**Public perceptions of the societal impact of elite sport: Scale development and testing in
the context of Belgium**

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Abstract

Nations are increasingly investing public money in elite sport on the belief that this will trigger a range of benefits for the population. However, there is lack of insight into how the population perceives elite sport's impact society. This study developed and tested a measurement scale assessing the publics' beliefs of the positive and negative societal impacts that could potentially flow from elite sport. A sample of the Belgian population (n=1102) was surveyed. A 32-item scale was built using principal component and confirmatory factor analysis procedures for which the goodness-of-fit indices were excellent. Multivariate analysis revealed that the Belgian population perceived elite sport to have mostly positive societal impacts. The study findings can serve researchers wanting to measure the perceived potential positive and negative societal impacts of elite sport.

Key words: elite sport; elite sport policy; impact; societal; scale development

Introduction

Competition for medals at the international stage is increasing and nations have adopted strategic approaches towards sporting success. Over time, this commitment has resulted in snowballing amounts of money invested in elite sportⁱ development by many nations (De Bosscher, Shibli, Westerbeek, & van Bottenburg, 2015). Consequently, when elite sport policy makers are facing the challenge of justifying investment in elite sport to taxpayers, they often claim that elite sport will not only lead to more medals, but it will also trigger a wide range of societal impacts that benefit the wider population. The argument that elite sport has the power to provide societal good, rests on the assumed existence of the demonstration effect (Weed, 2009). This effect denotes that elite performances, elite athletes and the organization of major elite sporting events are means from which positive societal impacts can be created (de Bosscher, Sotiriadou, & van Bottenburg, 2013). [Research on the potential positive impacts sparked by means of elite sport often relate to tourism \(Weed, 2014\), national identity \(Dóczi, 2012\), international prestige \(Houlihan & Zheng, 2013\), a ‘feel good factor’ \(Kavetsos & Szymanski, 2010\), and community sport participation \(Mutter & Pawlowski, 2014b\).](#) However, another stream of research points out several negative societal impacts, including [discrimination and stereotyping \(J. Kennelly, 2016\); exploitation \(Brackenridge et al., 2013\), gentrification \(Kennelly & Watt, 2012\), doping \(Connor, Woolf, & Mazanov, 2013\), disorderly](#)

behavior and vandalism (Best, 2010), match fixing (Numerato, 2009), and financial problems when governments host major sporting events that run over budget (Preuss, 2007). Additionally, some research suggests that demonstrations of sporting excellence by top-level athletes may discourage, rather than inspire, inactive people as a result of perceiving a competence gap (Carter & Lorenc, 2013). Therefore, academics question whether and how elite sport benefits society (Maennig & Vierhaus, 2016). The tangible and in particular the intangible (e.g., affecting feelings, attitudes) societal impacts of elite sport are often difficult to measure (Lee, Cornwell, & Babiak, 2013). Empirical evidence on the outcomes of elite sport to society is scant (McCartney et al., 2010; Thomson et al., 2018). As a result, the role of elite sport in society may be over- or undervalued and over- or underleveraged. There are limited studies that investigate the multiple perceived impacts of elite sport or take into consideration both the positive and negative impacts of elite sport, and in particular the negative impacts of elite sport are neglected (see for e.g., Hallmann, Breuer, & Kühnreich, 2013; Ohmann, Jones, & Wilkes, 2006; Zhang, Li, Ouyang, & Malone, 2013).

Furthermore, the literature review revealed that there is no robust instrument available to evaluate perceptions regarding the potential positive and negative societal impacts of elite sport. In addition to this paucity in literature, there is a need to conduct this present research

because the tax-paying population is the main sponsor of elite sport and thus should benefit from it.

Social exchange theory (SET), a concept of social behavior introduced by Homans (1958), points out that populations review the (short- and long-term) benefits in the exchange of negativities (e.g., taxes). SET has been successfully used to understand why residents would support (or not) hosting a mega-event, such as the Olympic Games, and to study residents' perceptions of the benefits, in exchange for negativities, brought by the event (Zhang et al., 2013). Indeed, it is important that perceptions are addressed so that policies acquire the support of the public (Funahashi, De Bosscher, & Mano, 2015). Understanding public perceptions about the societal impacts of elite sport can inform national governments and high-level sport organizations to set priorities in the strategic development of elite sport policy. In order to address the abovementioned research gap, this study developed and tested a quantitative scale for measuring the perceptions of individuals towards the positive and negative societal impacts of elite sport. For this purpose, it builds on recent work of De Rycke and De Bosscher (2018) who have constructed a theoretical conceptual model based on an extensive literature review mapping empirically investigated positive and negative societal impacts of elite sport, called the 'Mapping Elite Sport's potential Societal Impact' (MESSI) model (De Rycke & De Bosscher, 2018).

It is essential to recognize that the aim of the current paper is to measure people's perceptions, which are subjective and may not represent the truth. The study does not offer evidence of the existence of particular societal impacts due to elite sport, nor does it provide answers to questions about '*why*' and '*how*' these potential impacts occur. Although it might be argued that perceptions lack accuracy or objectivity, diverse authors have recognized that measuring and understanding perceptions is important (e.g., Funahashi et al., 2015; Hayday, Pappous, & Koutrou, 2016). The following three major arguments found in the literature underscore this importance: First, crucial issues in a policy debate are often matters of perception and interpretation rather than facts. As such, we intend to identify what people think not whether the perceptions hold true or not. Second, policies should maintain the support of relevant stakeholders. Finally, for stakeholders, perceptions are reality (Ohmann, Jones, & Wilkes, 2006). As such, support for investment in elite sport is reliant upon such perceptions.

Previous research demonstrates that individuals' perceptions are dictated by socio-psychological variables (Funahashi & Mano, 2015; Karadakis & Kaplanidou, 2012; Lee, Cornwell, & Babiak, 2013). In light of these studies, being fan of an elite athlete, frequently watching sport on television, participating in sport, and a high level of involvement with elite sport (measured by the ESI scale) were considered as the factors that are relevant to explain variations in the perceived impact of elite sport. Authors have also reported that personal

characteristics influence perceptions of the potential societal impacts of elite sport (Hallmann, Breuer, & Kühnreich, 2013; Mutter & Pawlowski, 2014a). Therefore, in addition to socio-psychological variables, the demographic variables were included in this study (i.e., gender, age, first language, employment status, educational status, marital status, annual household income, and migration background).

Despite the growing number of academics investigating potential societal impacts of elite sport, the question of why governments invest in elite sport development remains largely unanswered (Grix & Carmichael, 2011). Essentially, the empirical evidence-base regarding the potential societal impacts flowing from elite sport is mixed. The impacts under study are directed by many underlying mechanisms and contextual factors that are difficult to measure (Lee, Cornwell, & Babiak, 2013). Another problem is that it is hard to separate the effects of sport from the general development of societies (Vanwynsberghe, 2014). In consequence, the data used and the methods applied (e.g., cross-sectional data, primary data, correlations) have often been inadequate to measure elite sport's true impact (Frick & Wicker, 2016). It is fundamental to recognize that elite sport is neither positive nor negative intrinsically. But it is hard to detect how, when and to what extent underlying mechanisms and contexts guide the potential societal impacts of elite sport. Nonetheless, several studies have articulated that the ways in which elite sport is structured, governed, integrated with other institutions, and

communicated are far from ideal to trickle often presumed positive societal impacts (e.g., Coalter, 2007; Taks, Chalip, & Green, 2015).

Method

In this contribution, we used the recently developed theoretical MESSI model by De Rycke and De Bosscher (2018), as a basis to construct a measurement scale. The theoretical MESSI model was deemed useful as it outlines 79 sub-categories of empirically investigated positive and negative societal impacts that potentially flow from elite sport. Moreover, the 79 sub-categories are clustered into 10 categories: 1. Social equality and inclusion, 2. Collective identity and pride, 3. Ethics and fair play, 4. Feel good and passion, 5. Fans and (media) attraction, 6. International prestige and image, 7. Athletes' ability and quality of life, 8. Sport participation and health, 9. Sponsors and commercial activity, 10. Local consumption and living conditions. A visual graph of the theoretical MESSI model is presented in appendix 1. We refer to De Bosscher & De Rycke (2018) for more detailed information regarding the theoretical MESSI model. Again, this paper describes the measurement scale that was developed and tested to evaluate the public's perceptions regarding the potential societal impacts triggered by elite sport. For this purpose, a nationwide population-based cross-sectional survey in Belgium was conducted.

The study context

In order to understand the results of this study, the following section reports the context wherein the population survey has taken place. Belgium is a densely populated (11 million inhabitants), small western European country (30.500 m²) that has two parts: Flanders (the northern, Dutch speaking part) and Wallonia (the southern, mainly French speaking part).ⁱⁱ As such, the Flemish- and French-speaking communities have separate elite sport policies. Thus, aside from the selection of athletes for the Olympic Games, there is no national policy or structure for sport, and nor is there expenditure on sport at the federal level. Elite sport plays a prominent role in Belgium. Cycling, football and tennis are the nation's most popular sports. The nation has won 153 gold medals at Olympic Games. Belgium has a strong club-based sporting tradition [for e.g., around 23,000 sport clubs in the Flemish region alone (Sportdatabank, 2018)] and has been successful in football, as the national team topped the FIFA World Rankings in 2015 (FIFA, 2017). However, due to a lack of mountains and a temperate maritime climate, Belgium is not successful in winter sports. Related to the legitimization of elite sport investment, the Flemish elite sport policy makes it explicit that the aim is to generate positive societal impacts.ⁱⁱⁱ

Scale development

Scale construction began by developing measurement items based on the 79 sub-categories from the theoretical MESSI model. [One key point was the use of bipolar items, a combination](#)

of a semantic differential scale and a Likert-type five-point scale whereby people rated possible positive as well as negative impacts (Larsen, Norris, McGraw, Hawkley, & Cacioppo, 2009). An individual's mean score on an item was calculated by combining the positive Likert score and reverse-scoring the negative Likert score so that a total score of a minimum of one and a maximum of nine was obtained for each item (Larsen et al., 2009). This combination allowed the measurement of both hypothetical positive and negative impacts. This is particularly useful, as the same aspect of elite sport can often be seen as having both positive and negative impacts. An example of a bipolar item used in the scale is: "In general, I perceive that elite sport...; *Positive*: "... increases well-being"; *Negative*: "... decreases well-being". Several authors agreed that this type of scaling has been demonstrated to be robust, reliable, and valid (Larsen et al., 2009; Verhagen, van Den Hooff, & Meents, 2015). Nonetheless, developing a semantic differential is challenging as the items must be unidimensional and distinctive. The scale anchors have to be bipolar from both a linguistic point of view and in relation to the concept being measured. For example, the pure linguistic antonym of 'pride', for instance, could be 'dishonor' but when used in this research, it was perceived that a more logical antonym would be 'embarrassment'. Also, as respondents need to address two Likert items, completion time is longer than with single unipolar items. The initial pool of items was first evaluated by an independent researcher with experience in elite sport policy to assess content validity.

Procedures

Seven post graduate students specializing in sport and 17 regular Belgian inhabitants completed a pilot survey to determine the clarity of the questions. A revised version of the instrument was then submitted to a panel of 11 international academics with expertise in sport studies and 14 Belgian inhabitants to test content validity. Each participant was asked to examine the appropriateness of the test format and the wording of the questions in order to improve the wording and to eliminate redundancy. As a result, six items were deleted. The remaining 73 bipolar items (with the available responses on a five-point Likert-type scale) were then randomly arranged into an online questionnaire with clear instructions. In order to eliminate the effect of ignorance, respondents were able to skip the items they did not have knowledge of. The study received prior approval from the ethics committee of the administering tertiary institution (nr. ECHW_060_002).

Data collection and sampling

Data were collected using an internet-based survey that was distributed by a Belgian research service company (i.e., GfK). First, a pilot study (n=100) was conducted to pre-test the questionnaire. Then, a representative sample of the Belgian population was obtained during January 2017. Sampling was based on the demographic variables of gender, family income, age, employment status, level of education, and immigrant background. The survey was

translated from Dutch to French by a professional interpreter, thereby making it possible to conduct a nationwide study. Out of the 1102 surveys, 980 were included in the analysis after cases with missing data or unreliable response patterns were excluded.

Data analysis

In order to analyze and validate the results of the study, the sample (n=980) was randomly divided into a test sample (n = 494) and a validation sample (n = 486). This sample size exceeded the minimum recommendation of > 300 (Field, 2013). The preceding data analysis was informed by the extensively cited procedures of MacKenzie, Podsakoff and Podsakoff (2011). First, using the test sample, a principal component analysis with oblique rotation was conducted. The central idea of principal component analysis (PCA) is to reduce the dimensionality of a data set consisting of a large number of interrelated variables, while retaining as much as possible of the variation present in the data set (Field, 2013). The objective of this PCA is to replace the large number of correlated variables with a set of uncorrelated principal components. Oblique rotation was selected to allow for correlations between the factors (Field, 2013). PCA was chosen at this stage so initial evidence for the structure of the scale could be assessed and the number of items in the scale could be reduced prior to conducting CFA (with the validation sample). In fact, scholars argue that it should be anticipated that approximately only one-half of the initial items will be retained for use in the

final scale (Hinkin, Tracey, & Enz, 1997). Several methodologists and researchers agree that PCA is preferable to CFA in the early stages of survey development (e.g., Brown, 2006; Kelloway, 1995), as model modification should be done sparingly within CFA (MacCallum, 1995). Numerous past studies in sport have refined a scale in a similar manner (Byon, Zhang, & Connaughton, 2010; Cronin & Allen, 2017).

Following the guidelines of MacKenzie, Podsakoff and Podsakoff (2011) for developing reliable and valid measurement instruments, following the PCA, a confirmatory factor analysis (CFA) was performed using the validation sample. CFA assesses the measurement model's adequacy and offers researchers power and flexibility in evaluating the dimensionality, reliability and validity of their scales (Brown, 2014). Six common indices were used to test the fitness of the model. (1) $\chi^2/\text{d.f.}$ index (i.e., the chi-square value divided by the degree of freedom), (2) non-normed fit index (NNFI), (3) comparative fit index (CFI), (4) standardized root mean square residual (SRMR), (5) root mean square error of approximation (RMSEA) and (6) the Tucker-Lewis Index (TLI). Acceptable goodness-of-fit in this research was defined as $\chi^2/\text{d.f.}$ less than 5, NNFI and CFI above 0.90, SRMR and RMSEA below 0.08 (Kline, 2005). To compare alternative models, similar fit is evident when changes in the CFI are < 0.01 and increases in RMSEA are < 0.015 (Chen, 2007; Cheung & Rensvold, 2002). Changes in the TLI of < 0.01 indicate a similar fit with models involving a complex structure (Marsh et al., 2009;

Morin et al., 2013). After testing the replicability of the factor structure using CFA, a multivariate analysis of variance (MANOVA) was employed to test usability and the criterion related validity of the new scale.

Determinants of the perceived impact of elite sport

Further than an examination of scale properties, we also considered the scale in context. It enables us to test the model beyond internal validity (Lee et al., 2013). Cronbach and Meehl (1955) argued that one's measure of a given construct should be related to measures of other constructs in theoretically predictable ways for proper psychological testing of the developed scale. By considering context, we can test the construct validity of the new scale within a "nomological network" (Cronbach & Meehl, 1955). The design of a nomological network includes the theoretical framework of what we are trying to measure and specifies relationships or linkages among entities when testing the instrument. MANOVA's were performed with variables that, based on past research, one could expect to influence individuals' perceptions of the societal impact of elite sport. Four socio-psychological variables were added: 1. being fan of at least one elite athlete; 2. frequency of watching the Olympic Games on television; 3. participation in sport; 4. score on the 'Elite Sport Involvement (ESI) scale' that was adapted from the three-item domain involvement scale (Gwinner & Swanson, 2003). The 7-point Likert scale measures the degree to which elite sport as a domain is personally relevant. Additionally,

the literature review affirmed that personal characteristics influence perceptions of the potential societal impacts of elite sport (Hallmann, Breuer, & Kühnreich, 2013; Mutter & Pawlowski, 2014a). Therefore, the following demographic variables were examined: gender, age, first language, employment status, educational status, marital status, annual household income and migration background.

Results

The result section starts with an outline of the process conducted until there was a good fit of the overall model. Then, using the validation sample, insights on the main results are provided. Last, the role of [socio-psychological](#) and demographic variables is discussed.

Data reduction

Scale development is concerned with finding the right balance between suitable modification indices and ensuring that the most important items (which is always a bit arbitrary) are in the scale (Furr, 2011). [Before PCA, the Kaiser-Meyer-Olkin \(KMO\) test and Bartlett's test of sphericity were conducted to evaluate the factorability. The KMO measure of sampling adequacy was 0.957 and the significance of Bartlett's test of sphericity was less than 0.001, meaning that PCA can be applied to the obtained dataset.](#) In this regard several models were analyzed, as researchers often examine multiple measurement hypotheses to identify the one most consistent with participants' responses. Items with low loadings were excluded; items

with threshold loadings were only excluded if it was judged that they were not the most important ones, or if another item was closely related to it (e.g., through cross-loadings). The estimates of the oblique rotation principal component analysis followed the suggested 10 components, as conceptualized in the MESSI framework. However, some of the items loaded under factors different to those that were expected, and others had a low loading estimate. Based on the results, revisions were made to the structure of the scale. A total of 41 items were deleted in order to reduce the scale based on loading values, which is in line with common recommendations (Hinkin, Tracey, & Enz, 1997). Consequently, the revised model ($\chi^2 = 12541,64$) included 32 items reflecting the original 10 components from which the total amount of explained variance was 71.9% (the 73-item model only explained 62.5%). The amounts of variance explained by each factor were: factor 1: 42.6%, factor 2: 10.4%, factor 3: 3.9%, factor 4: 3.5%, factor 5: 2.6%, and factor 6: 2.4%, factor 7: 2.2%, factor 8: 1.7, factor 9: 1.5%, and factor 10: 1.2%. Based on the outcome of the factor analysis, no names had to be changed as they were thought to reflect their respective constructs.

Model fit

Following the PCA (with the test sample), a CFA was conducted using the validation sample, as CFA “facilitates theory-testing, theory-comparison, and theory-development in a measurement context” (Furr, 2011, p. 3). It was found that the six goodness-of-fit indices

chosen to assess the measurement model's adequacy were excellent (Field, 2013): $\chi^2/\text{d.f.} = 1.91$ ($\chi^2 = 801.16$, $p < 0.001$, d.f. = 419), NNFI = 0.93, TLI = 0.96, CFI = 0.97, SRMR = 0.04, RMSEA = 0.04 (90% CI: 0.04–0.05, p close = 0.99), AIC = 1083.16. Table 1 provides an overview of the resulting constructs' mean scores and numbers of items.

---Input Table 1---

Table 1 also shows that the correlation between constructs was less than the cut-off point of 0.85 (Hooper, Coughlan, & Mullen, 2008). Also, for each construct, the average variance extracted (AVE) was larger than the threshold value of 0.5, and each construct's AVE was greater than the squared correlation between them (Fornell & Larcker, 1981). This indicates that each construct is unique and different from the others (discriminant validity). Figure 1 shows the ten categories (constructs) of the newly developed 'Mapping Elite Sport's potential Societal Impacts' (MESSI) scale (represented by the large circles).

---Input Figure 1---

As can be seen, all items loaded at least the threshold value of 0.70 on the respective constructs. The significance of the loading coefficients ($p < 0.05$) provided evidence of the construct's convergent validity (i.e. the items measure the same underlying concept) (Anderson & Gerbing, 1988). Discriminant validity is established when the estimated correlations between the dimensions are not excessively high (i.e., > 0.85) (Hooper et al., 2008). Although seven

constructs loaded above 0.70, none of the correlations exceeded the 0.85 maximum threshold, which was an indication that the scale was valid. The Cronbach's alpha values obtained for each of the ten factors ranged between 0.79 and 0.92, suggesting high internal consistency (0.60 is considered as acceptable (Field, 2013)). Notice that the 'International prestige and image' construct resulted in two items, although most researchers recommend three to four items for each latent construct (Crawford, 1975; Zwick & Velicer, 1986). Two indicators can work if there is also a nonzero correlation with another construct in the model, or if additional constraints are imposed on the loadings of the indicators. More complex identification rules can be found in (Bollen, 1989). Since every construct in the scale is related to all the others, two-item indicators were considered to be acceptable in this study. The thinking is that the presence of a correlation between constructs adds a third indicator on each construct (Savalei & Bentler, 2010). In conclusion, the analysis confirmed the ability of the 10 categories of the scale to measure the population's perceptions regarding the societal impact of elite sport.

As the results showed a good overall fit to the data (the six goodness-of-fit indices were excellent), it was appropriate to proceed with the examination of **socio-psychological** factors and the scores on the scale. Table 2 illustrates the final 32 items of the MESSI scale and their mean scores, standard deviations, standardized loadings and significance values.

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As shown, the Belgian population generally perceived that elite sport trickles more positive than negative societal impacts. The Belgian population also perceived that the most beneficial impacts from elite sport to society are related to ‘sponsors and commercial activity’ ($M = 6.89$, $SD = 1.39$), ‘collective identity and pride’ ($M = 6.83$, $SD = 1.41$), ‘international prestige and image’ ($M = 6.56$, $SD = 1.48$), ‘feel good and passion’ ($M = 6.55$, $SD = 1.42$), ‘fans and (media) attraction’ ($M = 6.53$, $SD = 1.39$) and ‘sport participation and life skills’ ($M = 6.10$, $SD = 1.40$). Less positive and more negative perceived impacts relate to: ‘ethics and fair play’ ($M = 5.84$, $SD = 1.56$), ‘social equality and inclusion’ ($M = 5.96$, $SD = 1.52$), ‘athletes’ ability and quality of life’ ($M = 5.96$, $SD = 1.35$), and especially ‘local investments and living conditions’ ($M = 4.92$, $SD = 1.75$).

Examining the role of socio-psychological and demographic factors

In order to determine the potential mediating role of the selected socio-psychological and demographic variables, a MANOVA was performed. Table 3 outlines the multivariate analysis and additional file 1 provides an overview of the socio-psychological and individual factors and their descriptions. Using Wilks’ lambda, we found there was a positive significant difference in the scores on the scale for being fan of an elite athlete or not ($\lambda = 0.90$, $F(10, 369) = 4.14$, $p < 0.001$). Furthermore, frequency of watching the Olympic Games ($\lambda = 0.89$, $F(30, 1084) = 1.51$, $p = 0.04$) and scores on the elite sport Involvement (ESI) scale ($\lambda = 0.92$, F

(10, 369) = 3.32, $p = 0.001$) correlated significantly with scores on the MESSI scale. In contrast, no significant difference was found between those who participated in sport regularly and those who did not ($\lambda = 0.88$, $F(40, 1401) = 1.23$, $p = 0.16$).

---Input Table 3---

Interestingly, there was only one demographic variable that had a significant effect on the perception of the societal impacts of elite sport, and that was ‘language’ ($\lambda = 0.94$, $F(10, 369) = 2.34$, $p = 0.01$), which means that inhabitants of the two regions of Belgium scored significantly differently on multiple categories: scores for the French-speaking population were on average 0.2 higher. Demographic variables like gender, age, employment status, educational status, marital status, annual household income and migration background were found to be non-influential.

Following the MANOVA, separate univariate ANOVAs on the socio-psychological and demographic variables were performed (see additional file 2). This analysis revealed the significant or non-significant effects of the variables on each dimension individually. For instance, the ANOVAs led to the insight that although gender had an insignificant effect on the overall score, men had significantly higher scores on six categories. Thus, this legitimizes performing additional univariate post hoc analyses when measuring a multidimensional scale.

Discussion

Although elite sport has been frequently referred to as a powerful means to provide benefits to society, there are also many negative societal impacts appearing as a result of elite sport, but these [are largely under-researched \(Zhang, Li, Ouyang, & Malone, 2013\)](#). Furthermore, little is known about the public's perceptions about elite sport's potential impacts. This study fills this gap by presenting a comprehensive scale that enables stakeholders to measure and analyze public perceptions of the assumed positive and negative societal impacts of elite sport. With a growing demand for robust and evidence-based empirical research on which to base decisions about public investment in elite sport (Funahashi, De Bosscher, & Mano, 2015), researchers have posed questions regarding the societal impact of elite sport and whether nations should invest in it. This study offers only preliminary answers to this ongoing questioning of the significance of elite sport. It delivers subjective measurements rather than objective facts about actual impacts. Accordingly, the study does not offer evidence of the existence of particular societal impacts due to elite sport, nor does it provide answers to questions about 'why' and 'how' these potential impacts occur, or the mechanisms behind it. The method adopted is that of the measurement of community perceptions (Fredline, 2005), that identifies variations in respondents' perceptions about particular societal impacts. The answers given may merely be "imaginary notions" (Northcote & Macbeth, 2005, p. 45) as they reflect the respondents' values

and attitudes. Therefore, it offers only a tentative, but valuable and paradigmatic instrument to measure people's perceptions regarding the potential societal impacts of elite sport.

In general, the Belgian population perceives that the ways elite sport impact society is predominantly beneficial. Social exchange theory points out that populations review the benefits in the exchange of negativities when forming an opinion on a certain subject. Individuals support those alternatives from which they expect the most benefits. Hence, it could be argued that if people perceive elite sport brings about a lot of positive impacts and only few negative impacts, then they are likely to be in favor of elite sport (development). Elite sport is believed to provide opportunities to publicly express national values, beliefs, pride, unity, and identity. This empirical result is consistent with Funahashi et al. (2015) findings and consistent with Green's (2006) statement that: 'alternative voices' arguing for some perspective in respect of spending such large amounts of public money on the aspirational goal of a handful of Olympic medals, remain relatively suppressed (p. 233). As a consequence, caution should be taken that the harmful realities of elite sport are not masked by the positivistic perceptions of the population and sport advocates. Many studies have pointed out that the desired effects of elite sport to society do not always occur automatically; they require policy planning and stakeholder involvement to steer collective action (De Bosscher et al. 2013; Taks, Green, Misener, & Chalip, 2014; Weed et al., 2015). However, more often than not there is scant

strategic planning to facilitate potential positive and inhibit negative impacts (Taks et al., 2015).

The public also attributes negative impacts to elite sport. For instance, the Belgian population perceives that hosting elite sport events can result in unacceptably high short- and long-term costs and can severely disrupt the living conditions of the host community. This finding is in line with research results on cities hosting major elite sport events (Kennelly, 2016; Ohmann et al., 2006). Internationally, similar public concerns have led to a state where over the past 6 years, nearly every referendum regarding hosting the Olympic Games have failed because of a lack of public support (Preuss, 2018).

The results support the notion that to understand public perceptions towards the impacts of elite sport, it is important to observe the degree of interest in, and exposure to, elite sport. Indeed, levels of public interest in elite sport, the consumption of elite sport, and being fan of an elite athlete, are factors which guide perceptions regarding the societal impacts assumed to be triggered by means of elite sport. Moreover, it was found that in Belgium, a participant's first language (French or Dutch) was the only demographic variable that had a significant effect on their perceptions of the societal impacts of elite sport. This is no surprise, as the French- and Dutch-speaking regions of the country are culturally dissimilar and elite sport policy is the responsibility of the two regions rather than the national government; as such, the two regions

have significantly different elite sport policies (De Bosscher et al., 2015). Surprisingly, demographic variables like gender, age, employment status, educational status, marital status, annual household income and migration background appeared to be ineffective in explaining variations in the overall scores on the MESSI scale.

From a methodological perspective, the MESSI scale is found to be a consistent instrument which comprises 32 bipolar items under 10 key constructs related to the potential positive and negative societal impacts of elite sport. Thus, by surveying the perceptions of the Belgian population, this study is a first modest form of validation of the MESSI framework from a public perception perspective. There are many other ways in which the framework needs to be further validated, such as by investigating the relationship between the public perceptions and objectively and independently affirmed realities. Nonetheless, it is impossible to develop a framework that is totally construct valid because of the many extraneous factors that influence the societal impacts of elite sport. As Dellinger and Leech (2007) stated, “construct validation is the continuous process of negotiation of meaning, which is accomplished through argument as dialogue, criticism and objection” (p. 320). A unique benefit of the MESSI scale is that the use of a semantic differential scale offers respondents the opportunity to express both positive and negative perceptions. An important objective was to offer a concise scale (the MESSI scale has 32 bipolar items) that can summarize the sub-categories that make up the MESSI

framework without losing the frameworks' theoretical integrity. In addition, this reduction facilitates ease of use for population surveys, as a lengthy instrument might lead to respondent fatigue and subsequent bias.

A methodological limitation of this study is concerned with the split-sample approach, as there is a possibility that the reduced sample has led to a bias (compared to the full sample), although the sample size greatly exceeded the minimum recommendation of > 300 (Field, 2013). Another constraint is the context-specific nature of the data. The perceived impacts of elite sport are potentially mediated by a range of factors including cultural differences, the degree of sporting success, and whether a country's sport policy focuses on elite sport or sport for all. For instance, disappointing sport performances and controversial incidents reported in the media can dramatically change the public's perceptions (Green & Collins, 2008). Moreover, scores on the scale are likely to be based on personal experiences or exposure to specific aspects of elite sport (e.g., a tennis fan may be more likely to think about the societal impacts of professional tennis). Also, respondents were able to skip the items they did not have knowledge of. Thus, the results of this study need to be interpreted with caution as they solely reflect the context of Belgium. Consequently, it would be valuable to have a greater understanding of the factors which make successful impacts more probable and unintended consequences less apparent. For instance, it would be interesting to see whether or not similar

results were observable in countries with dissimilar population characteristics, cultural differences and distinctive elite sport policy focuses.

Conclusion

The current study developed and tested an instrument, named the MESSI scale by measuring the Belgian population's perceptions regarding the societal impacts of elite sport. It was found that the Belgian population is generally not so critical as several scholars concerning the societal impacts of elite sport. As such, the positivistic perceptions of the population support elite sport advocates and attention should be made that the harmful impacts of elite sport are not turned a blind eye.

This study contributes to the elite sport policy field, as it introduces a scale that enables elite sport stakeholders to study public opinion about the various ways elite sport potentially impacts society. As policies require public support, this scale can help policy makers see and know how to best address residents' concerns and design policies that are country/culture specific. Public perceptions about the possible societal impacts of elite sport could also provide a baseline for elite sport stakeholders to determine whether or not marketing, policy, or program objectives are being met. Another implication of this study is that the scale enables to assess the populations perception on whether or not bidding for an elite sport event will be supported by the nation and detect what specific aspect are not supported so adjustments can

be made in order to gain the population trust and support. It is fair to conclude that the Belgian population believes elite sport has predominantly positive impacts, but that it is not a panacea when it comes to social issues. This implies that investment which aims to increase the success of elite athletes and investment in hosting elite events should take into consideration both the positive and negative perceived impacts of elite sport, sustain the positive perceptions, and address peoples' concerns on perceived negative impacts.

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Table 1. Overall reliability of the constructs and standardized loadings of indicators (validation sample; n = 486)

Construct	Squared correlation matrix										Correlation matrix									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1. Social equality & inclusion	0.672a										1.00									
2. Collective identity & pride	0.372	0.689a									0.61	1.00								
3. Ethics & fair play	0.518	0.325	0.731a								0.72	0.57	1.00							
4. Feel good & passion	0.325	0.578	0.281	0.706a							0.57	0.76	0.53	1.00						
5. Fans & (media) attraction	0.410	0.548	0.360	0.624	0.734a						0.64	0.74	0.60	0.79	1.00					
6. International prestige & image	0.384	0.672	0.336	0.548	0.548	0.673a					0.62	0.82	0.58	0.74	0.74	1.00				
7. Athletes' ability & quality of life	0.325	0.314	0.423	0.348	0.372	0.260	0.566a				0.57	0.56	0.65	0.59	0.61	0.51	1.00			
8. Sport participation & life skills	0.325	0.476	0.348	0.449	0.462	0.449	0.384	0.740a			0.57	0.69	0.59	0.67	0.68	0.67	0.62	1.00		
9. Sponsors & commercial activity	0.152	0.423	0.078	0.325	0.203	0.490	0.084	0.203	0.743a		0.39	0.65	0.28	0.57	0.45	0.71	0.29	0.45	1.00	
10. Local investments & living conditions	0.260	0.068	0.314	0.109	0.185	0.096	0.185	0.144	0.001	0.728a	0.51	0.26	0.56	0.33	0.43	0.31	0.43	0.38	0.03	1.00
Construct	Mean				SD		#items	Cronbach's α		Item-to-total-cor.		St. loadings		CR		t-value				
1. Social equality & inclusion	5.96				1.52		4	0.89		0.75-0.78		0.81-0.84		0.93		19.9-20.3***				
2. Collective identity & pride	6.83				1.41		3	0.88		0.76-0.79		0.80-0.85		0.93		20.8-22.2***				
3. Ethics & fair play	5.84				1.56		4	0.92		0.81-0.84		0.84-0.88		0.94		22.9-25.1***				
4. Feel good & passion	6.53				1.39		3	0.86		0.74-0.78		0.82-0.87		0.92		21.0-22.1***				
5. Fans & (media) attraction	6.55				1.42		3	0.90		0.77-0.82		0.84-0.88		0.93		22.6-24.6***				
6. International prestige & image	6.57				1.48		2	0.81		0.69-0.69		0.80-0.84		0.92		19.2***				
7. Athletes' ability & quality of life	5.96				1.35		3	0.79		0.62-0.65		0.70-0.83		0.88		13.7-15.0***				
8. Sport participation & life skills	6.18				1.37		3	0.90		0.80-0.81		0.84-0.89		0.94		23.8-24.3***				
9. Sponsors & commercial activity	6.89				1.39		4	0.91		0.74-0.83		0.76-0.92		0.94		20.3-21.5***				
10. Local investments & living conditions	4.92				1.75		3	0.90		0.78-0.82		0.84-0.86		0.94		21.9-22.0***				

Note: n= 460, $\chi^2/\text{d.f.} = 1.91$ ($\chi^2 = 801.16$, $p < 0.001$, d.f. = 419), NNFI = 0.93, TLI = 0.96, CFI = 0.97, SRMR = 0.04, RMSEA = 0.04 (90% CI: 0.04–0.05, p close = 0.99); *** $p < 0.001$; a= Average Variance Extracted

Table 2

Survey items and their mean scores, standard deviations and standardized loadings (validation sample; N=486)

Constructs	Items	Mean	SD	β	t-value
Social equality & inclusion		5.96	1.52		
Item 1	Increases social equality <u>versus</u> increases social inequality	6.08	1.69	0.81	19.9***
Item 2	Promotes human justice <u>versus</u> obstructs human justice	5.97	1.64	0.84	21.1***
Item 3	Promotes gender equity <u>versus</u> promotes gender inequity	5.65	1.87	0.82	20.3***
Item 4	Blocks racism <u>versus</u> boosts racism	6.15	1.76	0.81	
Collective identity & pride		6.83	1.41		
Item 5	Generates a sense of national identity and belonging <u>versus</u> prevents a sense of national identity and belonging	6.81	1.66	0.85	
Item 6	Makes people feel proud of their country <u>versus</u> makes people feel embarrassed of their country	6.99	1.59	0.80	20.8***
Item 7	Provides socializing opportunities <u>versus</u> eliminates socializing opportunities	6.69	1.53	0.84	22.2***
Ethics & fair play		5.84	1.56		
Item 8	Encourages fair play <u>versus</u> encourages cheating	5.81	1.84	0.84	23.0***
Item 9	Enhances ethical and honest behavior outside the sports field <u>versus</u> pushes unethical behavior and corruption outside the sports field	5.82	1.70	0.88	25.1***
Item 10	Encourages positive form of competition <u>versus</u> encourages a too competitive trait	5.83	1.72	0.85	23.5***
Item 11	Promotes a decent lifestyle towards youngsters <u>versus</u> <u>promotes a deviant</u> (offensive) lifestyle towards youngsters	5.91	1.70	0.85	
Feel good & passion		6.53	1.39		
Item 12	Increases overall well-being of the public <u>versus</u> decreases overall well-being of the public	6.30	1.47	0.82	
Item 13	Brings passion (enthusiasm/excitement) <u>versus</u> brings boredom (disinterest/indifference)	6.86	1.60	0.87	22.1***
Item 14	Generates a feeling of success <u>versus</u> a feeling of failure	6.44	1.61	0.83	21.0***
Fans & (media) attraction		6.55	1.42		
Item 15	Makes our society more beautiful/attractive <u>versus</u> makes our society less beautiful/attractive	6.24	1.57	0.85	
Item 16	Adds something to support/love <u>versus</u> something to disapprove/hate	6.77	1.59	0.88	24.6***
Item 17	Delivers positive public figures/heroes <u>versus</u> delivers negative public figures/bad idols	6.63	1.55	0.84	22.6***
International prestige and (political) power		6.57	1.48		
Item 18	Reinforces a country's international recognition/prestige <u>versus</u> fosters dishonor/disregard towards a country	6.62	1.58	0.80	

Item 19	Brings up the image of a country, city or community <u>versus</u> takes down the image of a country, city or community	6.51	1.61	0.84	19.2***
Athletes ability and quality of life		5.96	1.35		
Item 20	Increases the quality of life of elite athletes <u>versus</u> decreases the quality of life of elite athletes	6.11	1.69	0.70	
Item 21	Supports elite athletes to gather sufficient useful knowledge and life skills <u>versus</u> hinders elite athletes to gather sufficient useful knowledge and life skills	6.14	1.56	0.83	15.0***
Item 22	Puts eligible/healthful pressure on elite athletes to perform <u>versus</u> immense/excessive pressure on elite athletes to perform	5.63	1.62	0.72	13.7***
Sport participation & life skills		6.18	1.37		
Item 23	Enhances health awareness <u>versus</u> declines health awareness	6.12	1.50	0.85	24.3***
Item 24	Exhibits strong sport performances that triggers the public to participate in sport <u>versus</u> discourage the public to participate in sport	6.14	1.54	0.84	23.8***
Item 25	Urges the public to obtain a healthy <u>versus</u> urges the public to obtain an unhealthy lifestyle	6.27	1.50	0.89	
Sponsors and commercial activity		6.89	1.39		
Item 26	Provides the business world through sponsorships a strong platform for advertisement <u>versus</u> provides the business world through sponsorships a weak platform for advertisement	6.74	1.55	0.76	
Item 27	Offers media strong resources by granting sport broadcasting rights <u>versus</u> provides media weak resources by granting sport broadcasting rights	6.88	1.56	0.87	20.3***
Item 28	Awards sport organizations through ticketing and licensing a profitable source of income <u>versus</u> awards sport organizations through ticketing and licensing a losing source of income	6.98	1.59	0.92	21.5***
Item 29	Increases sport industry commercial activities <u>versus</u> decreases sport industry commercial activities	6.98	1.55	0.89	20.9***
Local investments and living conditions		4.92	1.75		
Item 30	Directs an acceptable amount of long-term investments <u>versus</u> directs an inacceptable amount of long-term investments (legacy costs)	5.00	1.92	0.84	
Item 31	Affects the living conditions of inhabitants during elite sport events positively <u>versus</u> affects the living conditions of inhabitants during elite sport events negatively	4.86	1.87	0.86	22.0***
Item 32	event hosting leads to a justifiable amount of local temporal/one-off costs <u>versus</u> event hosting leads to an unjustifiable amount of local temporal/one-off costs	4.90	1.93	0.86	21.9***

β: Standardized loadings; SD: Standard Deviation; t-value>1.96 for p<0.05 and >2.33 for p<0,01 (Kline, 1998).

Table 3.MANOVA - differences of MESSI scores based on [socio-psychological](#) and demographic variables (validation sample; N=486)

Socio-psych. variables	Description	Mean	Wilks'λ	F	Df	ρ
FAN	No	5.9	0.90	4.14	1	0.00 ⁽³⁾
	Yes	6.5				
FREQWatch OG	Not at all'	5.8	0.89	1.51	3	0.04 ⁽¹⁾
	Occasionally	6.2				
	Most days'	6.5				
	Every day'	6.3				
	Never	6.2				
SPORTPARTICIP	1 - 6 times/year	6.1	0.88	1.23	4	0.16
	1- 2 times/month	6.2				
	Once/week	6.3				
	Several	6.2				
	times/week					
INVOLVE	No	6.1	0.92	3.23	1	0.00 ⁽³⁾
	Yes	6.3				
Demographic variables						
Gender	Female	6.1	0.97	1.23	1	0.27
	Male	6.3				
Age	18-34	6.1	0.94	1.21	2	0.24
	35-54	6.1				
	55-69	6.4				
Language	French	6.3	0.94	2.34	1	0.01 ⁽²⁾
	Dutch	6.1				
Employment status	Fulltime job	6.1	0.96	1.53	1	0.13
	Other	6.3				
Educational status	Min. Bachelor	6.2	0.98	0.75	1	0.68
	Other	6.2				
Marital status	Married/couple	6.2	0.98	0.62	1	0.80
	Other	6.2				
INCOME	< €2500	6.2	0.95	1.00	2	0.46
	€2500 - €5000	6.2				
	>€5000	6.1				
MIGRATION	Yes	6.1	0.97	0.99	1	0.45
	No	6.3				

⁽³⁾ = $p < .001$, ⁽²⁾ = $p < 0.01$, ⁽¹⁾ = $p < 0.05$; ROLEM scale, INVOLVE scale, employment status, educational status and marital status are transformed into dummy variables.

Figure 1. Structural model of the Mapping Elite Sport’s potential Societal Impact’ (MESSI) scale

ⁱelite sport or high-performance sport is sport at the highest level of competition, with elite athletes as the competitors.

ⁱⁱ The Belgian population is ranked 35th on world purchasing power parity (PPP) charts. Its capital, Brussels, is a bilingual area positioned in the middle of the country and is home to numerous international organizations. Political divisions between the Dutch-speaking Flemish of the north and the French-speaking Walloons of the south have led in recent years to constitutional amendments granting these regions formal recognition and autonomy.

ⁱⁱⁱ For instance, in an interview after the Olympic Games in Rio, the Flemish minister of sport stated: “*We want to support sports that can inspire. Winning medals is one thing, but I want to use elite sport to motivate youngsters to get physically active*” (Muyters, 2016).

Additional file 1.

Overview of the socio-psychological and demographic variables and descriptions

Contextual variables	Description	N	%	Demographic variables	Description	N	%
FAN	Yes	184	37.2	Gender	Male	252	51.0
	No	310	62.8		Female	242	49.0
FREQWatch OG	Not at all'	98	19.8	Age	18-34	154	31.2
	Occasionally	271	54.9		35-54	200	40.5
	Most days'	87	17.6		55-69	140	28.3
	Every day'	38	7.7	Language	French	214	43.3
SPORTPARTICIP	Never	142	28.7		Dutch	280	56.7
	1 - 6 times/year	97	19.6	Employment	Fulltime job	232	47.0
	1- 2 times/month	64	13.0		Min. Bachelor	205	41.5
	Once/week	87	17.6	Marital status	Married/couple	329	66.6
	Several times/week	104	21.1		< €2500	151	37.9
INVOLVE	Yes	122	24.7	INCOME	€2500 - €5000	177	44.5
	No	372	75.3		>€5000	70	17.6
				MIGRATION	Yes	70	14.2
					No	424	85.8

Additional file 2.

ANOVA – Construct scores based on socio-psychological and demographic variables

Antecedent variables	Description	1	2	3	4	5	6	7	8	9	10	Total
FAN	Yes	6.1 ⁽¹⁾	7.1 ⁽¹⁾	6.2 ⁽¹⁾	7.0 ⁽¹⁾	6.8 ⁽¹⁾	6.9 ⁽¹⁾	6.1 ⁽²⁾	6.6 ⁽¹⁾	7.0 ⁽¹⁾	5.2 ⁽¹⁾	5.9 ⁽¹⁾
	No	5.7	6.4	5.6	6.1	6.1	6.1	5.7	5.9	6.4	5.1	6.5
FREQWatch OG	Not at all'	5.4 ⁽¹⁾	6.5	5.5	6.1 ⁽¹⁾	5.9 ⁽³⁾	6.0 ⁽²⁾	5.4 ⁽²⁾	5.9	6.8	4.6	5.8 ⁽¹⁾
	Occasionally	5.9	6.8	5.8	6.5	6.4	6.4	5.9	6.2	6.7	5.1	6.2
	Most days'	6.2	7.1	6.0	6.9	7.0	7.0	6.4	6.5	7.0	5.4	6.5
	Every day'	6.1	6.7	6.2	6.5	6.5	6.6	5.9	6.3	6.4	5.5	6.3
SPORTPARTICIP	Never	6.0	6.8	5.9	6.4	6.4	6.4	6.0	6.2	6.5 ⁽¹⁾	5.1	6.2
	1 - 6 times/year	5.9	6.7	5.9	6.4	6.3	6.4	5.8	6.1	6.5	5.0	6.1
	1- 2 times/month	6.0	6.7	5.9	6.7	6.3	6.4	6.0	6.3	6.6	5.4	6.2
	Once/week	5.9	6.8	6.0	6.6	6.6	6.7	6.0	6.1	7.0	5.2	6.3
	Several times/week	5.7	6.9	5.8	6.6	6.7	6.6	5.8	6.3	7.0	5.1	6.2
INVOLVE	Yes	5.9	6.5 ⁽²⁾	5.9	6.4	6.3	6.3 ⁽¹⁾	5.8	6.1	6.4 ⁽³⁾	5.5 ⁽²⁾	6.1
	No	5.9	7.0	5.9	6.7	6.6	6.6	5.9	6.3	7.1	4.8	6.3
Demographic variables	Description											
Gender	Male	5.7 ⁽¹⁾	6.7	5.7 ⁽¹⁾	6.4 ⁽¹⁾	6.3 ⁽¹⁾	6.3 ⁽¹⁾	5.7 ⁽¹⁾	6.1 ⁽¹⁾	6.6	5.1	6.1
	Female	6.1	6.9	6.1	6.7	6.6	6.6	6.1	6.4	6.8	5.2	6.3
Age	18-34	5.7	6.6	5.9	6.4	6.4	6.2 ⁽²⁾	5.8	6.1	6.5	5.0	6.1
	35-54	5.9	6.8	5.7	6.4	6.4	6.3	5.8	6.2	6.6	5.1	6.1
	55-69	6.1	7.0	6.0	6.8	6.5	6.9	6.0	6.4	7.0	5.3	6.4
Language	French	6.0	6.9	6.0	6.7 ⁽¹⁾	6.5	6.7 ⁽²⁾	6.1 ⁽³⁾	6.4 ⁽³⁾	6.9 ⁽¹⁾	5.2	6.3
	Dutch	5.8	6.7	5.8	6.4	6.4	6.3	5.7	6.0	6.6	5.1	6.1
Employment status	Fulltime job	5.8	6.7	5.8	6.5	6.3	6.5	5.9	6.2	6.5 ⁽¹⁾	5.2	6.1
	Other	6.0	6.8	6.0	6.6	6.6	6.5	5.9	6.2	6.9	5.1	6.3
Educational status	Min. Bachelor	5.8	6.8	6.0	6.5	6.4	6.5	5.8	6.2	6.8	5.0	6.2
	Other	6.0	6.8	5.8	6.6	6.5	6.5	5.9	6.2	6.6	5.3	6.2
Marital status	Married/couple	6.0	6.7	6.0	6.6	6.5	6.5	5.9	6.3	6.7	5.3	6.2
	Other	5.9	6.8	5.8	6.0	6.4	6.5	5.8	6.1	6.7	5.0	6.2
INCOME	< €2500	5.9	6.6	6.0	6.5	6.4	6.4	6.0	6.2	6.6	5.5	6.2

MIGRATION	€2500 - €5000	5.9	6.8	6.1	6.6	6.5	6.6	5.9	6.2	6.8	5.0	6.2
	>€5000	5.9	6.9	5.7	6.5	6.4	6.5	5.7	6.2	6.7	4.9	6.1
	Yes	5.8	6.7	5.9	6.5	6.4	6.3	5.7	6.1	6.6	5.2	6.1
	No	6.0	6.9	5.9	6.6	6.6	6.7	6.0	6.2	6.8	5.1	6.3

Note: 1. Social equality & inclusion; 2. Collective Identity & pride; 3. Ethics & fair play; 4. Feel good & passion; 5. Fans & media attraction; 6. International prestige & (political) power; 7. Athletes' ability & quality of life; 8. Sport participation & life skills; 9. Sponsors & commercial activity; 10. Local investments & living conditions; ⁽³⁾ = $\rho < .001$, ⁽²⁾ = $\rho < 0.01$, ⁽¹⁾ = $\rho < 0.05$;