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Exploring Developmental Factors for Overcoming Relative Age Effects in Ice Hockey (2016)

Project Summary

Relative age effects (RAEs) are developmental advantages experienced by those born in the early months of the year relative to an age-defined cut-off date (Barnsley et al., 1985). In sport and educational settings, RAEs tend to endure, resulting in an accumulated advantage that could affect youths' overall development (Murray, 2003). This research program investigated the accumulated advantage of RAEs amongst Canadian male adolescent ice hockey players at different competitive levels (i.e., house league and travel) in hopes of: a) assessing the leadership behaviours and other developmental outcomes (e.g., personal & social skills, goal setting) among Canadian hockey players within the context of RAEs, and; b) comparing the attributes of relatively younger and older hockey players. Despite significantly more travel players being born in the early months of the selection year than the latter months, no significant differences in leadership behaviours or other developmental outcomes were found among travel or house league players based on birth quartile. Moreover, there were no significant interactions between birth quartile and competitive level on these outcomes. These results should be comforting to sport administrators, particularly in light of published reports of how RAEs are impacting developmental outcomes among youth in alternative settings, such as education (e.g., Cobley et al., 2009; Dhuey & Lipscomb, 2008). To the extent that participation in hockey is providing adolescent males with equal opportunities to develop skills that are valued in the workplace (Kuhn & Weinberger, 2005), this achievement is worthy of celebration.

Research methods

Adolescent male travel and house league ice hockey players were recruited at tournaments across Ontario to complete an online survey that evoked general demographic information, including date of birth, along with their responses to the Leadership Scale for Sport (LSS; Chelladurai & Saleh, 1980) and the Youth Experience Survey for Sport (YES-S; MacDonald et al., 2012). The LSS measures five dimensions of leadership, while the YES-S examines five dimensions of youth development: *personal and social skills, initiative, goal setting, cognitive skills, and negative experiences*. Both scales demonstrated adequate model fit and reliability in previous research involving adolescent athletes.

To determine if an RAE was present within these samples, we grouped athletes into birth quartiles using the December 31st cut-off date prescribed by Hockey Canada. Athletes born in January, February, and March were placed in quartile one (Q1), while quartile two (Q2) consisted of those

born in April, May and June, and so forth. Chi-square goodness of fit tests were performed to determine if the birthdate distributions of the male travel and house league hockey players differed significantly from what we would expect among midget-aged players (15-17 years) within the Ontario Hockey Federation (Hancock et al., 2013) and the general Canadian population. Effect sizes were calculated using Cramér's phi and, when necessary, standardized residuals for the significant chi-square values were calculated post-hoc to identify which quartiles differed significantly from the expected birth distributions.

Finally, we performed multivariate analysis of variance (MANOVA) tests to determine if scores on the sub-scales of the LSS and YES-S differed because of birth quartile. Through these analyses, we attempted to discern how relative age may influence the leadership behaviours and development of male adolescent hockey players. When necessary, and to account for correlations among dependent variables in the LSS and YES-S, we employed relative weight analyses to discern where significant differences were located.

Research results

Consistent with previous research (e.g., Hancock et al., 2013; Montelpare et al., 2000), we found no evidence of a RAE among the male adolescent house league hockey players that we surveyed ($n = 453$). Although our MANOVA results revealed significant multivariate differences between quartiles of birth on the LSS dimensions, post-hoc tests indicated that the relative weights were not statistically significant. Therefore, quartile of birth was not significantly different for any of the LSS dimensions. Similarly, we found no significant multivariate differences between quartiles of birth on the five YES-S dimensions.

On the contrary, we found a significant difference between the birth distribution of travel players ($n = 259$) and what we would expect to find in the general population, with significantly more players born in Q1 and significantly fewer players born in Q4. These results are also consistent with previous research (e.g., Barnsley & Thompson, 1988; Hancock et al., 2013). Despite evidence of a RAE among travel players, no significant multivariate differences were found between quartiles of birth on dimensions of the LSS or YES-S. Finally, there were no interactions between birth quartile and competitive level on the dimensions of the LSS or YES-S.

Caution should be exercised when generalizing these results, or lack thereof. Firstly, the vast majority of our sample was born and participated in hockey in Ontario, making it difficult to generalize our results to other geographic regions or sports. Secondly, as with any self-reported survey, it is difficult to ensure participants answered questions about their experiences in sport thoughtfully and honestly. Finally, our results may be somewhat skewed because athletes who had negative experiences in hockey may have already dropped out of the sport. This is noteworthy given that other researchers have found relatively younger athletes dropping out of sport due to their negative experiences prior to or during adolescence (e.g., Helsen et al., 1998; Lemez et al., 2014).

Policy implications

To our knowledge, this is the first series of studies to examine the relationship between relative age and leadership behaviour and other developmental outcomes within sport. While Dhuey and Lipscomb (2008) found relatively younger adolescent students acquire fewer leadership experiences prior to graduation, our results demonstrate that leadership behaviours and other developmental outcomes among adolescent male travel and house league ice hockey players are not influenced by relative age or competitive level. These contrasting results may stem from coaches and other sport administrators developing these qualities in all of their athletes, regardless of their relative ages. Determining that travel and house league hockey players are not being (dis)advantaged in terms of their leadership behaviours or other developmental outcomes because of their relative ages can help guide future research and inform professional practice. To the extent that participation in hockey is providing equal opportunities to develop skills that are valued in the workplace (Kuhn & Weinberger, 2005), our null results are worthy of celebration. In the future, Ontario parents, teachers, and other relevant stakeholders should consider promoting hockey to children as a method to facilitate positive youth development and leadership behaviour, given that relative age plays no discriminating role in achieving these outcomes.

Next steps

Despite the null findings in this study, we believe relative age ought to be considered in other studies exploring positive youth development within sport to provide a more comprehensive analysis of other potential influences on youth sporting experiences. In particular, we recommend the replication of this study with samples drawn from other sports, other competitive levels, as well as from female athletes, where RAE patterns are more equivocal (e.g., Wattie et al., 2007; Weir et al., 2010).

Key stakeholders and benefits

- Sport Canada (better informed sport policies)
- Ontario Ministries of Education and Advanced Education and Skills Development (enhanced integration of educational policies with sport)
- National, provincial and community sport organizations (clearer visions and better targeted efforts in enhancing equitable sport participation and youth development)
- Academic community (use of findings to inform research and teaching)
- Coaches and sport administrators (improve equitable sport participation and youth development)