts.

The perspective of situational stereotype threat does not require endorsement of the stereotype for it to yield negative performance (Chalabaev et al., 2013), but the threat effect instead arises from the performer's fear of confirming the stereotype. Ironically, any performance disruption caused may lead to confirmation of the stereotype, and those who are most susceptible to the threat are those who most strongly value the domain (Leyens et al., 2000). It is proposed that the mechanism for disruption is avoidance motivation or explicit monitoring of task execution. There is, therefore, scope for overlap with the EVM in terms of the perceived value of the domain being a contributing factor, yet, the performer's

interpretation of ability is proposed to be more situation-specific, thereby affecting task self-efficacy (Chalabaev et al., 2009).

In a sports context, the authors are aware of only one meta-analysis (Gentile et al., 2018) and one narrative review (Chalabaev et al., 2013) of the impact of gender stereotypes on participation and performance, but both of these reviews were focussed on adults. The effects on youth sport are important to consider since lifelong participation habits appear to be influenced by the experiences of childhood exercise (Taylor et al., 1999; Telama, 2009). Systematic reviews summarise a research area, focussing on a specific question. The clear process of these reviews aims to identify, appraise, and synthesise findings from high quality research relating to that specific question (Bettany-Saltikov, 2012). The structured nature of systematic reviews is particularly attuned to identifying bias and methodological weaknesses that may exist in individual studies.

A review of gender stereotypes in youth sport is merited at this stage to scope the progress and gaps, review the evidence for the proposed explanatory mechanisms, and identify worthy future directions. Reviewing both participation and performance impacts together recognises that these are intrinsically linked.

For the purposes of this review, stereotype beliefs are defined as either existing or introduced beliefs held by study participants in relation to male/female gender-sex. The level of endorsement of these beliefs is also considered (where information is available in the included studies), as well as where participants are aware of stereotypes in their environments but do not necessarily endorse them. The terminology of ‘pro-group stereotypes’ is used to indicate where a stereotype allocates a positive characteristic to the group in that context (e.g., strength in sport) and vice versa for ‘stereotypes against’ a group.

This review had three aims. The primary aim was to identify the volume of evidence available relating to gender stereotypes in youth performance and participation. The second

aim was to identify the effects of gender stereotype beliefs on young people's sport/exercise performance or participation levels. Finally, we aimed to examine the impact of gender stereotype beliefs on barriers and facilitators to young people's participation or performance.

## **Method**

This narrative review followed the approach recommended by Bettany-Saltikov (2012). This allows for the integration of findings from both quantitative and qualitative research. Reporting follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al. & The PRISMA Group, 2009).

### **Eligibility Criteria**

Eligibility criteria are shown in Table 1. Studies that explored with adults the impact of gender stereotypes on children were deemed too distant from the young persons' experiences and were excluded. Due to the anticipated small number of studies available a range of study types were included, and no date restrictions were applied. This breadth also provided a deeper understanding of effect diversity (Hong et al., 2018).

[INSERT TABLE 1 ABOUT HERE]

### **Search Strategy**

Following trial searches to refine the search terms, a search string of 29 searches was repeated with each relevant database. Databases searched are presented in Table 2 and the search strings in Supplementary Material 1. Where available, relevant database subject headings were included in searches.

[INSERT TABLE 2 ABOUT HERE]

### **Study Selection**

After completion of the database searches , duplicates were removed and title and abstract screening was completed by the first author to remove articles that did not meet the inclusion criteria. Where this could not be established from the titles and abstracts or where inclusion criteria appeared to be met, articles were progressed to full text screening. Full text screening by the first author was checked by and discussed with a second independent researcher. Reference lists of full text articles were also hand searched.

### **Data Extraction**

Data were extracted from each included article by the first author and all were checked by the same second independent researcher. Data were extracted onto an electronic template created for the review purpose. Specifically, the data extracted were: aims/objectives, design, sample size, recruitment details, participant demographic information, theoretical model used, country of study, name of intervention/ collection mode, timescale of study, participant groups structure, setting, threat introduced, comparator details, performance/participant outcomes, performance/participant findings, author conclusions/recommendations, study strengths and weaknesses.

### **Risk of Bias**

Study quality was assessed using the Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018) with results informing the review discussion. This tool was selected due to its specific development for systematic mixed studies reviews. The MMAT has been validated for interrater reliability, usability and content validity (Pace et al., 2012; Souto et al., 2015)

and is frequently reviewed for improvement (Hong et al., 2018). The PRISMA Statement (Liberati et al., 2009) recommends risk of bias tools instead of quality appraisal and directs authors towards the Cochrane Risk of Bias Tool (Higgins et al., 2011). The Cochrane tool is aimed at randomised control trials (RCTs) though, with random allocation and blinding accounting for 4 of the 7 items, and therefore it was not appropriate for the mix of studies in the current review. This tendency to focus on RCTs was found to be common across such tools in a systematic review of 121 tools (Katrak et al., 2004). The MMAT meets the PRISMA recommendation of avoiding tools that result in a score, instead allowing the reviewer to interpret the results in the context of the review. The same second independent researcher independently assessed risk of bias using the MMAT. Following their independent assessment, a review session was carried out with the first author to collate the MMAT assessments. Overall assessment levels were in agreement and both assessors' insights are included in the risk of bias remarks in Table 3.

## **Results**

Due to the variety of study designs, participants, and outcome measures it is appropriate to present the review results, applicability, and limitations as a narrative synthesis (Popay et al., 2006).

### **Study Selection**

Figure 1 shows the selection process. Database title and abstract screening left 62 studies for full-text screening with an additional 3 studies from hand searching. The first author identified eight articles for inclusion and an additional five articles were identified by the second independent researcher for further discussion. This discussion resulted in complete agreement on the eight included studies.



[INSERT FIGURE 1 ABOUT HERE]

### **Study Characteristics**

Individual study characteristics are presented in Table 3. The studies included 6,154 participants; 271 parents, 4,564 adolescents (high school), 1,319 primary/elementary school aged. Mean ages were not provided in 2 studies. Five studies included only adolescents. One study did not report participant demographics (Eccles & Harold, 1991), but of the other studies' 1,842 participants, 53% (973) were female; 55% of adults, 51% of adolescents, and 57% of elementary school aged participants.

Two studies were experimental designs (introducing a stereotype threat), two were longitudinal quantitative, two were cross-sectional correlational, one was mixed methods (cross-sectional and qualitative), and one study was of qualitative design. Three theoretical models were applied; Expectancy-Value Model (EVM; Eccles et al., 1983), stereotype threat theory (Steele & Aronson, 1995), and self-determination theory (Deci & Ryan, 2008).

### **Outcome Measures**

Table 3 shows outcome measures. Participants' stereotype beliefs and awareness were measured in seven different ways. Nine participation measures were included in five of the reviewed studies. Six performance measures were included in five of the eight studies. Three studies included both participation and performance measures.

### **Quality Appraisal**

The MMAT quality results are included in Table 3. All studies passed the two screening questions on clear research questions and appropriate data. The included studies

were deemed to be of medium to good quality and relevant weaknesses are considered within the Discussion.

[INSERT TABLE 3 ABOUT HERE]

## **Study Findings**

Table 3 includes individual study findings and the synthesis relevant to the review's second and third aims follows here.

**Impact of gender stereotypes on performance.** There were mixed relationships between gender stereotype beliefs and performance (Chalabaev et al., 2014; Chalabaev et al., 2009; Eccles & Harold, 1991; Laurin, 2013; Xiang et al., 2008). The stereotype threat effect on performance was found by Laurin, however Xiang et al. and Chalabaev et al. (2009) did not find a direct effect. The type of sport may impact the findings. In Laurin (2013) and Xiang et al., (2008) the sports were viewed as gender-neutral, however Laurin introduced a stereotype threat. This indicates that even in a gender-neutral sport, the introduction of a stereotype threat impacts performance. In a masculine domain, both Chalabaev et al. (2009, 2014) studies found that although a stereotype effect existed, it could be mediated by other individual factors (e.g., perceived ability).

Eccles and Harold's (1991) findings, which pre-date Steele and Aronson's (1995) stereotype threat theory, suggest that a factor other than aptitude was influencing children's perceived ability. Mediating factors were found in other performance studies (Chalabaev et al., 2009; Chalabaev et al., 2014; Laurin, 2013) suggesting that any stereotype-performance relationship is not straightforward.

All of the performance studies used school classes for their samples and the study theoretical perspective did not appear to relate to detection of a performance effect.

**Impact of gender stereotypes on participation.** None of the reviewed studies included an attendance measure of participation, but five studies examined the relationship between stereotype beliefs and participation aspects (Boiche et al., 2014; Eccles & Harold, 1991; Schmalz & Kerstetter, 2006; Watson et al., 2015; Xiang et al., 2008). Stereotype endorsement and stereotype stigma were found to impact participation. Stereotype endorsement against own group was found to positively correlate with drop-out and indirectly negatively with perceived value (Boiche et al., 2014), and negatively predict intention to participate in running (Xiang et al., 2008). An awareness of stereotypes was found even with pre-adolescents (Eccles & Harold, 1991; Schmalz & Kerstetter, 2006).

Perceived ability was potentially significant in participation. It was correlated with pro-group stereotypes and participation intention (Boiche et al., 2014); perceived sport gender appropriateness and perceptions of parent beliefs (Eccles & Harold, 1991); additionally, Watson et al. (2015) found that girls felt parental pressure to conform to stereotypes, particularly from their mothers. Taken together with Boiche et al.'s parental stereotypes correlations, these results can be interpreted to indicate that gender stereotypes influence children's perceived value and ability in sports, and in turn affect intentions to participate. Parental stereotypes may affect girls' and boys' participation in gender-appropriate sports. As with performance, the relationship between gender stereotype beliefs and participation does not appear to be straightforward.

Impact on participation aspects was found across all age groups and study contexts. The EVM (Eccles et al., 1983) was the only theoretical model applied in the participation

studies. It was found to provide a good fit and give a reasonable social explanation for the findings (Boiche et al., 2014; Eccles & Harold, 1991, Xiang et al., 2008).

**Barriers and facilitators of participation and performance.** In addition to those barriers and facilitators already mentioned, motivational outcomes were included in two studies (Chalabaev et al., 2014; Xian et al., 2008). Results indicated that the impact of stereotypes on motivation is part of a complex mediated path. Enjoyment was mediated by gender stereotypes and correlated with perceived ability and participation (Watson et al., 2015).

## **Discussion**

This review aimed to assess the volume of research available and explore the impact of gender stereotype beliefs on young people's sport and exercise participation and performance. In relation to the primary aim of the review, the systematic study selection process found only eight studies met the inclusion criteria. This small body of literature indicates that there is a need for further research on gender stereotypes in youth sport. The volume of studies available does not impact the quality of the review and still allows discussion to be drawn from the synthesis of the eight studies. The included studies used a broad range of approaches and therefore no replication of their results was evident. This heterogeneity of approaches is an important insight as it indicates a clear gap in the current research base whereby study conclusions are not tested beyond the initial finding. Despite this gap, several further insights can be drawn.

First, perceived ability as a mediator better supports an internalisation hypothesis (as per the EVM; Eccles et al., 1983), rather than a situational explanation since perceived competence is not affected by stereotype threat (e.g., Steele & Aronson, 1995). If an

internalised stereotype leads to lower perceptions of ability then the EVM also explains reduced enjoyment of, and therefore participation in, negatively stereotyped activities (Watson et al., 2015). Two studies (Boiche et al., 2014; Eccles & Harold, 1991) specifically set out to test the EVM. Whilst this has merit, care must be taken not to show bias towards confirmatory data or isolate research in one theoretical domain. The explanatory mechanisms may not be mutually exclusive (Chalabaev et al., 2013), with multiple routes possible. Further research is needed to experimentally examine the impact of threat conditions with a measure of stereotype endorsement, perceived ability, and self-efficacy. This would help to differentiate hypotheses and identify contextual factors contributing to effects.

Second, potential contextual moderators were found (Chalabaev et al., 2014; Laurin, 2013; Watson et al., 2015), demonstrating that negative effects of stereotype beliefs can be thwarted by the task context. Stereotypes are not always present though and do not always favour males, with some gender neutral or pro-female sports (Eccles & Harold, 1991; Laurin, 2013; Xian et al., 2008). Laurin created a stereotype threat effect in a normally gender-neutral sport (basketball). Therefore, generalisation across sports or contexts should be done cautiously since a gender-neutral sport in one context may be stereotyped in another. This variance could support either the EVM (Eccles et al., 1983), where socialisation has led to the stereotyped view, or the situational interpretation (e.g., Steele & Aronson, 1995) with a localised threat. It would be of interest to explore the longevity of situational threat to determine if repeated threats create internalised stereotypes over time, however this may be difficult within the ethical boundaries of research.

Third, the results of the included studies highlight the complexity of the pathway of gender stereotype beliefs and effects. Perceived ability was repeatedly found to correlate with stereotype beliefs (Boiche et al., 2014; Chalabaev et al., 2009) and to act as a mediating factor in performance and participation (Eccles & Harold, 1991; Watson et al., 2015). The

findings indicate that it may be a critical concept for levelling the playing field for both participation and performance, and to a greater extent than in academic domains (Eccles & Harold, 1991). As one of the three psychological needs in Self-Determination Theory (Deci & Ryan, 1985) it would follow that perceived ability (competence) could play a role in resisting stereotypes. Understanding the mediating role of perceived ability requires further research and consistency in measurement of the concept, not evident in the current review.

Finally, stereotype endorsement and awareness were found to impact young people's participation and performance. In Chalabaev et al. (2009) this impact was again mediated by perceived ability, whereas Boiche et al. (2014) found that gendered competence stereotypes correlated with the likelihood of dropout. While distinct from stereotype endorsement, Schmalz and Kerstetter's (2006) stigma consciousness finding nonetheless contributes to the complex picture of stereotypes' influence. When combined with the findings on parental stereotype endorsement (Boiche et al., 2014), the perception of stigma in social environments appears to be a factor in stereotypes' impact on participation. The social influences on young people are distinct and so it is important that young people are recognised as a separate group within stereotype research. For example, structures in schools creating gendered experiences in physical education (Metcalf, 2018). This review excluded studies that focussed on cultural gender rules and roles (e.g., Arar & Rigbi, 2009; Ramanathan & Crocker, 2009), but there may be some overlap between the socialisation perspective of stereotypes, stigma awareness, and these cultural gender roles.

### **Strengths and Limitations**

The scope of the current review meant that it was able to integrate both quantitative and qualitative perspectives including the views of children themselves, which gave a fuller reflection of the factors at play in gender stereotypes. The relatively small number of

experimental studies that met the inclusion criteria did mean that few causal effect conclusions could be drawn, but they did provide an overview of the scope of current research. The review carried the normal restrictions of database searches, with results limited by keywords, but it had a robust strategy with a lengthy search string and additional hand searching. Rigour was improved by search results and data extraction being checked by an independent researcher. The authors recognise though that by only including published and English-language studies in the review, the conclusions may be vulnerable to publication and cultural biases.

The individual studies carried some limitations. Laurin (2013) and Xiang et al. (2008) both selected gender neutral activities for their studies, which may have limited the effects that could be observed. The omission of potentially significant variables from analyses (e.g., gender in studies 2 and 3 in Boiche et al., 2014) reduces the generalisability and replicability of some of the studies. This omission is compounded by the diversity of variables throughout all the include studies. Further, a lack of longitudinal tracking of actual participation is also a substantial gap in the literature. The only longitudinal study included (Xiang et al., 2008) took place in physical education classes so there was not a true measure of drop out, since free choice is limited in school class attendance. Drop out was included in Boiche et al.'s (2014) study, but as it was retrospective there was no baseline for comparison. The use of school-based samples across all but one of the studies (Boiche et al., 2014) means that contextual differences may be missed. While school samples are convenient, effort must be made to widen the population base.

Despite these limitations, the included studies were generally of medium or good quality, as assessed against the MMAT (Hong et al., 2018) and the synthesis broadens the understanding of gender stereotypes in youth sport. The majority of the studies are also theoretically-grounded, providing a firm base for future research to develop existing models.

## **Recommendations and Conclusions**

**Future Research Directions.** To progress academic work on the impact of gender stereotypes on youth sport, a more coordinated approach is required. At present, the diversity of constructs being considered means that full confidence in research conclusions is difficult to justify. The research presented does clearly show that gender stereotypes are impacting on the experience of young people in sport and exercise, but further research is needed to broaden the understanding of that impact so that appropriate steps can be taken to limit it. Future research should look beyond the school setting, include actual quantitative participation measures, and consider study designs that differentiate internalisation and socialisation hypotheses. In addition, replication studies would be useful to add weight to existing findings.

**Applied Implications.** The primary recommendation for practitioners working in youth sport and exercise domains is to be aware of the stereotype messages that surround activities. To improve physical activity levels in young people, practitioners must ensure that they do not limit their programme effectiveness by introducing negative stereotypes. Sport and exercise practitioners should also challenge socialised stereotypes to broaden perceptions of gender appropriateness. The studies included in this review show that the negative effects of stereotypes can begin at a young age and that parental endorsement can influence both girls and boys. Thus, educating parents early about the negative effects of stereotypes is likely to be useful in increasing physical activity levels.

## **Conclusion**

This systematic review set out to identify the volume of literature available and explore the insights of the current research landscape on the impact of gender stereotype



beliefs on youth sport and exercise participation and performance. Its breadth of scope allowed for participation and performance to be examined as overlapping outcomes. The review shows that there is a complex relationship between stereotype beliefs and performance, but that such beliefs are consistently linked to participation. Perceived ability and stereotype awareness were shown to be potentially important to both performance and participation levels. As the first systematic review of stereotype beliefs in youth sport and exercise, this paper provides a base for further coordinated research to fill the gaps identified and develop the evidence to understand the mechanisms involved in gender stereotype effects.

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### **Declaration of Interest Statement**

The authors have no interests to declare.

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\*Denotes studies included in review

**Table 1***Eligibility Criteria*

Inclusion	Exclusion
<i>Population:</i>	
Population: Children aged 4-18 (school-aged)	Pre-school children (0-3 years old) and adults (19 years and older)
<i>Intervention:</i>	
Intervention: Experimental studies, manipulating/measuring gender stereotype (GS) beliefs on performance and/or participation.	Qualitative studies exploring with adults the impact of GS on children.
Qualitative studies of impact of GS beliefs on involvement in sport/exercise.	Described gender differences only with no stereotype intervention.
	Addressed impact of cultural gender norms or rules.
<i>Outcomes:</i>	
Effect of GS beliefs on participation and performance, where:	Non-quantified performance effects.
<ul style="list-style-type: none"> <li>• performance is a rated performance of sport skill.</li> <li>• participation is a measure of attendance.</li> </ul>	
Effect of GS on barriers and facilitators to participation or performance.	
<i>Context:</i>	
Sport, exercise, physical activity.	Any other context.
<i>Study Type:</i>	
Experimental, qualitative, cohort/cross-sectional studies.	Single case studies, expert opinion/editorials, systematic reviews/meta-analyses
<i>Other:</i>	
Peer reviewed	Dissertations
English language	Other languages

**Table 2**  
*Database Searches*

Search	Databases Included	Date of Search	Initial Results
	British Education Index		
	ERIC		
1	Child Development & Adolescent Studies	25/03/2019	43
2	Medline	25/03/2019	321
3	Medline + AHMED	25/03/2019	325
4	CINAHL	25/03/2019	148
	Psychology Database		
	Health & Medical Collection		
	PsychInfo		
	PsychArticles		
5	Sports Medicine & Education Index	26/03/2019	132



GENDER STEREOTYPE BELIEFS AND YOUTH SPORT

**Table 3**

*Study Characteristics*

<b>Study &amp; Location</b>	<b>N</b>	<b>Population</b>	<b>M<sub>age</sub></b>	<b>Gender</b>	<b>Design</b>	<b>Sport / Activity</b>	<b>Theoretical Model</b>	<b>Stereotype Measure</b>	<b>Outcome Measures</b>	<b>Findings</b>	<b>Quality (MMAT)</b>
Boiche, Plaza, Chalabaev, Guillet-Descas, & Sarrazin, 2014  France	796	Adolescent sports club members, former club members, parents.	14.9 (child) 43.6 (parents)	X	CR	Multiple team & individual sports	Expectancy-Value Model	Endorsement of GS  Implicit genderlanguage association	Intrinsic Motivation  Intention to participate  Sport value	Males competence & value stereotypes > females. Males rating of parents' stereotypes > females. Pro-masculine competence stereotype endorsement by boys decreased probability to drop out from sport & increased it for girls. Pro-group stereotypes of sport competence led to higher self-perception of competence & in turn, higher sports value self-perception. Perceived competence not related to participation intention. Perceived sports value predicted lower intentions to drop out. GS of competence indirect effect on perceived value, via competence perception. Perceived competence indirect effect on participation intention via perceived value. Athletes' explicit GS endorsement scores for competence > parents. Positive correlations between parent & athlete implicit stereotype scores & between athlete explicit competence scores & parent implicit scores.	Good, but limited participant demographics.
Chalabaev, Sarrazin, & Fontayne, 2009  France	102	High school PE pupils	13.5	F	CR	Soccer	n/a	Personal Endorsement of GS	Soccer performance ratings  Perceived ability in soccer  Sex roles	Stereotype belief that girls' soccer performance is poor negatively predicted perceived ability, which positively predicted performance. Belief about girls' performance did not predict performance, after controlling for perceived ability. Positive correlation between perceived ability and performance. Masculinity negatively predicted belief about girls' performance & positively predicted	Good, but limited participant demographics.

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Author(s)	Year	Sample	Age	Gender	Design	Sport	Theoretical Model	Intervention	Outcome	Findings	Limitations
Chalabaev, Dematte, Sarrazin, & Fontayne, 2014	80	High school PE pupils	13.4	X	EX	Soccer	SDT	GS threat introduced	Soccer dribbling task speed  Intrinsic, extrinsic, & identified regulation motivation  Performance-approach & performance-avoidance goals	perceived ability & belief that boys' performance in soccer is good.  Interaction between stereotype threat & goal context. Girls under stereotype threat performed better in the performance-avoidance goal context compared to the performance-approach goal context (opposite interaction than control). Boys showed only a main effect for goal context, performing better in the performance-approach goal context. Girls under stereotype threat were less externally regulated in the performance-avoidance goal context than in performance-approach goal context. The more girls were externally regulated, the more time they needed to complete the soccer task.	Medium. Lack of blinding of outcome assessors. No baseline provided and lack of details of group assignment.
France											
Eccles & Harold, 1991	4025	High school PE pupils	NR	X	LT CR	Maths, English, & Sport (general & throwing/tumbling)	Expectancy-Value Model		Teacher's ability assessments  Motor proficiency  Free time involvement  Self-concept of ability  Perceived task value	Adolescents' free time spent on sport positively related to ability self-concept, utility value, and importance value. Attitudinal values & ability self-concept mediates relationship between gender & free time spent on sport. Adolescent boys > girls on sport importance, usefulness, & enjoyment, & own ability. Perceived ability gender difference greatest in the sport domain. In elementary school children, boys > girls on ability, throwing ability, importance, enjoyment, usefulness of sport. Girls rated tumbling ability > boys. Sport gender role stereotyped more than maths & English by boys and girls & stereotypes more strongly endorsed by boys. Positive correlation between children's view of sport as appropriate for their gender & evaluation of their own ability. Positive correlations between girls' & boys' beliefs of parent importance of sports	Medium. Lack of demographics for participants, but large number. Vague on outcome data completeness.
USA											

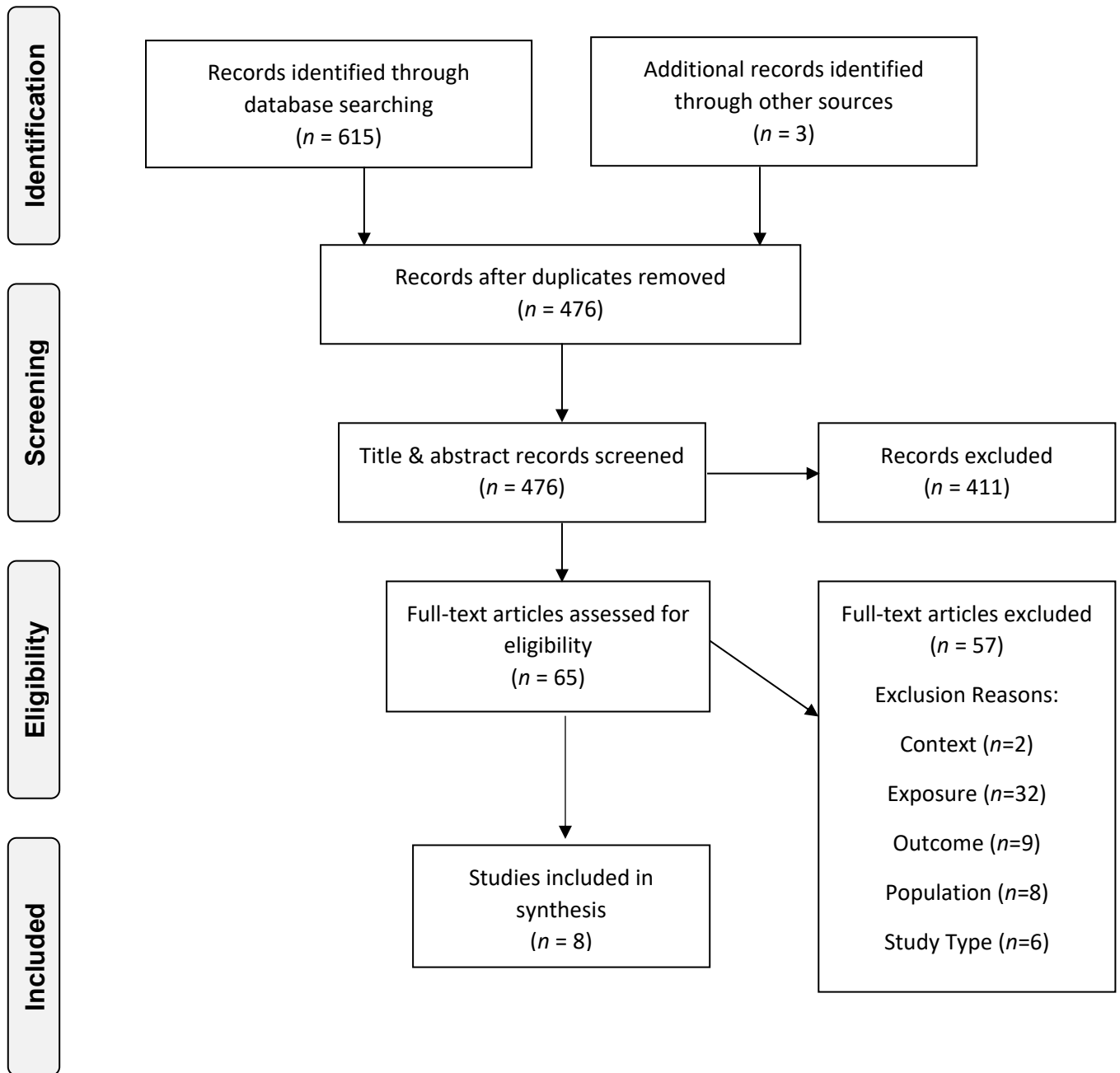
## GENDER STEREOTYPE BELIEFS AND YOUTH SPORT

Laurin, 2013	161	High school PE pupils	15.2	X	EX	Basketball	STT & Somatic/Cognitive Anxiety Models	Personal Endorsement of GS GS threat introduced	Free-throws success rate Anxiety	involvement & perception of their own ability. Boys > girls on large motor skills & girls > boys on fine motor skills. Basketball perceived as a gender neutral activity. Stereotype threat group had lower female performance. Males showed stereotype lift in female threat condition. Females had lower somatic anxiety in control compared to female threat condition. Partial model of mediation of somatic anxiety between threat conditions & gender to performance.	Good, but lack of assessor blinding and details on randomisation.
France											
Schmalz & Kerstetter, 2006	444	School pupils	9	X	CR & QL	Sport (general)	NR	Stigma Consciousness Stereotype endorsement Awareness from focus groups	Focus group perceptions - effects of stereotypes List of sports played	Children participated in gender-typed sports rather than cross gender-types. Stigma consciousness negatively correlated to participation in feminine sports for girls and boys. Stigma consciousness > children who did not participate in feminine physical activities. Children used general GS to explain what boys/girls like to do or are supposed to do. Children's behaviour & participation choices curbed to fit stereotypes, but they were unable to explain why.	Potential type 1 error in stigma-participation data interpretation. Otherwise, study is good quality.
USA											
Watson, Elliott, & Mehta, 2015	13	High school pupils	12-13	F	QL	Physical activity (lunch breaks)	NR	Awareness from focus groups	Focus group perceptions - barriers and facilitators to physical activity	Girls felt pressure to conform to GS; fear of being viewed negatively. The desire to be viewed positively by peers for gender appropriate activities felt by girls in low & high socioeconomic status. Pressure to conform felt from parents, particularly mothers. Some resistance toward conforming to GS. Perceived ability was tied to enjoyment, with both important factors in participation.	Good, but not all data fully accessible though.
Australia											

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Xiang, McBride, Lin, Gao, & Francis, 2008	246	School pupils	10.88*	X	LT CR	Running	Expectancy-Value Model	GS about running	Timed 1-mile run Interest in running Intention for future running participation	No significant gender stereotypes about running & stereotypes of running as a male sport decreased over time. Girls reported lower GS scores for running as a male sport. Changes in girls' GS negatively predicted changes in intention for future running participation & interest in running. Changes in boys' GS about running positively predicted changes intention for future running participation & interest in running. GS not related to performance boys or girls. GS not correlated to motivational outcomes.	Good, but missing data from performance measure (running test) in latter years.
USA											

*Note.*  $M_{age}$  given in years; F=Female; M=Male; X=Mixed Gender; EX=Experimental; CR=Correlational; LT=Longitudinal; QL=Qualitative; NR=Not Reported; SDT = Self-Determination Theory; STT = Stereotype Threat Theory; GS=Gender Stereotype; EVM = Expectancy-Value Model \*At start of study



**Figure 1**

PRISMA Flow Diagram.