

Faster, Higher, Stronger... and Younger? Birth Order, Sibling Sport Participation, and Sport Expertise

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Introduction

The number of successful sibling and parent-child pairs in high performance sport make it difficult to ignore the role of family in the development of sport expertise. Take, for example, the Williams sisters, the Sedin twins, and the Manning family. While genetics may be a contributing factor (Tucker & Collins, 2012), research suggests that financial, tangible, and emotional support from one's family are critical for expert performance (Bloom, 1985; Côté, 1999). Much of the research examining the family in the context of sport expertise has focused on parents (Horn & Horn, 2007; Côté & Hay, 2002). Sport-related investigations of sibling influences have typically compared first-born and later-born athletes on characteristics of sport involvement and achievement (e.g. Abel & Kruger, 2007; Flowers & Brown, 2002; Hall, Church, & Stone, 1980; Sulloway, & Zweigenhaft, 2010), and/or have examined competition and co-operation between siblings within the same family (e.g. Côté, 1999; Davis & Meyer, 2008). Very little attention has been devoted to differences in sibling characteristics, behaviours, and relationships, between athletes of varying skill levels. As such, the present study explored skill level differences in sibling characteristics and participation in sport and physical activity, within a large sample of athletes from a variety of sports.

Methods

As part of a larger investigation of sport expertise development, 229 athletes completed the Developmental History of Athletes Questionnaire (DHAQ). Athletes were aged 15-35, and represented 34 sports. Eligibility criteria required athletes to have reached the highest level of competition at which they expected to participate for their main sport, allowing for classification into three skill groups: 1) Elite, including athletes who had competed at the senior international level; 2) Pre-elite, including athletes whose highest level of competition was the senior national or junior international level; and 3) Non-elite, encompassing all remaining eligible athletes.

Among other factors, the DHAQ addresses familial characteristics and participation in sport and physical activity. This study focussed specifically on responses pertaining to athletes' siblings. For each sibling, participants provided date of birth, sex, and a rating of how frequently they engaged in general fitness activities, recreational sport, and competitive sport during the time living together. In addition, they listed all competitive sports in which each sibling had participated, along with the highest level of competition reached for each sport. Skill level differences in sibling characteristics and participation in sport and physical activity were assessed via Pearson chi-square tests for independence and one-way ANOVAs.

Results

Sibling characteristics

No skill level differences were observed for total number of siblings ($F(2,228) = 1.53, p = .22, \eta^2 = .01$); however, a highly significant birth order effect was evident ($\chi^2(4,228) = 15.10, p < .01, V = .18$). Elite athletes were more likely to be later-born children, while pre-elite and non-elite athletes were more likely to be first-born (Figure 1).

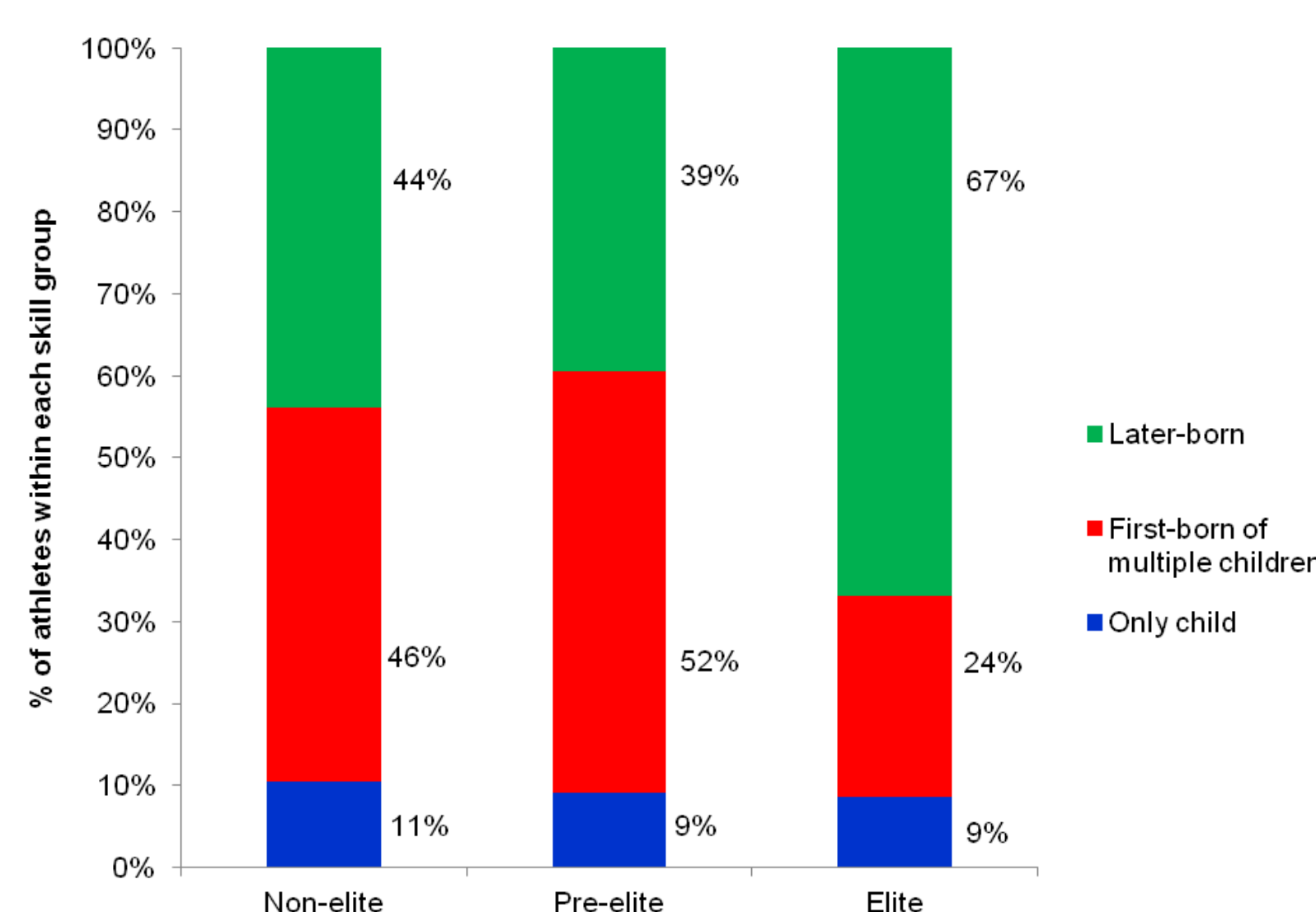


Figure 1. Birth order

The relative age spacing between athletes and their older siblings, and athletes and their younger siblings did not differ between skill groups (older: $Welch's F(2,37.54) = .33, p = .72, \eta^2 < .01$; younger: $F(2,168) = .21, p = .81, \eta^2 < .01$), and there were no group differences in the proportion of siblings who were the same or opposite sex to the athlete ($\chi^2(2,373) = 3.56, p = .16, V = .10$).

Sibling participation in sport and physical activity

A significant association was observed between skill level and sibling participation in physical activity ($\chi^2(2,373) = 6.56, p = .04, V = .13$). Siblings of elite athletes were 2.32 times more likely to participate in physical activity on a regular basis during the time living with the athlete than siblings of non-elite athletes.

Older siblings of elite athletes were 2.40 times more likely to have participated in general fitness activities on a regular basis than older siblings of non-elite athletes ($\chi^2(2,196) = 6.20, p = .05, V = .18$; Figure 2).

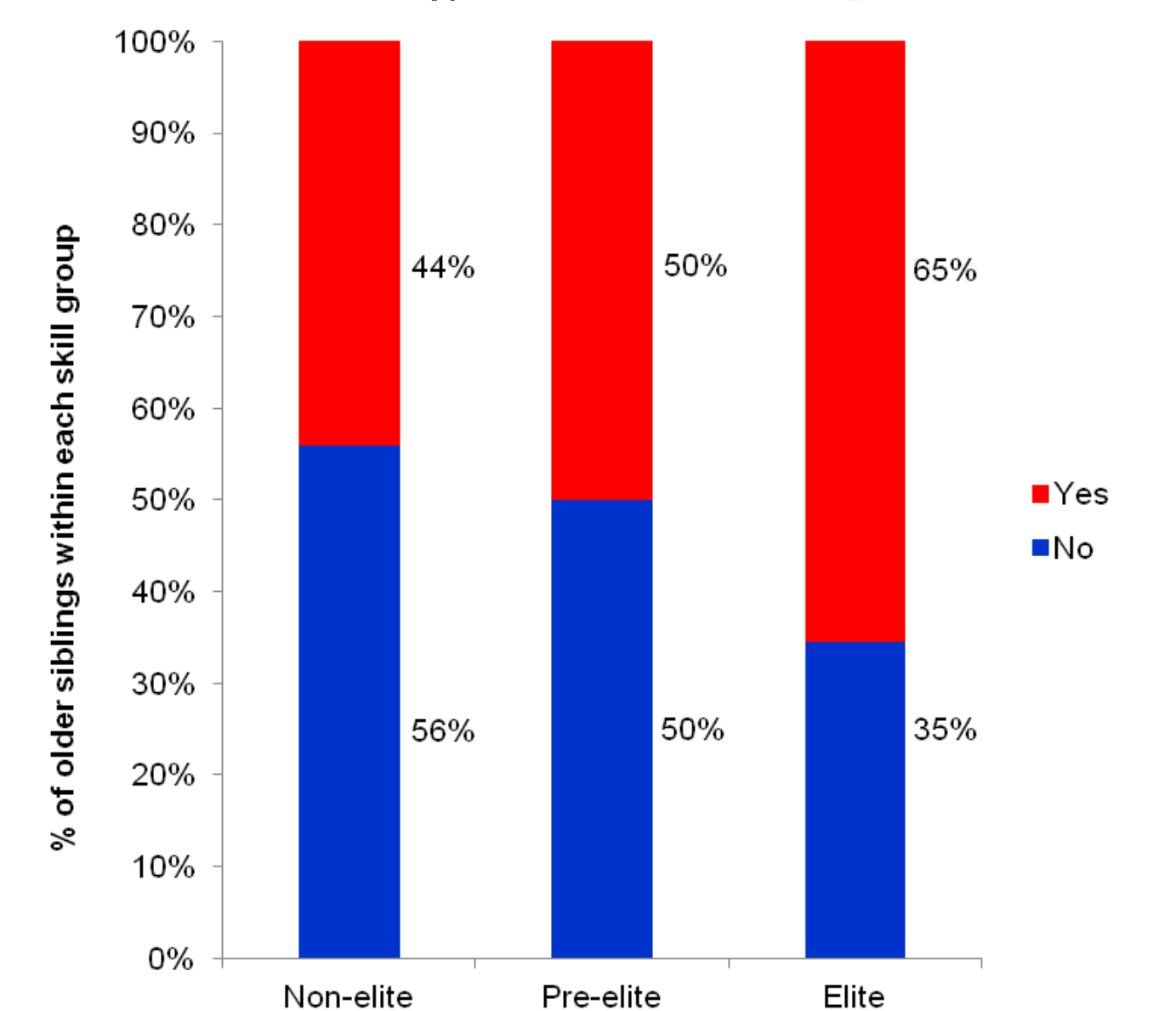


Figure 2. Participation of older siblings in general fitness activities

Older siblings of elite athletes were 2.30 times more likely to have participated in recreational sport on a regular basis than older siblings of non-elite athletes ($\chi^2(2,196) = 6.63, p = .04, V = .18$; Figure 3).

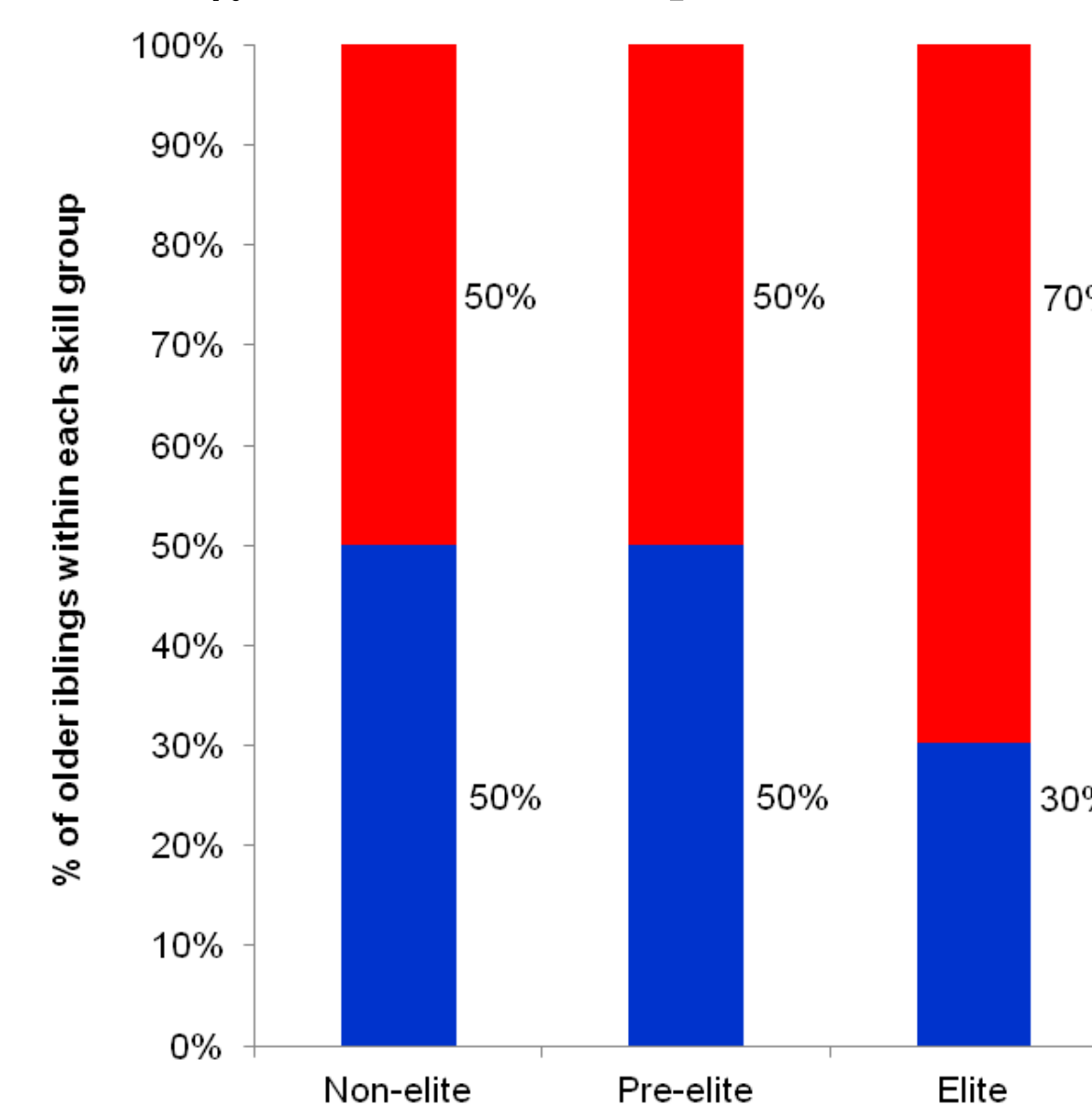


Figure 3. Participation of older siblings in recreational sport

Younger siblings of elite athletes were 3.85 times more likely to have participated in competitive sport on a regular basis than younger siblings of non-elite athletes ($\chi^2(2,169) = 11.77, p < .01, V = .26$; Figure 4).

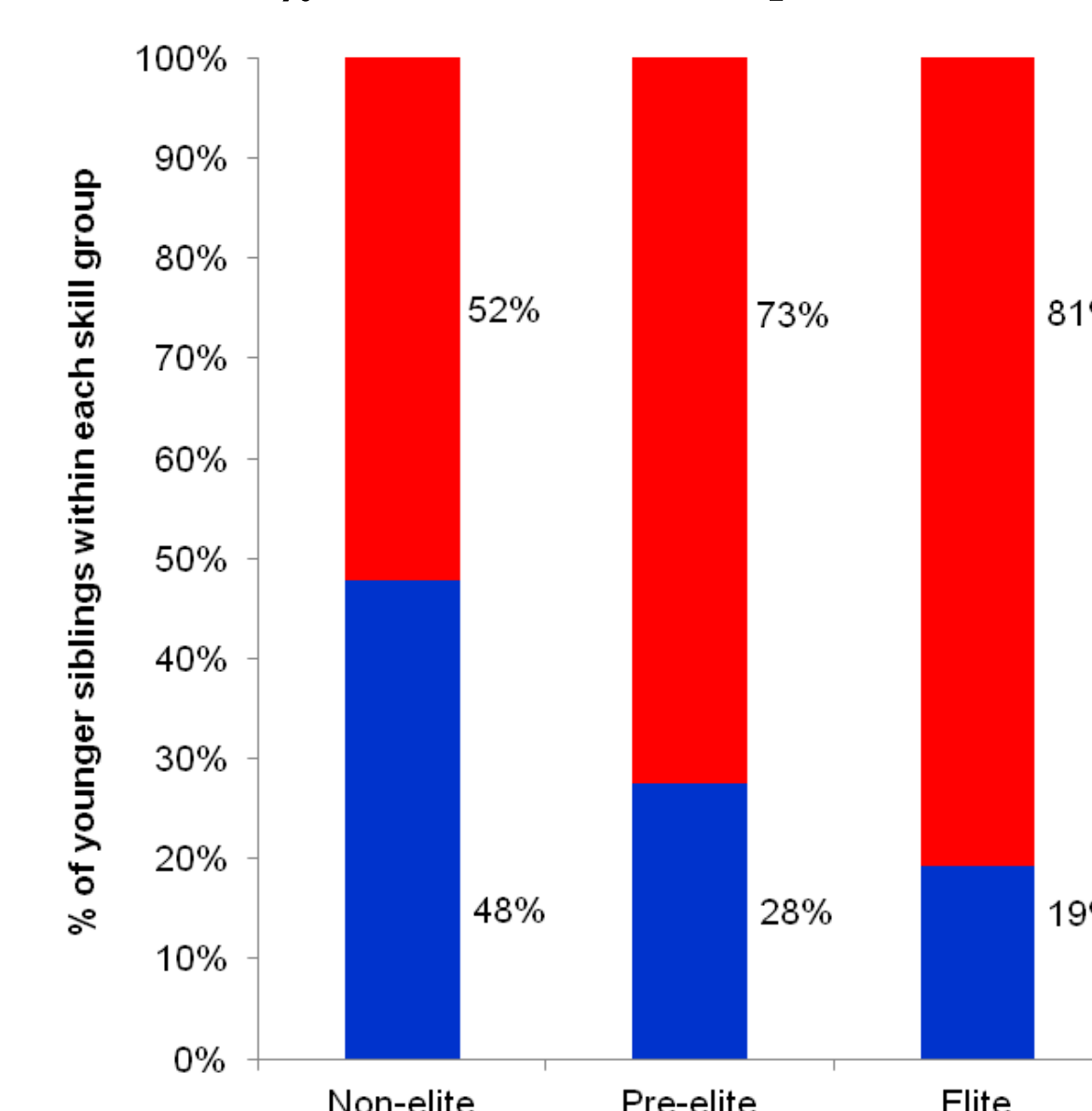


Figure 4. Participation of younger siblings in competitive sport

Sibling participation in competitive sport

Among siblings who participated in competitive sport, there were no skill group differences for the number of sports in which they were involved ($F(2,372) = .49, p = .62, \eta^2 < .01$). However, siblings of elite athletes were more likely to have participated in competitive sport at the elite and pre-elite levels than siblings of non-elite athletes ($\chi^2(4,284) = 17.04, p < .01, \tau_b = .22$; Figure 5). This association was primarily driven by younger siblings.

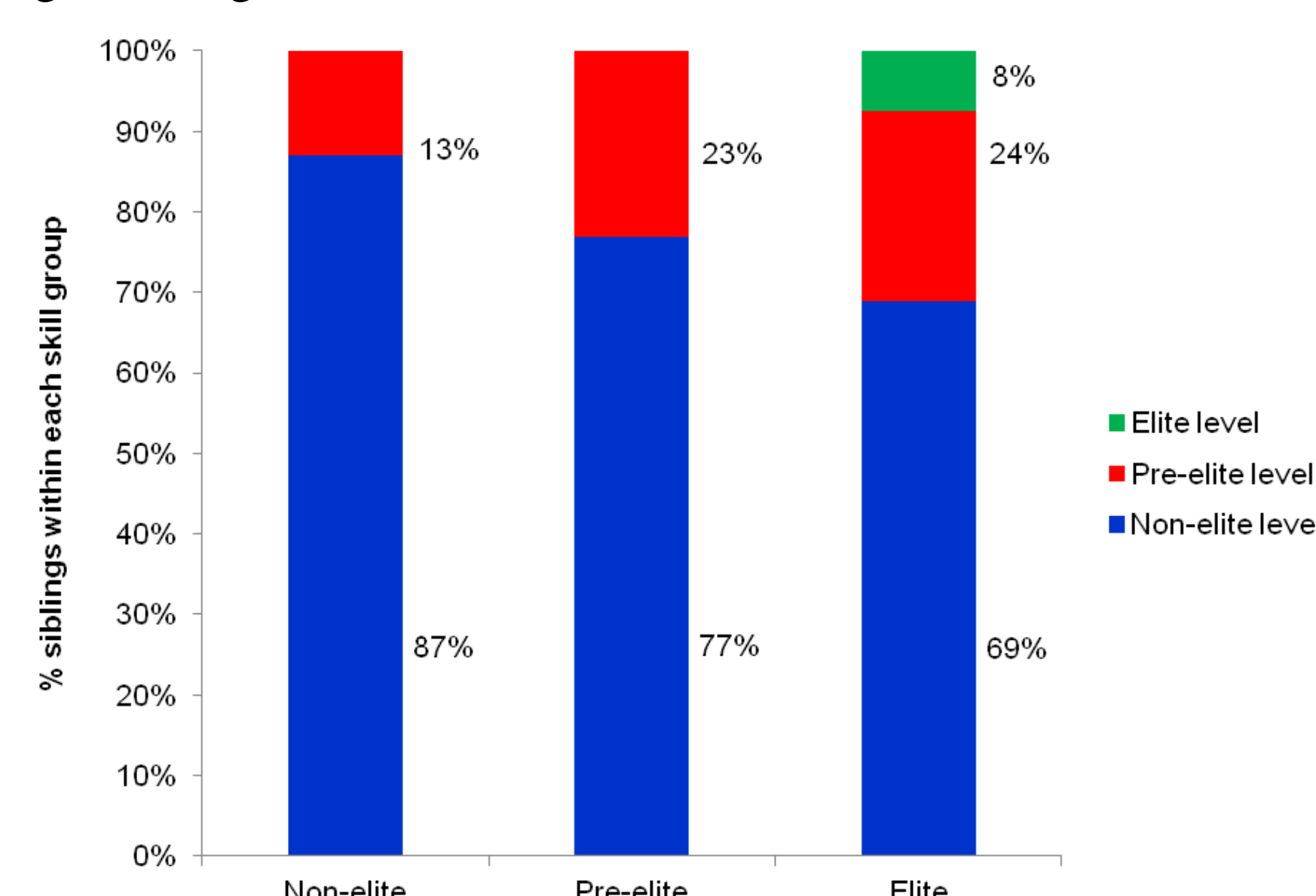


Figure 5. Highest level of competition reached by siblings in any sport

Sibling participation in athletes' main sport

Furthermore, among siblings who participated in competitive sport, older siblings of non-elite athletes were 3.53 times more likely to have participated in the athletes' main sport than older siblings of elite athletes ($\chi^2(2,146) = 6.62, p = .04, V = .21$; Figure 6). No such differences were observed for younger siblings.

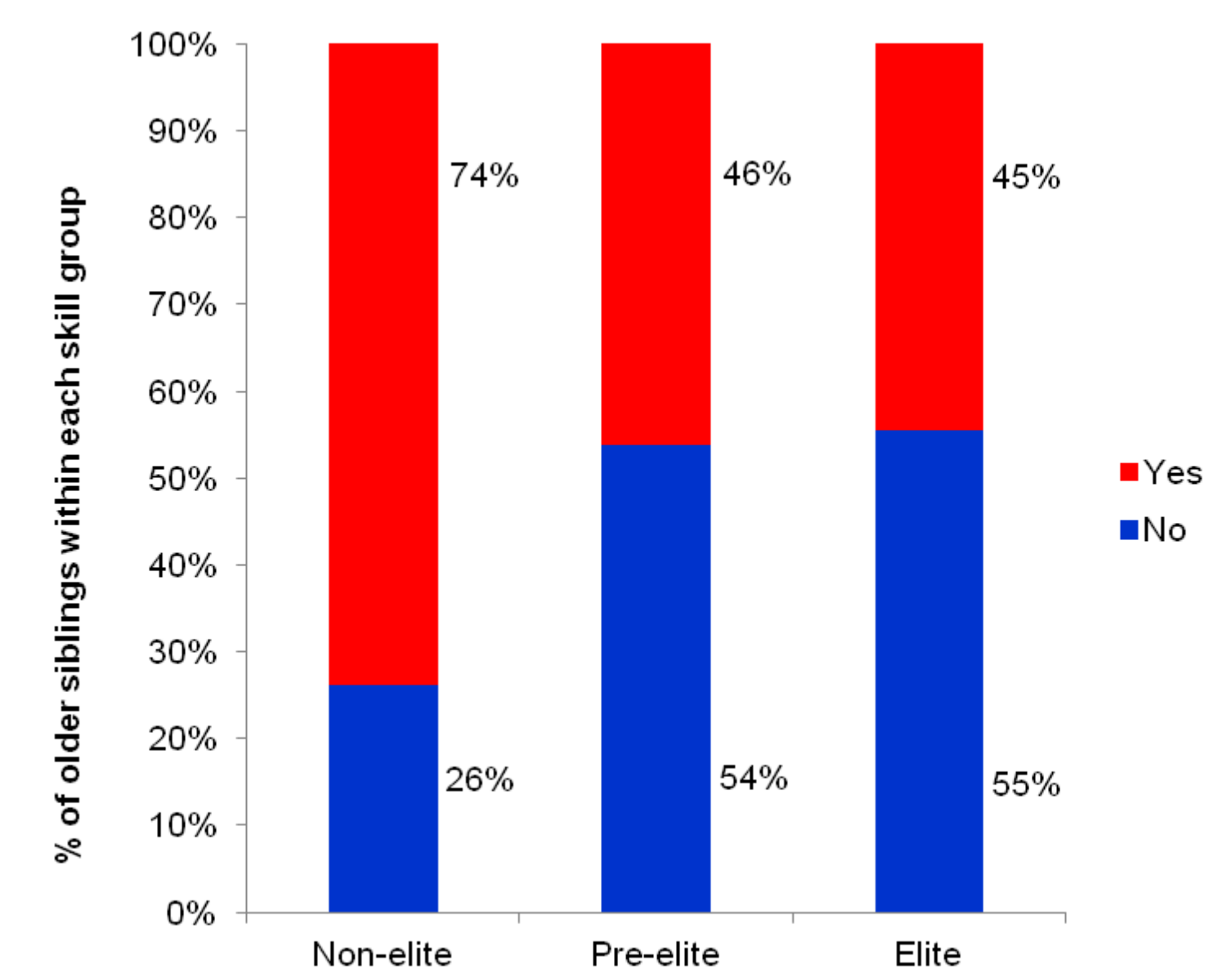


Figure 6. Participation of older siblings in athletes' main sport

Finally, among siblings who participated in the athletes' main sport, siblings of elite athletes were more likely to have competed in this sport at the elite and pre-elite levels than siblings of non-elite athletes ($\chi^2(4,155) = 11.92, p = .02, \tau_b = .26$). Once again, this relationship is primarily driven by younger siblings.

Discussion

This study investigated associations between sibling characteristics, sibling participation in sport and physical activity, and sport expertise. Comparative analyses between athletes of three skill levels revealed several significant differences, providing an important contribution to our understanding of the role of family in sport expertise development.

One of the strongest findings was a significant association between birth order and skill level. Despite having the same number of siblings as pre-elite and non-elite athletes, elite athletes were more likely to be later-born children. Previous research has indicated that younger siblings tend to be more athletic than older siblings, but older siblings tend to be higher achievers (Eckstein, 2000). Our results suggest that among athletes, later born siblings were typically more successful.

Additionally, older siblings of elite athletes were more likely to have participated in general fitness activities and recreational sport on a regular basis, but were less likely to have participated in the athletes' main sport compared to older siblings of non-elite athletes. On the other hand, younger siblings of elite athletes were more likely to have participated in competitive sport on a regular basis than younger siblings of non-elite athletes, and were also more likely to have reached higher levels of competition, particularly in the athletes' main sport.

In the case of the elite athlete, through their involvement in recreational sport, older siblings may have acted as socialising agents, encouraging the athlete's initial participation in sport (Stevenson, 1990). Later on, in an effort to differentiate themselves, the athlete may have selected a sport their older sibling did not play and attempted to out-perform them (Sulloway, 1996). Once successful, the elite athlete may then have acted as a role model for their younger siblings, who may have subsequently attempted to emulate their older sibling's great achievements (Davis & Meyer, 2008). It is likely that additional factors such as sibling rivalry and siblings as sources of instructional support may also come into play (Davis & Meyer, 2008). As non-elite athletes were typically first-borns, the socialisation process and motivations to participate and succeed in competitive sport would have been fundamentally different to those described above. Furthermore, as non-elite athletes do not experience the same level of success in sport, they are less likely to act as role models for their younger siblings, which may explain the lower sport participation findings for younger siblings of non-elite athletes compared to younger siblings of elite athletes.

Conclusion

The current investigation provides novel contributions to our understanding of the role of siblings in the development of sport expertise. In particular, birth order and sibling participation in sport and physical activity appear to be associated with expertise, such that elite athletes were more likely to be later-born children, and more likely to have siblings who were also involved in sport and physical activity, than non-elite athletes. While several mechanisms are proposed, further qualitative research is required to gain a better understanding of the relationships between sibling characteristics, sibling participation in sport and physical activity, and sport expertise development.