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Why do sports officials dropout?

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Abstract. Sports officials' recruitment and retention is currently an issue for many sports. The sources of stress are numerous but seem to have a reduced impact on sport officials' dropout. To examine potential reasons of sport officiating dropout, 1718 sport officials were asked to fill a survey about their motivation, the way they trained and are evaluated, perceived stress, the qualities and skills required for officiating, and how they live their function, for a total of 135 questions. Data mining was used to extract information from the data set and transform it into an understandable structure for further use. Results show that intention to dropout among sports officials is related to the main motivation for which they begin officiating: obligation and needs of their sport association to have a sport official.

1 Introduction

Sport officials have a special function within the sport settings. Often judged, sometimes criticized, rarely forgotten, referees, judges and umpires are regularly at the core of stormy discussions and are a generous source of inspiration for the media [1, 2]. They have an essential influence on the outcome of a competition and have a challenging role [3, 4]. However, officiating-specific demands are extreme since sport officials need to assess situations as rapidly and accurately as possible, to manage the game [5], to preserve the order and to solve hostile interactions [6]. In addition, sport officials experience negative feedback during and after a sport event from athletes, coaches and spectators. It is no wonder officials' recruitment and retention are an issue for many sports [7, 8, 9]. We assume that the first step to limit and decrease officials' turnover and dropout is to understand the reasons underlying officials' dropout.

Sport officiating: stress and dropout

Sport officiating can be a stressful occupation [10, 7, 11]. Since an initial study by [7], researchers have investigated the sources of stress among sport officials by using survey questionnaires. They have showed that sport officials receive

considerable abuse [12, 10, 13, 14, 15, 16, 17]. In particular, sport officials report suffering from interpersonal conflict coming from players, coaches and spectators [14]. They are also afraid to fail and to make mistakes during the course of a sport competition [13, 7]. In addition, most of them have to manage officiating, familial, professional and social life with important time constraints [7]. Finally, social recognition remains limited [11]. It has often been assumed that such sources of stress result in burnout and ultimately dropout in sport officials [18, 16, 19].

Psychological stress is determined by how a sport official appraises the stressors, and requires the sport officials to cope with those stressors [20]. Surprisingly, the sources of stress appear to contribute moderately to the stress of sports officials [11, 21]. Burnout experiences in sport officials remains occasional, but may contribute partly to the intentions to terminate their officiating roles [16, 19, 7]. Although sport officiating may be a stressful role, sport officials are highly motivated toward officiating, passionate for officiating and enthusiast to their sport [22, 14, 23]. The main reason cited by sport officials to continue to officiate is the love of their sport [22, 23]. They appear to be motivated by their intrinsic devotion to sport and the opportunity to contribute to their sport [21]. In addition, [24] provided support for a dualistic conception of passion as applied to sport officiating. Results showed that almost all sport officials were passionate for officiating, and age, years of experience, gender and types of sports were unrelated to the level of passion. Nevertheless, harmonious passion (i.e., an autonomous internalization of the activity into the person's identity; see [25]) for sport officiating was positively associated with positive emotions, but obsessive passion (i.e., a controlled internalization into one's identity and an uncontrollable urge to engage in the activity) was positively associated with negative emotional experiences during games. Therefore the type of passion might play a role in sport officials' dropout decision. In addition, [26] suggests that social interaction is essential to sport officiating retention that may play a role in enjoyment, learning and longevity. In this qualitative research, sport officials reported that interaction with other officials could be important in all levels of sport officiating involvement. In summary, the factors contributing to the continuation of sport officials are linked to the love of their sport, harmonious passion and the quality of social interaction for sport officials.

Another concept that might play a role in sport officials continuation: referee efficacy or *refficacy* [3], which is defined as the extent to which sports officials believe they have the capacity to perform successfully in their mission. It is expected that highly efficacious sports officials should be more committed to their job, have more respect from other actors of sport settings, but be less stressed than less efficacious officials. A four-model of refficacy showed that sport officials relied on game knowledge, decision-making, pressure, and communication as determinants of officiating efficacy [27]. Moreover, the authors proposed four sources of refficacy including mastery experiences (e.g., sport officiating experience, past performance, knowledge of rules), significant others (e.g., evaluation and evaluators, feedback), physical and mental preparation (e.g., goal setting,

physical condition and training) and partner qualifications (e.g., match and partner assignments, environment). We suggest that efficacy and its sources play a crucial part in sport officials' retention and dropout.

The sources of stress are numerous but seem to have a reduced impact on dropout of sport officials. Harmonious passion and the use of effective coping strategies could have a positive effect on the decision to continue sport officiating. Nevertheless, estimated turnover and dropout rates among sport officials in France are considered too high. Most French Sports Associations wonder about the reasons of these important rates of dropout. Most of the studies were focused on team sports such as basketball and soccer while other team or individual sports were also affected by sport officiating's dropout. Moreover, most of the studies relied only on questionnaires assessing sources of stress or coping strategies and the authors assumed that stress could explain dropout. In order to fill this gap, this study was aimed to understand the potential reasons for sport officiating dropout. To proceed, we questioned sport officials about their motivation, the way they trained and the way they are evaluated, their perceived stress, the qualities and skills required for officiating, and how they live their function. Because it is very difficult to question sports officials who dropped (the dropout is often followed by a stop of any implication in the sport and these officials wish no more contact), we chose active officials. Persistence in the role is linked to their motivation to officiate in sport and their resilience or the ability to thrive in the face of adversity [10, 26, 28]. Data mining process was used to extract information from the data set obtained and transformed it into an understandable structure for further use.

The main objective of the present study was to find the rules answering the question - why would sports officials stop sports officiating?

2 Methods

2.1 Participants

The Association Française du Corps Arbitral Multisports (French Association of Sports Officials) endorsed the project on the sports officials' survey and provided a list of 120 names, addresses and e-mail addresses of board members, concerning 48 sports. These members were contacted and sent a letter giving procedural details about the project. Participants were contacted both electronically and by mail or phone, either directly by these board members or by the principal investigator. A list of 4,839 e-mail addresses was established and the survey was administered between June and September 2012. Less than 2% of the addresses were erroneous, 6 persons declined to participate in this investigation. The sample reported in this investigation represents 1,718 participants who provided informed consent (i.e., 35%; 430 female and 1,288 male officials) ranging in age from 18 to 68 years ($M = 38.76$ years, $SD = 13.07$). They officiated in 35 different sports and were active officials during the present study for at least two years. They officiated at different levels: 41.2% at the regional level, 47.1 % at the national level, and 11.7% at the international level.

Participants were informed about the purpose of the study and the methodology of the measurement. The authors stressed the non-evaluative aspect of the questionnaire as well as its anonymity and confidentiality. Ethical approval was obtained from the ethics committee of the authors' university.

2.2 Measures

A questionnaire was developed and composed by demographic and sport officiating information, with a total of 135 questions. The first validation phase targeted item development, selection and content relevance. A number of studies on sports officials [29, 30, 3, 4, 27, 24, 31] were examined and a list of 135 items was obtained, with three open-ended questions regarding officiating motives. The objective was to ask participants to rate statements about official qualities, behaviors, values, and functions about dimensions and sources of refficacy [3]. In the second step, 12 female regional, national or international officials (two in soccer, two in handball, three in judo, one in tennis, one in athletics and three in basketball) and 17 male regional, national or international officials (four in soccer, three in handball, two in basketball, two in judo, two in table tennis, one in rugby, one in water-polo, one in swimming and one in volleyball) responded and examined this primary list and could suggest additional items. After this second qualitative step, two items were added and two items were removed from the list because they were considered ambiguous.

The final survey was composed of three sections. Firstly, 10 introductory questions collected participants' demographic (e.g., age, gender) and officiating information relative to respondent group and generalities on sports officiating (e.g. level of sport officiating, sport officiated, number of officiated sport events, other sports experience). Secondly, participants were asked about why they committed to sport officiating, why they continue and if they had thought to stop sport officiating (3 pre-established choices). These questions were essential to characterize two populations: Sport officials who want to stop officiating and those who wish to continue. Consequently, the three questions were: Did you sometimes want to stop officiating (yes or no)? Why did you begin? Why do you continue? In these last two questions, seven propositions were submitted (e.g., for the association needs, by vocation, for pleasure). Finally, in the third section, key questions asked participants to rate short statements about (a) official qualities, behaviors, values and functions ($n = 65$), (b) evaluation and communication ($n = 30$), (c) pressure ($n = 30$), and (d) physical and mental preparation ($n = 10$). In this third section, participants were asked to respond to short questions by "yes" or "no", or to rate statements following this instruction: "Estimate the importance of the qualities useful for an official listed below". Each item was scored on a seven-point Likert-type scale ranging from 1 (Not at all important) through 4 (Moderately important) to 7 (Extremely important).

Once the questionnaires were fully completed and received, all participants were thanked for their participation and the authors told them that results would be accessible on a dedicated website after data analysis.

2.3 Data analysis method

Statistics and data mining share a lot material: both focus on helping the expert by providing measures and summaries for the decision process. Roughly speaking, statistics may validate experts' assumption (are these variables correlated?) while data mining focuses on knowledge discovery (what are the sets of correlated variables?). The later has a drawback: it often provides too much knowledge, which has to be filtered in order to precisely answer the question. More specifically, data mining works without distribution models, because no hypothesis is tested, but facts are retrieved. It may focus on local pieces of knowledge, characterizing a small population, while statistics provide global indicators. Data mining can handle huge volume of data (e.g., billions of objects, thousands of attributes).

Association rules [32] are usual tools for data mining. They are expressions of the form antecedent/consequent, where the antecedent is a conjunction of attributes and the consequent is an attribute. For example, in data where objects are weather conditions and attributes are in sun, rain, wind, cloud, ..., the rule wind, cloud \rightarrow rain tells that the objects containing wind and cloud also contain rain. These rules are measured by a frequency (the proportion of objects in which the antecedent is appearing) and a confidence (the conditional probability for the consequent to appear with the antecedent). Association rules are a useful piece of information, but they also may help in building classifiers [33]. When the rule concludes on the special attribute considered as the class - here, the class of officials having liked to give up -, the rule characterizes the class. Emergent patterns [34], those patterns which are more frequent for the class than the others, also have this characterization skill, because they are the antecedent of high confidence association rules concluding on the class attribute.

In the data, we applied this data mining techniques, in order to characterize the specific population of officials who declared having thought about giving up. These characterizations consisted in minimal emerging patterns, interpretable as conjunction of attributes, or patterns. These patterns are qualified as emerging because they are more likely to be found in this population than in the other.

Our poll rose to a boolean matrix (true or false), each column (or attribute) being a question, each row (or object) being an official. There are 1230 attributes (corresponding to all possible answers to the 135 questions of the poll) and 1718 objects. (i.e., officials). Between these 1718 officials, 705 (41%) thought about dropping out. We give below an example of the knowledge found (Table 1). This pattern characterizes 115 officials in our population.

Attribute	Value
Do you continue being an official for keeping the contact with high-level sport?	False
Do you continue because your club needs it?	True
Did you endure vocal aggression?	True

Table 1. Example of found pattern

Even if the emerging patterns are easy to interpret, they usually are too numerous for being browsed manually. In fact, there is a lot of redundancy; for example, if the rule wind, cloud \rightarrow rain has a 100% confidence, it means that every analyzed weather situation containing wind and cloud also contains rain. But the computer will also compute the rule wind, cloud, November \rightarrow rain. Here, “November” does not provide more information about the raining conditions. The second rule is then redundant and only rules with minimal antecedent should be computed.

Figure 1 gives intuitions about how minimal emergent patterns may be computed. On the left part, our data is figured by a table; the a, b, c, . . . , h columns represent the poll questions; the answers are “no” (or false) if the cell is white, “yes” (or true) if it is gray. The population to be characterized is at the top part of the table. In order to compute the emerging patterns, we need to compute the patterns, which are not in the patterns of the bottom part. A classical way for doing this is to build the patterns by picking one attribute in each of the complementary. Such a pattern is called a transversal. To fit our requirements, these transversals also have to be frequent in the top part (this is an easy step) and be minimal (a clarification of the whole procedure is out of the scope of this paper, further details can be found in [35]).

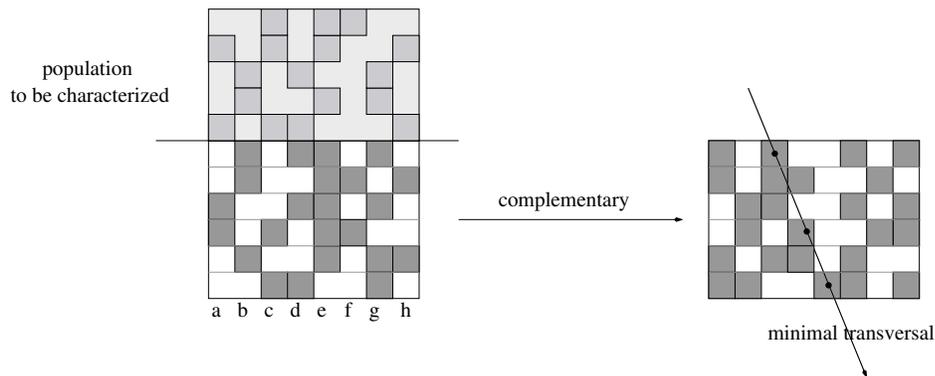


Fig. 1. Mining minimal emerging patterns.

The relevance of the knowledge is measured by a chi-square χ^2 , indicating the correlation between the people characterized by the pattern and those having liked to give up. More precisely, the chi-square computes the standard deviation from the average, giving a real value between 0 and the population number (here 1718 officials). If it is below a particular cutoff value, e.g. 3.84 at the 95% significance, the independence assumption has to be rejected.

3 Results

The objective was to find patterns of characteristics of sport officials thinking of dropping out. Seven hundred and five participants (197 female and 508 male officials; Mage = 38.03, SD = 12.13) wish or wished to stop sport officiating (41%).

Our patterns have a chi-square around 120: they are strongly dependent with desertion, mainly because they are constituted with attributes which already have a high chi-square (Table 2).

Attribute	Chi-square χ^2
Continuing for pleasure = false	8.77
Enduring vocal aggression = true	2.15
Continuing for vocation = false	1.16

Table 2. Example of chi-square results

The most frequent attribute of these respondents was that they continued to officiate for one main reason: the needs for their sport club. The current system of recruitment is based on financial penalty for clubs not having sufficient sport officials. Consequently, players, parents or staff members become official to avoid the penalty. These respondents did not choose pleasure and desire to keep in touch with top-level sport. However, they were already assaulted verbally, officiated at local and regional levels, had no other sport experience (i.e., only sport officiating), and they had little contact with medias. Results also showed that the less frequent attributes were that these sport officials thinking of dropping out have no other motivations to continue officiating (other one than the needs for club). Moreover, officiating expertise was not perceived as the best assessment of sport situations. They had instructions of sports federations or regional committees and were not followed by a supervisor during competitions and did not officiate exclusively male athletes.

4 Discussion

The main objective of the present study was to examine the potential reasons of sport officiating dropout with a data mining method. Results showed that the intention to terminate among sports officials is related to the main motivation for which they begin officiating: comply with obligation and needs of their sport association. Indeed, French sports associations must supply one or several officials to enter athletes or teams into competitions. If an association does not supply officials, then it is sanctioned financially and sportily (i.e., downgrading). Thus, sports officials thinking of dropping out are motivated by extrinsic requirement [36]. Extrinsic motivation refers to motivation that comes from outside an individual. The motivating factors are external and rewards provide satisfaction

and pleasure that the task itself may not provide. These officials are not motivated by an intrinsic devotion to sport and the opportunity to contribute to the sport, whereas these characteristics may determine partially motivation and passion for sport officiating [21].

Beyond this lack of intrinsic motivation, sports officials thinking of dropping out are only officials (i.e., no other function such as player, coach or supervisor). It tends to show that they are little committed to their job while the commitment is essential for the sports officiating [3]. Finally, they perform in low level of female and male competitions without gender specialization, do not have or not much contact or relationship with supervisors while they regularly have to follow instructions required by regional or national sports authorities. Thus, they are not expert in sport officiating, judging and refereeing indifferently female and male athletes or teams. Thus, these sports officials seem isolated: they must apply instructions but they do not receive any supervision. It may be linked with their low officiating level in which supervision remains occasional. [27] suggest that communication is one of the determinants of officiating efficacy and evaluation and feedback by supervisor and match and partner assignments are some sources of refficacy. Intention to terminate among sports officials may therefore be related to the lack of communication and gratefulness.

Finally, these respondents were already assaulted verbally by athletes. Threats and verbal aggression (i.e., interpersonal conflict) may have negative effect on performance and motivation [14, 37]. Moreover, officiating experience and motivation influence officials' coping with aggressive behaviors from athletes, coaches or sports audience [14, 21]. Age and years experience are not frequent attributes observed, but sports officials thinking of dropping out perform in low level of female and male competitions.

In summary, the data mining method allowed to show that sports officials thinking of dropping out are extrinsically motivated (i.e., the needs of their sport association). Moreover, this extrinsic motivation, the low sports officiating level, the lack of follow-up and gratitude allow to develop a typical profile. Those results could inform sports officials' recruitment and training, pointing out the emphasis on communication.

References

1. Baldwin, C.: A fair go! narrative accounts of sports officials experiences with media induced stress. In: 4th International Colloquium on Leisure and Tourism, Bangkok, Thailand. (2010)
2. Stern, J.: Media relations. *Referree* **413** (2011) 50–53
3. Guillén, F., Feltz, D.L.: A conceptual model of referee efficacy. *Frontiers in Psychology* **2**(25) (2011) 1–5
4. MacMahon, C., Mildenhall, B.: A practical perspective on decision making influences in sports officiating. *International Journal of Sports Science and Coaching* **7**(1) (2012) 153–165
5. Brand, R., Schmidt, G., Schneeloch, Y.: Sequential effects in elite basketball referees' foul decisions: An experimental study on the concept of game management. *Journal of Sport and Exercise Psychology* **28**(1) (2006) 93–99

6. Weinberg, R.S., Richardson, P.A.: Psychology of officiating. Champaign, ILL: Leisure Press (1990)
7. Taylor, A.H., Daniel, J.V.: Sources of stress in soccer officiating: an empirical study. In: First World Congress of Science and Football, Liverpool. (1988)
8. Titlebaum, P.J., Haberlin, N., Titlebaum, G.: Recruitment and retention of sports officials. *Recreational Sports Journal* **33** (2009) 102–108
9. vanYperen, N.W.: Predicting stay/leave behavior among volleyball referees. *The Sport Psychologist* **12** (1998) 427–439
10. Dorsch, K.D., Paskevic, D.M.: Stressful experiences among six certification levels of ice hockey officials. *Psychology of Sport and Exercise* **8** (2007) 585–593
11. Voight, M.: Sources of stress and coping strategies of us soccer officials. *Stress and Health* **25**(1) (2009) 91–101
12. Anshel, M.H., Weinberg, R.S.: Re-examining coping among basketball referees following stressful events: Implications for coping interventions. *Journal of Sport Behavior* **22**(2) (1999) 141–161
13. Goldsmith, P.A., Williams, J.M.: Perceived stressors for football and volleyball officials from three rating levels. *Journal of Sport Behavior* **15**(2) (1992) 106–118
14. Folkesson, P., Nyberg, C., Archer, T., Norlander, T.: Soccer referees' experience of threat and aggression: Effects of age, experience, and life orientation on outcome of coping strategy. *Aggressive Behavior* **28** (2002) 317–327
15. Kaissidis, A., Anshel, M.H.: Sources and intensity of acute stress in adolescent and adult australian basketball referees : a preliminary study. *Australian Journal of Science and Medicine in Sport* **25**(3) (1993) 97–103
16. Rainey, D.W.: Sources of stress, burnout, and intention to terminate among basketball referees. *Journal of Sport Behavior* **22**(4) (1999) 578–590
17. Tsorbatzoudis, H., Kaissidis-Rodafinos, A., Partemian, S., Grouios, G.: Sources of stress among greek team handball referees: Construction and validation of the handball officials' sources of stress survey. *Perceptual and Motor Skills* **100**(3) (2005) 821–830
18. Balch, M.J., Scott, D.: Contrary to popular belief, referees are people too! personality and perceptions of officials. *Journal of Sport Behavior* **30** (2007) 3–20
19. Rainey, D.W.: Sources of stress, burnout, and intention to terminate among rugby union referees. *Journal of Sports Sciences* **17**(10) (1999) 797–806
20. Lazarus, R.S., Folkman, S.: Stress, appraisal and coping. New York, NY: Springer Verlag (1984)
21. Wolfson, S., Neave, N.: Coping under pressure: Cognitive strategies for maintaining confidence among soccer referees. *Journal of Sport Behavior* **30**(2) (2007) 232–247
22. Burke, K.L., Joyner, A.B., Pim, A., Czech, D.R.: An exploratory investigation of the perceptions of anxiety among basketball officials before, during, and after the contest. *Journal of Sport Behavior* **25** (2000) 11–19
23. Purdy, D.A., Snyder, E.E.: A social profile of high school basketball officials. *Journal of Sport Behavior* **8**(1) (1985) 54–65
24. Philippe, F.L., Vallerand, R.J., Andrianarisoa, J., Brunel, P.: Passion in referees: Examining their affective and cognitive experiences in sport situations. *Journal of Sport and Exercise Psychology* **31**(1) (2009) 77–96
25. Vallerand, R.J.: On the psychology of passion: In search of what makes people's lives most worth living. *Canadian Psychology* **49**(1) (2008) 1–13
26. Kellett, P., Shilbury, D.: Umpire participation: Is abuse really the issue? *Sport Management Review* **10**(3) (2007) 209–229

27. Myers, N., Feltz, D.L., Guillén, F., Dithurbide, L.: Development of, and initial validity evidence for, the referee self-efficacy scale: A multi-study report. *Journal of Sport and Exercise Psychology* **34**(6) (2012) 737–765
28. Kellett, P., Warner, S.: Creating communities that lead to retention: The social worlds and communities of umpires. *European Sport Management Quarterly* **11** (2011) 471–494
29. Bar-Eli, M., Plessner, H., Raab, M.: *Judgment, decision-making and success in sport*. Hoboken, NJ: John Wiley & Sons, Ltd. (2010)
30. Dosseville, F., Laborde, S., Bernier, M.: Athletes' expectations with regard to officiating competence. *European Journal of Sport Science* (2013)
31. Plessner, H., Haar, T.: Sports performance judgments from a social cognitive perspective. *Psychology of Sport and Exercise* **7** (2006) 555–575
32. Agrawal, R., Srikant, R.: Fast algorithms for mining association rules. In: *Intl. Conference on Very Large Data Bases (VLDB'94)*, Santiago de Chile, Chile. (1994) 487–499
33. Li, W., Han, J., Pei, J.: Cmar: Accurate and efficient classification based on multiple class-association rules. In: *IEEE International Conference on Data Mining (ICDM'01)*, San Jose, USA. (2001)
34. Dong, G., Li, J.: Efficient mining of emerging patterns: discovering trends and differences. In: *Knowledge Discovery and Data Mining (KDD'99)*, San Diego, USA. (1999) 43–52
35. Eiter, T., Gottlob, G.: Identifying the minimal transversals of a hypergraph and related problems. *SIAM Journal on Computing* **24**(6) (1995) 1278–1304
36. Deci, E.L.: Intrinsic Motivation and Self-Determination. In: *Encyclopedia of Applied Psychology*. New York: Elsevier (2004) 437–448
37. Friman, M., Nyberg, C., Norlander, T.: Threats and aggression directed at soccer referees: An empirical phenomenological psychological study. *The Qualitative Report* **9**(4) (2004) 652–672