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BASKETBALL OFFICIALS' TRAINING AND DEVELOPMENT: LINKS TO RETENTION

A Thesis
presented in partial fulfillment of requirements
for the degree of Master of Science
in the Department of Health, Exercise Science and Recreation Management
The University of Mississippi

By

Nathan Ferdinand

August 2019

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ABSTRACT

The sharp decline in retention from year-to-year among sport officials is considered a “crisis” among the officiating community, and research has attempted to explore the issue by identifying factors that impact retention (Warner et al., 2013). The seven-factor “Referee Retention Scale” (RRS) seeks to predict the likelihood of retention for officials, one factor being officials’ ratings of their continuing education (Ridinger et al., 2017). However, there is a lack of study for examining the relationships among methods and outcomes of training, continuing education, and referee retention across sporting contexts. A cross-sectional design was created using an online survey which combined officials’ training methods and outcomes, the RRS, and a retention likelihood scale (Jaros, 1997). Hypotheses stated that all training outcomes and methods would each hold statistically significant positive correlations with officials’ ratings of continuing education, and the RRS would be a statistically significant predictor of retention likelihood. Data analysis of the responses revealed statistically significant correlations between continuing education ratings and the frequency of each training method, as well as frequency of each training outcome. In relationships with continuing education ratings, video analysis was the highest correlated method ($r = 0.40, p = 0.000$), while confidence development was the highest correlated outcome ($r = 0.46, p = 0.000$). The RRS regression analysis predicting retention likelihood recorded an R^2 value of 0.21 ($p = 0.000$). Continuing education was not a statistically significant factor in this study but remains an important construct toward retention. Through assorted methods and outcomes, associations may increase the likelihood of training satisfaction among their officials, while also utilizing the RRS as a tool to evaluate performance in factors

relating to retention. Research that further explores relationships between training methods and outcomes of interest is highly recommended, including within sub-populations of officials.

DEDICATION

This thesis is dedicated to all officials who have a true passion for sport and community, and continuously strive for excellence in all that they do.

LIST OF ABBREVIATIONS AND SYMBOLS

NFHS	National Federation of State High School Associations
OHSAA	Ohio High School Athletic Association
IHSAA	Iowa High School Athletic Association
NASO	National Association of Sport Officials
SOSS	Soccer Officials' Stress Survey
RRS	Referee Retention Scale
WE	Work Engagement
PIED	Perceived Investment in Employees' Development
FIFA	Fédération Internationale de Football Association
SASS-SO	Sources of Acute Stress Scale for Sport Officials
IRB	Institutional Review Board

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CHAPTER I

INTRODUCTION

There is a widespread belief that sport officials (referees, umpires, etc.) should go unnoticed or “blend in” during a game, thus when they gain attention from players, coaches, and/or spectators, it is often negative. However, officials are necessary for the experience of sporting events. In the process of adjudicating each contest to a set of rules, officials commit to provide a fair and safe environment, while also influencing the flow and management of games to maintain the spirit of competition and sportsmanship between players, coaches, and spectators (Mascarenhas et al., 2005). In the past few decades, the number of high school sport officials retained from year to year has decreased, while the number of high school sport participants has increased (Scandale, 2017).

Individual states, as well as national associations such as the National Federation of State High School Associations (NFHS) have come forward with data showing the declining numbers of officials, along with suggested reasonings behind them. The *USA Today* reported an NFHS statistic which claims that for every 10 new officials, only two come back to officiate for a third year (Scandale, 2017). Within individual states, a matching pattern has emerged. For instance, the Ohio High School Athletic Association (OHSAA) provided data that from 2010 to 2017, the total number of certified officials across all sports dropped by 1,400 (Blackledge, 2017). Furthermore, according to the Iowa High School Athletic Association (IHSAA) in the 2016-17

school year, 614 new officials registered, but only 263 of those returned for the following year (IHSAA, 2018).

Since the trend of declining retention began, several rationales have been publicly broadcast by officials and administrators. Several studies have sought to explain this through the amount of verbal abuse from spectators, coaches, and players toward officials (Taylor & Daniel, 1987; Rainey, 1999; Anshel et al., 2013). A report published by the National Association of Sport Officials (NASO) states that among 17,487 officials polled, 57 percent indicated that sportsmanship is getting worse, while 27 percent indicated there is no change and 16 percent indicated it is improving (NASO, 2017). As a response to this sentiment, multiple state associations partnered with the NFHS with op-ed pieces published in newspapers and websites formatted to each state with the message “Dear Mom and Dad: Cool It” in January 2019 (Hogg, 2019). The general feeling of declining sportsmanship and prevalence of verbal abuse toward officials is now front-and-center in the public image.

Research surrounding officials in the past few decades began largely mirroring the public’s view surrounding verbal abuse of officials. Early research found that the norm of verbal abuse of officials around the world is widely accepted by coaches, players, and spectators, and even that officials themselves have accepted that such abuse as natural to sports (Kellett & Shilbury, 2007). Taylor and Daniel’s (1987) Soccer Officials’ Stress Survey (SOSS) inspired research produced by Goldsmith and Williams (1992) and Rainey (1995) which considered factors such as fear of failure, fear of physical harm, time pressure, and interpersonal conflict within the officiating experience. New research showed that stress resulting from abuse was not as impactful to the overall experience due to expectations (Kellett & Shilbury, 2007). Many officials tend to develop coping strategies or ignore the abuse directed toward them. Wanting to

address the problem of retention but understanding stress as one of many factors led to research exploring the other factors that affect retention. Warner, Tingle, and Kellett (2013) found factors both on and off the court throughout each stage of recruitment, retention, and advancement within an official's experience. Livingston and Forbes (2016) similarly found intrinsic and extrinsic motivators as reasons to start and continue as an official. Research in this vein led to Ridinger et al. (2017) to develop a comprehensive Referee Retention Scale (RRS) that includes seven factors: perceived administrator consideration, intrinsic motives, mentoring, remuneration, sense of community, lack of stress, and continuing education.

While the research has shifted, few practical applications have been studied to change the trend of declining retention. Assessing training and development, which fit under the RRS factor of "continuing education," (Ridinger et al., 2017) may be one of the first and easiest fixes for associations to enact, as factors such as remuneration and lack of stress would logically rely on changes outside of the officiating associations, such as school administrators, spectators, players, and coaches. Several training and development topics, or outcomes, of focus to improve officials such as mental toughness (Slack et al., 2016), decision-making (Mascarenhas et al., 2005), and rules knowledge (Walker et al., 2018). This leads to the first research question of this study:

RQ1: How do training and development outcomes of focus relate to high school basketball officials' rating of their continuing education?

Meanwhile, the method of delivery in addressing desired training outcomes may impact their effectiveness (Poulston, 2008). Recent research across multiple sports and multiple levels identified training and development methods such as video analysis, in-class presentations, and web-based instruction, were identified across different sports and levels of officiating (Walker et

al., 2018; Slack et al., 2016). An understanding of how prevalent and useful these training methods are to high school basketball officials leads to the second research question:

RQ2: How do training and development methods relate to high school basketball officials' rating of their continuing education?

Finally, this study seeks to determine the relevance of the RRS toward the specific population of high school basketball officials, as it relates to retention likelihood. With continuing education being one of the factors within the RRS (Ridinger et al., 2017), the study also seeks to find the comparative relevance among all factors to retention. Implications of the application of this study rely on the third research question:

RQ3: What is the degree of influence of each factor within the RRS, including continuing education, on retention likelihood among high school basketball officials?

The purpose of this study is to explore the relationships between high school basketball officials' training outcomes and officials' rating of continuing education, as well as that between the methods used to teach those outcomes and officials' rating of continuing education. Additionally, it seeks to further examine the RRS within the population of high school basketball officials and determine its predictive effect on retention likelihood. By utilizing a survey-based research design, in which scales to measure each construct are included, each of these questions will be examined. Through analysis of resulting data, suggestions can be made toward the most relevant training and development methods and topics that relate to high continuing education ratings, and continuing educations' standing among all retention factors will be determined for the population. Officials' associations can in turn use the knowledge to practice and promote use of certain training and development methods in order to impact more positive continuing education satisfaction, theoretically aiding retention amongst their officials.

CHAPTER II

LITERATURE REVIEW

Training, Development, and Retention

Training and development are required applications across many sectors of work. Research has accumulated discussing the impact, both direct and indirect, that they have on retention of employees within different fields. Human resources research, specifically, has focused on this relationship the most. While studies of this nature tend to focus on career fields, or full-time employees, the idea of training and development affecting turnover intention is one that can transfer to developing hypotheses surrounding similar effects in officiating.

Regarding training, Poulston (2008) highlights the importance of effective training methods in reducing issues in the hospitality industry. Poulston's findings suggest that employees who are improperly trained are the ones who generate many of the industry's common service issues, and consequently have low retention rates, either from dismissal or leaving their job (Poulston, 2008). Furthermore, Poulson states that the difference in form of training also has an impact on staff quality and retention. Those that are trained on the job may face different experiences – those who are trained by regular staff may develop poor techniques and are put into much worse circumstances compared to those who have trained trainers (Poulston, 2008). The distinction between trained and untrained trainers may also be considered when discussing concerns surrounding training methods in officiating.

Other studies that focus on training have also established a relationship between training and turnover intention, with mediation. Memon et al. (2016) used a study of oil and gas professionals to show that work engagement (WE) mediated the relationship between training satisfaction and turnover intention. That study defined WE as “a positive fulfilling work-related state of mind characterized by vigor, dedication, and self-absorption.” Memon, et al. (2016) found a positive relationship between employees’ satisfaction with their training and WE, which negatively correlated with turnover intention. A different study, focusing on part-time hospitality (particularly lodging) employees, found training satisfaction to be significantly correlated with job commitment, which negatively relates to turnover rates (Jaworski et al., 2018). These findings mirror a study of Lebanese professionals across several fields that linked training and turnover in an inverse relationship, fully mediated by organizational commitment (Ismail, 2016). The constructs of job commitment and organizational commitment are similarly defined in each text so they reinforce the mediating nature of each within the relationship between training and retention/turnover.

As with training, development of employees has received focus in studies seeking to find correlation with retention. A multiorganizational study in England found that together, training and development had a positive relationship with intention to stay which was fully mediated by factors of job satisfaction, employee engagement, and change-related anxiety (Fletcher, et al, 2018). In a nursing study, Perceived Investment in Employees’ Development (PIED) had a negative relationship with intention to quit, although fully mediated by job satisfaction and organizational commitment (Lee & Bruvold, 2003). Likewise, a study of Dutch pharmacy assistants found that PIED is negatively related to intention to quit, mediated to a large extent by job satisfaction (Koster, et al, 2011). Across each of these studies, the findings remain consistent

that training and development affect job satisfaction, engagement, and/or commitment, which in turn affect turnover intention.

One form of development that has been studied in other realms of employment but remains relevant to officiating is feedback. As with the studies performed regarding general development, feedback has also shown relationships with employee retention predictors. Feedback can be used to tell employees when they are doing right or wrong, but both forms let employees know they're being invested in, and improve their performance – thus, a significant correlation between satisfaction with regular feedback and retention likelihood was found among quantity surveyors in Singapore (Hee & Lin, 2011). One study reinforced the merits of developmental feedback, that is, positive feedback or feedback that is useful in learning, by sampling employees from four Korean *Fortune* 500 companies, showing a relationship between developmental feedback and organizational commitment (Joo & Park, 2010). The same study added that organizational commitment and turnover intention were related, therefore linking developmental feedback in a negative relationship with turnover intention (Joo & Park, 2010).

Training and development have been shown throughout various industries and organizations as directly or indirectly affecting turnover intention and employee retention. These studies can't say exactly which elements among methods or outcomes are important for officiating but demonstrate the general importance and impact that training and development can potentially produce in any profession or avocation. This study will seek to use the RRS scale's relationship to retention to evaluate the link between officiating-specific training outcomes and methods, continuing education, and retention.

Learning Outcomes and Methods of Training and Development in Officiating

In the emerging research surrounding officiating, limited research has been conducted surrounding specific training and development methods. Several have been mentioned briefly within separate studies, however in-depth studies surrounding specific training methods are still developing. Ryan et al. (2014) confirmed many of the external field studies' claims as time spent in formalized training was positively associated with job satisfaction and negatively associated with turnover intention. However, one additional aspect that was discovered for officials is that increased time in training correlated with a decrease in pay satisfaction. That overall job satisfaction trended positively with training hours as pay satisfaction decreased shows that pay may not be as large of a factor in determining turnover intentions. This may be due to officiating serving as an avocation where motivation is intrinsic and there remains greater purpose than pay for officials to continue (Ryan et al., 2014). The degree to which training affects this relationship is unclear, because there are known other factors such as intrinsic motivators aiding job satisfaction. However, the positive correlation with job satisfaction and retention likelihood shows there is some tangible value to increased training.

Training is a broad term and in research it needs to be specified what trainings address, and what methods are used to achieve learning objectives. Amongst some officials, there is frustration that training and development is sometimes limited to observational evaluations and association meetings, the frequency of which can vary (Livingston & Forbes, 2016). One aspect of officiating that officials indicated they need increased training for is how to communicate and handle situations of game management with coaches, players, and spectators (Warner et al., 2013). Officials have indicated that the majority of training they receive surrounds rule knowledge or mechanics and positioning, rather than training on how to deal with people (Warner et al., 2013). Using various methods of psychological training, Chien et al. (2014)

showed that outcomes such as confidence, pressure process, motivation, education, and concentration can be positively impacted through training. Additional research by Slack et al. (2016) gave insight into mental toughness training, featuring in-season workshops, which improved officials' performance assessments overall, at the same time emphasizing the need for continual development to maintain improved performance. Each of these case studies had limited sample sizes. While outcomes were positive, the practical application may be difficult for associations to accomplish effectively with hundreds of officials. Nonetheless, it is worth continuing to investigate the merits of psychological trainings to aid new and veteran officials.

Observations from Slack et al. (2016) show the effectiveness of training styles that simulate real-world situations, both through role play and through video evaluation. The use of video specifically has been another focus in officials training and development in recent years. "Multimedia Teaching Materials" helped high-level soccer officials in their continuing development with high perceived usefulness. With the resources of the Fédération Internationale de Football Association (FIFA), officials who participated in online development tools found them easy to use, conveniently paced, enjoyably interactive, and as quality opportunities for visual learning (Armenteros et al., 2017). Specific online training models have been developed in different sports to aid rule interpretation and performance of officials. English rugby officials were given a video-based training that gave expert analysis and interpretation of specific plays, helping the newest officials significantly with their interpretation and decision-making for similar plays later in the season (Mascarenhas et al., 2005). Video-based judgement training is improved with immediate feedback toward the participant when they practice making calls, whereas delayed feedback is not significantly effective (Schweizer et al., 2011). In basketball, movement and positioning training is under consideration through new video technology that can

predict movement of officials by ball location and movement (Pecev et al., 2015). The transition from video and online training to live action, real-time decision making can't be guaranteed (Schweizer et al., 2011) but knowledge gained, time devoted, and ease of use for trainees make video-based options appealing for officials training and development.

The practicality and availability of technology and time make video and psychological trainings potentially difficult to implement for some associations. Higher level leagues may have greater resources than high school officials will have access to. One level that is often below the skill level of high school sports is collegiate intramural sports. Additional training methods that intramural sports programs offer to officials include on-field/court demonstrations, slideshow presentations, practice games, in-season meetings, and use of video (Walker et al., 2018). Desired outcomes of intramural trainings include confidence, rules knowledge, decision-making, stress management, and emotional intelligence (Walker et al., 2018). Both the methods and outcomes of intramural trainings match with many of the previously discussed features of higher-level leagues. Therefore, it is reasonable to suspect that although research is lacking regarding high school-level training specifically, many of those features can be and are included within some associations. Summaries of training and development outcomes and methods described in this literature review are described in tables 1 and 2 below.

Table 1: Training and Development Learning Outcomes
Positioning and Mechanics
Rules Knowledge
Confidence
Stress Management/Mental Toughness
Judgement/Decision Making

Table 2: Training and Development Methods
In-class presentations
On-court demonstrations
Web-based instruction
Mid-season workshops
Formal game evaluations
Video analysis
Role play scenarios

While additional constructs may exist within smaller numbers of high school basketball officials' associations, those listed in Tables 1 and 2 will serve as the generally accepted options that exist within research. These constructs will be used to answer explore which frequencies of outcomes and methods of training relate most to higher ratings of officials' continuing education, specifically within high school basketball.

Factors Toward Officials' Retention

The retention crisis surrounding sport officials generated a great deal of research during the past few decades. Much of the early research into retention focused on the issue of abuse, mostly verbal, from spectators, coaches, and players. One of the most influential early works was the development of the Soccer Officials' Stress Survey (SOSS) (Taylor & Daniel, 1987). The SOSS marked a tangible source of knowledge for other researchers to continue studying various aspects of officials' stress across multiple sports, not only related to verbal abuse but also a fear of physical abuse, time pressures, game situations, and interpersonal conflict, signifying that officials feel uncomfortable in their environment from a multitude of factors (Goldsmith & Williams, 1992). Rainey (1999) used these factors and found that "burnout" was a mediator in the relationship between stress and intention to continue officiating. The factors of stress combined with age to create increased burnout among basketball officials.

Further research regarding stress as a factor toward retention continued, as Anshel et al. (2012) sought to develop a Sources of Acute Stress Scale for Sport Officials (SASS-SO) which could measure the level of stress brought on by different factors within different settings (age, gender, sport, etc.). The authors claimed that officials "must maintain cognitive functioning by successfully managing stressful events that are inherent in competitive sport," citing Myers, et al. (2012) and the Referee Self-Efficacy Scale, which listed pressure as one of the four factors in

positive self-efficacy among officials. Some different findings came about through the SASS-SO, where verbal abuse was a diminished factor of abuse, compared to the stress produced by making a wrong call or being out of position (Anshel et al., 2012). One potential reason may be found in the findings of Kellet and Shilbury (2007) by reinforcing the importance of avoidance coping skills to manage stress, in other words ignoring or reinterpreting stressors such as verbal abuse and reducing their importance. However, another important aspect of the results is that stressors vary amongst sport type, gender, and skill of the officials and players. Over-generalizing about the levels and impact of stressors across all of officiating would be dangerous. Instead, research should be broken down specifically to each sport and level as much as possible. The SASS-SO showed some flaws and unexpected findings related to the role of stress in officials' experiences, despite the focus on stress among early research and popular beliefs among officials.

Research into other factors toward retention began with Kellet and Shilbury (2007), who sought to challenge two “myths” of officiating: first, that officials quit and leave a sport because of negative factors such as abuse, or “punishers;” and second, that reducing said “punishers” will lead to an increase in retention among officials. Among interviews with Australian rugby officials, the study found that abuse is essentially part of sports, and officials are prepared to take it on, whereas the concern among officials is a sense of community, with social interaction or lack thereof determining officials' choice to quit (Kellet & Shilbury, 2007). Most officials interviewed felt that spending time with other officials and developing personal relationships with each other was the largest benefit of officiating and contributed to their decision to continue as officials. The most recent research has followed this belief, and searches for a wider view of why officials stay, and why they leave.

Sense of community has been reinforced as a variable with multiple facets. Depending on the level of the game, there is a different expectation of formality in the community and sharing of common interest – as the game gets to a higher level, less sense of community is expected to be shared with players but the sense of community and shared space and interest between officials remains a constant expectation across levels (Kellet & Warner, 2011). There are potential divisions within sense of community, such as lack of administrator consideration or differences in remuneration between officials. Kellet and Warner (2011) suggests that examples of lack of administrator consideration include administrators not offering equal opportunities to all officials based on skill and merit, but rather giving the best game assignments to an in-group of veteran, older officials. If officials feel that different resources and opportunities are being shared unequally and without a merit-based system, then the sense of community will be negatively impacted, and often younger officials get discouraged.

Another group that gets discouraged through a lack of shared experience is female officials. Female officials' experience can be hampered by several factors, including a lack of role models in male-dominated sports, administrators' lack of consideration and reliance on the "old boys' network," lack of mutual respect from male officials, and gendered abuse from coaches, players, and spectators (Tingle, Warner, & Sartore-Baldwin, 2014). These issues represent portions of a few larger factors (sense of community, mentoring, administrator consideration, and abuse/stress) but show how different populations are potentially impacted separately. Nearly all officials face abuse, however females encounter an entirely separate category of abuse because of common sport perceptions, particularly in male-dominated sports (Tingle et al., 2014). Thus, it is important to consider demographic factors when measuring the role of each larger factor toward officials' retention.

Over the past several years, new approaches to the process of retention have been taken. Warner, Tingle, and Kellett (2013) chose instead of studying factors toward officials' retention in bulk as previous studies have done, they looked at the factors through a sport development lens, which breaks down into phases of an official's career. By adding time and setting as categories, they were able to identify three stages of officiating: recruitment, retention, and advancement, as well as two settings: on and off the court. In effect, Warner et al. (2013) identified when and where factors were most relevant in the experience of officials. In addition, their population was unique in that former officials were used to tell the story of how they left, rather than current officials indicating potential reasons for leaving in the future. During the recruitment stage, intrinsic motivators such as staying part of the game and competition and challenge fueled the on-court experience, while extrinsic motivators of remuneration and socialization into the community defined the off-court experience. Retention stages were negatively impacted by problematic social interactions (such as verbal abuse) on the court, and by incomplete training and lack of community off-court. Finally, they felt that lack of administrator consideration hampered their advancement within officiating (Warner et al., 2013). By understanding that factors come into play at different times during the officiating experience, there can be a better understanding of when associations should emphasize and develop those factors. Furthermore, knowing that intrinsic motivation gets officials to the court and then issues arise with their developmental experience should show associations and administrators that they have control over the retention and advancement stages. Research by Livingston and Forbes (2016) reinforced these findings and a call to action for associations that recruitment should be achievable by finding intrinsically motivated people who want to stay in the game, while retention heavily relies on factors of the experience they provide officials.

Understanding the factors that impact retention of officials is important so that a larger view of the issues is maintained. While this study seeks to isolate one factor, it is likely that the factors are not wholly independent. Because retention efforts are part of a process throughout an official's experience, they interact with each other in ways that are both seen and unseen. To predict and analyze retention, a knowledge of all factors will help guide research.

Measuring Officials' Retention

The completed view surrounding factors that impact officials' retention created the need for a scale that could bring them all together. A predictive instrument would be able to help identify where associations stand and what factors need improvement in order to better enhance retention rates. Throughout the studies which sought to identify factors leading to retention, the predictor for retention changed between theoretical questions. Cuskelly and Hoye (2013) used an 11-item instrument based on the theory of planned behavior that asked officials questions about the prospect of continuing to officiate. Their scale asked attitudinal questions, such as "For me to continue refereeing past the end of this season would be (valuable/worthless)" rated using 5-point semantic differentials, and behavioral questions using 5-point Likert-type scales of statements such as "I want to continue officiating past the end of this season." Similar scales were used across different studies to measure turnover intention; this was a way to validate factors of retention through correlation with those scales (Rainey, 1999; Ryan et al., 2014). Once factors toward retention were validated through several studies in this manner, the factors themselves could be used to predict retention.

A new scale that combined relevant factors within officiating toward retention was the focus of recent work by Ridinger et al. (2017). Through their background research, seven factors were identified to create the Referee Retention Scale (RRS):

1. Administrator Consideration
2. Intrinsic Motives
3. Mentoring
4. Remuneration
5. Sense of Community
6. Lack of Stress
7. Continuing Education

Combining these seven factors, 28 items were created on a scale to measure impact on retention. While only three factors directly predicted turnover intention (sense of community, intrinsic motives, and lack of stress), the scale combined with all seven factors strongly correlated with a scale of job satisfaction and overall explained a significant portion of the variance in turnover intention (Ridinger et al., 2017). A confirmatory factor analysis further validated the scale in its comprehensive summary of retention factors. Therefore, the overall results of responses to the RRS are valid in predicting the degree of satisfaction officials have in their avocation and the likelihood for retention among officials in general. Because the RRS is a new scale and was developed by surveying officials at varying levels of multiple sports, validation should be verified if used to study a single sport and/or level. This can be done through additional scales of intention to continue or terminate, as was used in the original study (Ridinger et al., 2017).

Having a scale that provides information on strength of all factors involved in officials' retention could be greatly useful in providing feedback to associations on what factors need improvement and can also be used to evaluate the interactions between factors (Ridinger et al., 2017). As it is a new scale and additional research to validate the RRS has not yet been

published, this study seeks to validate the use of the RRS as a retention predictor among high school basketball officials, clarifying which factors are most relevant in influencing retention. Additionally, the study seeks to find the degree of influence training outcomes and methods have on officials' ratings of the RRS factor of continuing education. Combined, the results will demonstrate the most prevalent methods and outcomes of training and development programs for high school basketball officials and their connection to factors toward officials' retention.

CHAPTER III

STATEMENT OF HYPOTHESES

This study is based upon three research questions surrounding officials' training and development, and the relation they have with retention predictors. The research questions are as follows:

RQ1: How do training and development outcomes of focus relate to high school basketball officials' rating of their continuing education?

RQ2: How do training and development methods relate to high school basketball officials' rating of their continuing education?

RQ3: What is the degree of influence of each factor within the RRS, including continuing education, on retention among high school basketball officials?

Formulation of Hypotheses

As a response to each of these research questions, the following hypotheses will be proposed:

Hypothesis 1 (H1): There will be a significant positive relationship between ratings of continuing education and frequency of focus on each outcome of training among high school basketball officials.

Hypothesis 2 (H2): There will be a significant positive relationship between ratings of continuing education and frequency of each method of training among high school basketball officials.

Hypothesis 3 (H3): The seven-factor RRS will serve as a statistically significant predictor for retention likelihood, with higher RRS scores predicting higher retention likelihood.

CHAPTER IV

METHODOLOGY

This chapter will describe the methods used to answer proposed research questions and serve the desired purpose of the study. The purpose is to answer what influence use of training methods and reinforcing of intended training outcomes have on officials' rating of their continuing education, as well as the influence that each factor of the RRS, including continuing education, have on retention likelihood. The process outlined in Figure 1 was used in carrying out the research design for this study.

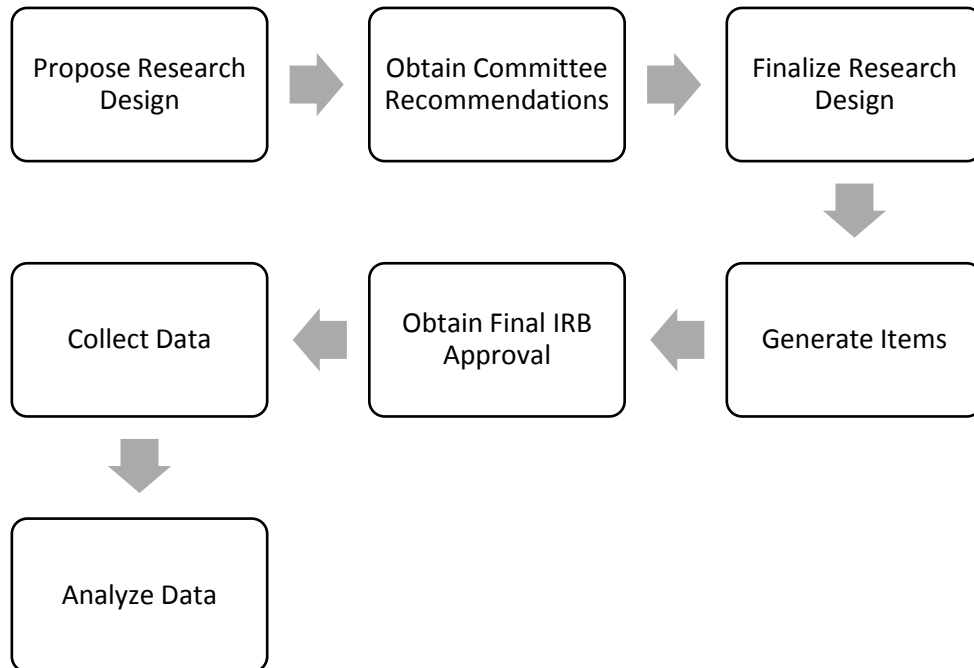


Figure 1: Research Design Process

Research Design

In order to address hypotheses and answer the research questions, a cross-sectional survey model was used to measure participants' experiences in officiating training and development, and perceived overall experience according to the RRS, as well as evaluating their job satisfaction. Demographic data was also collected to measure who took the survey and what subpopulations are represented within the respondents. The survey was developed through item construction related to relevant literature. The survey and overall research design was submitted to and approved by the Institutional Review Board (IRB), following proposal and approval with recommendations from the faculty advisory committee.

Research Participants

The participants of this study were NFHS basketball officials within the United States. They were recruited through contact with association administrators via electronic mail, as well as through a community-run group on Facebook™ consisting of NFHS basketball officials. Officials under the age of 18 were excluded from participation. Data was collected via an online survey sent by email and Facebook™ with a survey link utilizing Qualtrics survey software. After obtaining approval of IRB, the link for the survey was distributed to basketball officials in the selected organizations and groups where permitted to participate in this data collection. The self-report questionnaire included a letter explaining the purpose of the study and confirmation of their agreement to participate as a human subject for the described research purposes.

At the completion of data collection, two hundred twenty-nine ($n = 229$) officials from 37 U.S. states submitted fully complete responses to be included in analysis. Of the valid responses, 93.9% were male, 5.2% were female, and 0.9% declined to provide their gender. Non-Hispanic White/Euro American respondents accounted for 73.9% of participants, while 17.5% were Black

or African American, 3.1% Latino or Hispanic American, 1.3% American Indian or Alaska Native, and 2.2% “other.” Ages of participants ranged from 19 to 77 years old, with a mean of 48.63 ($SD = 12.33$). Participants had experience officiating high school basketball from 1 to 48 years, with a mean of 16.12 years ($SD = 11.11$), as 70.3% had 10 or more years of high school basketball officiating experience, and 11.4% had 3 or fewer years of experience. Varsity-level high school officials accounted for 87.8% of participants, and 27.9% officiated at the college or professional level in addition to being current NFHS certified officials. With three outliers (beyond three SDs from the mean) removed, the total number of games worked per official in the past season ranged from 0 to 345 across all levels from professional to adult and youth recreational, with an average of 93.56 games ($SD = 62.51$).

Measurements

In order to test research hypotheses and build an appropriate survey, items must be considered based on relevant literature, so that constructs are valid within the survey. This survey contains items related to constructs of RRS factors, training methods, training outcomes, and retention likelihood.

Reinforcement and teaching of intended training outcomes were measured with a scale which measures the constructs listed in Table 1. This was achieved by a 5-point Likert-type scale (1 = *never*, 5 = *very frequently*) using statements about each construct, outlined in Table 3.

Constructs	Items
Positioning and Mechanics	My association uses training to focus on positioning and mechanics.
Rules Knowledge	My association uses training to focus on rules knowledge.
Confidence	My association uses training to focus on confidence development.
Stress Management	My association uses training to focus on stress management.
Judgement/Decision Making	My association uses training to focus on judgement and decision making.

Table 3: Reinforcement/Teaching of Intended Training Outcomes

Use of training methods was measured with a scale which measures the constructs listed in Table 2. This was achieved by a 5-point Likert-type scale (1 = *never*, 5 = *very frequently*) using statements about each construct, outlined in Table 4.

Constructs	Items
In-class presentations	My association offers trainings through in-class presentations such as PowerPoint.
On-court demonstrations	My association uses on-court demonstrations to train officials.
Web-based instruction	My association offers web-based instruction to train officials.
Mid-season workshops	My association conducts mid-season workshops.
Formal game evaluations	My association conducts formal game evaluations.
Video analysis	My association provides video analysis of games and/or plays.
Role play scenarios	My association uses role play scenarios to train officials.

Table 4: Use of Training Methods

The RRS consists of a 28-item scale split between seven factors, with each item providing a statement and requesting response on a 5-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*). Select items are reverse scored, as indicated by a (r) on the list in Table 5 (Ridinger et al., 2017). Scores for each item were added to a total score within each construct and averaged. In addition, a singular overall score was created from the average of all questions. Items are listed along with constructs in Table 5 below.

Constructs	Items
Administrator Consideration	27. Game assignments are based on "who you know." (r) 25. Officiating assignments are based on favoritism and politics. (r) 24. Administrators in my officials' association are considerate of my needs. 26. Decisions related to game assignments are fair. 28. Administrators in my association show favoritism. (r)
Intrinsic Motives	1. I officiate as a way to stay involved in the sport. 2. I enjoy officiating because it allows me to stay connected to my sport. 4. I love the competitive nature of sports. 5. I like that officiating allows me to be a part of competitive events. 6. I like the challenge of officiating. 3. Officiating allows me to give back to the sport.
Mentoring	13. A mentor assisted my integration into the officiating community. 14. Having a mentor to support me was an initial attraction to the role.

	11. A mentor helped me feel welcomed in the officiating community. 12. A mentor or friend encouraged me to officiate.
Remuneration	10. My main motivation for officiating is financial reward. 9. Pay was an important factor in my decision to start officiating. 7. Officiating is a good source of supplementary income. 8. Money is not the primary reason I officiate. (r)
Sense of Community	20. A strong sense of community among officials exists for me. 19. I feel included in the officiating community. 18. I belong to a strong officiating community.
Lack of stress	15. I often feel abuse while officiating. (r) 17. I often encounter hostile interactions with coaches and/or spectators while officiating. (r) 16. I often feel a lot of stress while officiating. (r)
Continuing Education	23. I receive adequate training each year to stay current on officiating mechanics and rules of the game. 22. Because of the continuing education provided by my association, I feel prepared to officiate my sport. 21. Training prepared me for interactions with coaches, players, and fans.

Note: Items with (r) indicate reverse-scoring

Table 5: Referee Retention Scale (RRS)

Retention likelihood was reverse-scored from a turnover intention scale developed by Jaros (1997). To match other scales used, this is a 5-point (1 = *strongly disagree*, 5 = *strongly agree*) Likert-type scale. Items are listed in Table 6; items with an (r) were reverse-scored.

Construct	Items
Retention Likelihood	1. I often think about quitting officiating. (r) 2. I am likely to search for something else to do besides officiating. (r) 3. It is likely that I will leave officiating in the next year. (r)

Note: Items with (r) indicate reverse-scoring

Table 6: Retention Likelihood Scale

The previous scales were combined with demographic questions for participants to answer their age, number of years officiating high school basketball, state they officiate in, gender, and ethnicity. Adjustments made to the scale through the planning process were approved by the faculty advisor and IRB.

Data Collection

The items for this survey were compiled into a single, web-based survey compiled with Qualtrics software. Through Qualtrics, a link was obtained and sent within a recruitment email

to the administrators of high school basketball officials' associations (see Appendix A). The recruitment email asked the administrators to forward the link to the officials within their association. A similar message was posted on the Facebook™ group "Basketball Officials" with an anonymous link to the survey attached. Those who follow the links were delivered to the Qualtrics survey, with the first page displaying an informed consent form for participants to complete before answering any survey questions (see Appendix B). Then, the survey appeared and participants were instructed to answer each question. When completed, the participants were thanked for their participation and informed that the survey is completed. The survey was open for two weeks to collect the appropriate amount of data. A target sample of at least 130 participants was required for this study, determined through a priori power analyses of the proposed data analysis tests using G*Power software.

Data Analysis

After all data collection is completed via Qualtrics survey software, response values were exported with SPSS sav data file format with raw data, variable, and value labels. Data was re-coded for reverse-scoring and nominal demographic data was coded. Non-respondents were deleted listwise due to a sufficient sample size. Through SPSS, multiple statistical tests were used to test hypotheses. Chronbach's alpha tests were performed on each factor within the RRS, and retention likelihood in order to determine internal consistency of the survey. Further, correlations were calculated to compare the frequency of each outcome and method of training to continuing education responses. By comparing two continuous variables from the 5-point Likert scales, correlation analyses can further determine which outcomes and methods of training relate to officials' ratings of their continuing education most. While there is no single agreed upon scale for evaluation of correlation magnitude, the following intervals fall within the general

range of existing research and was used for this study: $0.0 \leq |r| \leq 0.19$ (negligible or no correlation), $0.2 \leq |r| \leq 0.39$ (low correlation), $0.4 \leq |r| \leq 0.59$ (moderate correlation), $0.6 \leq |r| \leq 0.79$ (moderately high correlation), $0.8 \leq |r| \leq 1.0$ (strong correlation) (Akoglu, 2018).

A multiple linear regression analysis was run with the RRS scores in order to show its predictive impact on retention, as reported in Ridinger et al. (2017). To determine statistical significance for each test listed, the threshold of significance will be set at $\alpha = 0.05$.

CHAPTER IV

RESULTS

Descriptive Analyses

A total of two hundred twenty-nine ($n = 229$) officials from 37 U.S. states submitted fully complete responses to be included in analysis of the results. Means and standard deviations for frequency of use of training methods and frequency of focus for training outcomes were calculated and recorded in Table 7. In-class presentations were the most common method for training ($M = 3.77$, $SD = 0.951$), while role play scenarios were least common ($M = 2.69$, $SD = 1.187$). Among outcomes of focus, rules knowledge was the topic of focus most often ($M = 4.27$, $SD = 0.759$), while stress management ($M = 2.39$, $SD = 1.093$) was least commonly an outcome of focus in training provided by associations.

	<i>Mean</i>	<i>SD</i>
Methods		
In-Class Presentations	3.77	0.95
On-Court Demonstrations	3.27	0.98
Web-Based Instruction	3.31	1.13
Mid-Season Workshops	2.59	1.25
Formal Game Evaluations	2.77	1.25
Video Analysis	3.16	1.26
Role Play Scenarios	2.69	1.19
Outcomes		
Positioning and Mechanics	3.90	0.94
Rules Knowledge	4.27	0.76
Confidence Development	2.98	1.18
Stress Management	2.39	1.09
Judgement and Decision-Making	3.34	1.12

Note: All measurements on a 5-point Likert-type scale

Table 7: Training Methods and Outcomes Means and Standard Deviations

Means, standard deviations, and Chronbach Alpha scores for each factor of the RRS, as well as the retention likelihood measurement, are displayed in Table 8. All reliability scores were above the commonly held $\alpha \geq .70$ threshold of acceptance. It should be noted among the results that the intrinsic motivation factor had a high kurtosis score of 5.09, meaning it was not normally distributed, having high peakedness at the upper end of the scale.

	<i>Mean</i>	<i>SD</i>	Chronbach's Alpha
RRS Factors			
Intrinsic Motivators	4.40	0.56	0.82
Remuneration	2.70	0.78	0.72
Mentorship	3.73	1.01	0.88
Lack of Stress	2.98	0.98	0.84
Sense of Community	4.23	0.77	0.91
Continuing Education	4.05	0.78	0.76
Administrator Consideration	3.19	0.90	0.89
Retention			
Retention Likelihood Score	3.95	0.99	0.87

Note: All measurements on a 5-point Likert-type scale

Table 8: RRS Factor and Retention Likelihood Means, Standard Deviations, Chronbach’s Alpha

Continuing Education Correlations

Officials’ rating of continuing education, which is measured within the RRS, was compared to several different variables. Among the demographic variables – ethnicity (one-way ANOVA), gender (independent samples t-test), age (correlation), years of officiating experience (correlation), and number of games officiated (correlation) – none showed a statistically significant relationship or effect with continuing education ratings. Tables outlining these results are in Appendix C. Because there were no statistically significant differences between demographic groups’ continuing education ratings, demographics were not included in analysis as covariates that would impact continuing education ratings.

Hypothesis one states that there is a relationship between officials’ continuing education rating and the outcomes presented in their trainings. To test this hypothesis, a correlation was conducted to show statistically significant relationships between each training outcome and continuing education ratings. Correlation strengths were labeled based on ranges which fit in relation to labeling scales compiled by Akoglu (2018). All five outcomes correlated positively with continuing education at a statistically significant level across all officials. One, stress management, had low correlation, while the other four had a moderate-level correlation with continuing education across all officials. The correlation coefficients and p-values are listed in Table 9.

	Correlation Coefficient (r)	<i>p</i>
Positioning and Mechanics	0.44	0.000
Rules Knowledge	0.40	0.000
Confidence Development	0.46	0.000
Stress Management	0.39	0.000
Judgement and Decision-Making	0.42	0.000

Table 9: Correlations Between Continuing Education Rating and Training Outcomes

Hypothesis two suggests that there are relationships between officials’ continuing education rating and methods used to train officials. To test this hypothesis, a correlation was conducted to show statistically significant relationships between each training method and continuing education ratings. All seven methods correlated positively with continuing education at a statistically significant level across all officials. Six were low correlation, while the video analysis had a moderate-level correlation. The correlation coefficients and p-values are listed in Table 10.

	Correlation Coefficient (r)	<i>p</i>
In-Class Presentations	0.24	0.000
On-Court Demonstrations	0.30	0.000
Web-Based Instruction	0.25	0.000
Mid-Season Workshops	0.38	0.000
Formal Game Evaluations	0.30	0.000
Video Analysis	0.40	0.000
Role Play Scenarios	0.35	0.000

Table 10: Correlations Between Training Methods and Continuing Education

Referee Retention Scale Predictive Validity

In order to test the predictive validity of the RRS toward retention likelihood, a multiple linear regression analysis was conducted using the average scores for each of the seven factors, with the average score of the retention likelihood scale as the dependent variable. The overall model with all seven factors included recorded an R^2 value of 0.213 ($p = 0.000$). Among the individual RRS factors, those which had statistically significant beta values were lack of stress ($\beta = 0.30, p = 0.000$), sense of community ($\beta = 0.27, p = 0.000$), and administrator consideration ($\beta = 0.16, p = 0.024$). Full results of the regression analysis are included in Table 11 below.

	Multiple <i>R</i>	R^2	β	<i>p</i>	F	<i>df</i>
RRS - 7 Factors	0.462	0.213		0.000	8.54	7
Intrinsic Motivators			0.01	0.128		
Remuneration			-0.02	0.817		
Mentorship			0.02	0.771		
Lack of Stress			0.30	0.000		
Sense of Community			0.27	0.000		
Continuing Education			-0.11	0.128		
Administrator Consideration			0.16	0.024		

Table 11: Multiple Regression Analysis for the RRS and Retention Likelihood

CHAPTER V

DISCUSSION

Hypothesis 1: Training Outcomes and Continuing Education

Hypothesis 1 stated that there would be significant correlations between each of the proposed training outcomes of interest and officials' ratings of their overall continuing education. The results of correlation analysis support this hypothesis, albeit to a low degree. The correlation coefficients displayed in Table 9 show low-to-moderate levels of relationships between each outcome and continuing education ratings. All were labeled statistically significant according to the pre-determined alpha threshold of significance. Thus, the more frequently an association focuses their training sessions on each outcome, it is reasonable to expect that overall satisfaction with training increases as well, even at low or moderate rates.

The highest correlation existed between continuing education ratings and association's frequency of training on confidence development, followed by training on positioning and mechanics, judgement and decision-making, rules knowledge, and stress management in that order. Confidence development can help with several different aspects of officiating and is an outcome that in practice can be significantly affected through training (Chien et al., 2014). As Warner et al. (2013) states, officials feel a need for more training that will prepare them for intense situations of game management. Confidence development training is a part of that, and the correlation seen in this study validates the notion that those who receive it more often may also feel more satisfied with their overall training.

The frequencies of each training outcome (listed in Table 7) do not align with the order in which they correlate with continuing education ratings. Participants reported higher frequencies of rule knowledge and positioning and mechanics as an outcome of training compared to judgement and decision-making, confidence development, and stress management. This aligns with previous studies which found officials believe their associations generally focus on the technical aspects like rules and mechanics rather than any psychological and/or social-interactive concepts (Warner et al., 2013). While rules and mechanics are central to officiating, they are no higher correlated with continuing education ratings than other outcomes. This outlines a discrepancy between current training curriculums and what relates most to officials' comfortability and satisfaction with training. Associations may choose to adjust their training outcomes to reflect the need to elevate outcomes outside of rules and mechanics.

Outcome	All Officials (<i>n</i> = 229)		Officials Year 1-3 (<i>n</i> = 29)	
	Correlation Coefficient (r)	<i>p</i>	Correlation Coefficient (r)	<i>p</i>
Positioning and Mechanics	0.44	0.000	0.69	0.000
Rules Knowledge	0.40	0.000	0.53	0.006
Confidence Development	0.46	0.000	0.43	0.027
Stress Management	0.39	0.000	0.34	0.089
Judgement and Decision-Making	0.42	0.000	0.49	0.011

Table 12: Training Outcomes and Continuing Education Correlation Comparison with Newer Officials

Although years of officiating experience did not significantly correlate with continuing education ratings, newer officials are a population of interest and therefore the same correlation between training outcomes and continuing education was run only including officials in their first through third years. This grouping left four statistically significant correlations, as stress management showed as statistically insignificant, while the other four methods showed moderate

to moderately high positive correlations with continuing education. The largest increases in correlation were observed with positioning and mechanics and rule knowledge, demonstrating a potential emphasis in early training on those outcomes, although other outcomes maintain relevance.

Hypothesis Two: Training Methods and Continuing Education

The second hypothesis, that frequency of use of each training method would correlate with continuing education ratings, was also supported by the findings. For each of the seven training methods used, the greater the frequency of their use, the greater officials' ratings of their training satisfaction were. While labeled as statistically significant, these relationships did not have a sizeable magnitude (see Table 10). In fact, only video analysis narrowly surpassed the threshold for "moderate" correlation, with a coefficient of $r = 0.40$ ($p = 0.000$). All others scored between 0.20 and 0.39, giving their relationships "low" correlation labels.

Video analysis is an emerging method of officials' training at several levels of different sports and has been particularly effective in its ability to give immediate feedback along with visual cues for officials to recognize key points surrounding plays and situations within the game (Schweizer et al., 2011). It is also highly versatile in application, as it can be used to demonstrate several outcomes of interest for training, such as judgement and decision-making (Mascharenhas et al., 2005) and positioning and mechanics (Pecev et al., 2015). It is not surprising that something that can generate value in several ways is positively related with officials' satisfaction with what their association provides for training.

There was not much difference between the reported frequency of each method's use. Both video analysis and web-based instruction had mean frequencies close to those of the more

traditional in-person presentations, demonstrations, and evaluations. This may have changed within the past few years, as recently as 2016 many officials demonstrated concern that the methods of instruction were somewhat limited to observational evaluations and association meetings where presentations could be given (Livingston & Forbes, 2016). There may be many reasons for the progression in variation of training methods, but it appears that associations have overall developed a balanced approach within their training and development programs to support officials' continuing education.

As with training outcomes, the same correlation between training methods and continuing education was run only including officials in their first through third years. This grouping left six statistically significant correlations, as mid-season workshops showed as statistically insignificant, while the other six methods showed moderate to moderately high positive correlations with continuing education. Frequency of using video analysis maintained the highest correlation with continuing education ratings, while all methods except in-season workshops increased their correlation coefficients by at least 0.12, meaning all likely have relevance and belong as part of early training strategies.

Method	All Officials ($n = 229$)		Officials Year 1-3 ($n = 29$)	
	Correlation Coefficient (r)	P	Correlation Coefficient (r)	P
In-Class Presentations	0.24	0.000	0.56	0.003
On-Court Demonstrations	0.30	0.000	0.42	0.034
Web-Based Instruction	0.25	0.000	0.49	0.011
Mid-Season Workshops	0.38	0.000	0.27	0.183
Formal Game Evaluations	0.30	0.000	0.45	0.022
Video Analysis	0.40	0.000	0.69	0.000
Role Play Scenarios	0.35	0.000	0.61	0.001

Table 13: Training Methods and Continuing Education Correlation Comparison with Newer Officials

Between training outcomes and training methods, most correlations with continuing education ratings saw an increase or stayed relatively stable when the sample was isolated to officials in their first three years of experience. The sample size was small, potentially limiting external validity of the measures, but statistical significance was reached with a majority of the outcomes and methods' correlations to continuing education ratings. This emphasis on training during the first few years of experience may also relate to retention factors, as evidenced in other fields. School teachers, a population that is also experiencing issues with retention, have shown value in extended induction (training and development) programs over the first years of experience, as their presence is able to predict lower turnover rates (Ronfeldt & McQueen, 2017). Kampkötter and Marggraf (2015) further explained that new employees at firms may see the highest levels of impact on retention from training programs because of a reciprocal investment, in other words their job commitment and effort increases while turnover decreases as a result of a firm investing in them through training. While the correlations in this study do not directly relate training outcomes or methods to retention, the fact that they significantly correlate with satisfaction of continuing education provides an initial piece of evidence that the links between training and retention exist among high school basketball officials.

Hypothesis Three: RRS Prediction of Retention

Hypothesis three stated that the seven-factor RRS would predict retention likelihood at a statistically significant level within the population of high school basketball officials. This was supported, although at a low level. The overall R^2 statistic calculated through multiple linear regression analysis was 0.213, meaning that 21.3% of the variance in retention likelihood would be attributed to the RRS factors. In the original RRS publication, which included officials from all sports, the scale accounted for 41.3% of the variance in turnover intention (Ridinger, et al.,

2017). While this may be an indication that more factors exist outside of those provided by the RRS, error is a more likely explanation. The RRS accommodates most factors explored by existing research, and the confirmatory factor analysis performed in the original study showed significant factor loadings (Ridinger et al., 2017). The sample of this survey had several potential sources of error, such as a heavily weighted participation rate toward males as well as older and more experienced officials.

Among the seven factors, three showed to be individually statistically significant within the model: lack of stress, sense of community, and administrator consideration. This slightly differs from the results of Ridinger, et al. (2017), which stated that lack of stress, sense of community, and intrinsic motives were individually significant predictors of turnover intention. Intrinsic motives scores in this study displayed a kurtosis of 5.09, meaning that it wasn't normally distributed. The frequency curve showed that most respondents answered with very high averages for the intrinsic motives questions, and a sharp peak just below 5 (with 5 being the highest possible score). It may be that the sampling allowed a responder bias in which only highly motivated people replied to the survey, potentially due to the use of the Facebook™ group. Logically it may consist of more active officials who joined because they want to be better officials by learning and conversing with other officials. The sample also included a high rate of veteran officials compared to newer officials, as over 70 percent of respondents were 10 or more years into their career, so they are also likely highly motivated. There are no available statistics to determine how far off these groups' representation are from the true population, however it appears to be a high potential that they are over-represented. The kurtosis means that analysis of intrinsic motives factor may be inaccurate to the population, which would be normally distributed. Despite that, previous research, including the original RRS publication

(Ridinger et al., 2017), supports intrinsic motives as a key factor, especially among newer officials but continuing as a constant throughout the officiating experience (Livingston and Forbes, 2016, Warner et al., 2013). Therefore, while it can't be completely dismissed, the non-significant findings for intrinsic motives are likely not representative of the population.

The other difference was the significance of administrator consideration. It was not a statistically significant factor in the regression model from Ridinger et al. (2017), but the data from this study shows it is ($\beta = 0.16$, $p = 0.024$). This means that for the sample, whether officials felt supported by their administrators via assignments and other procedures affected retention at a low yet statistically significant rate, the more support, the better the retention likelihood of an official. Existing research supports this notion within officiating and across other fields of work, as well. Among school teachers, administrative support is a predictor of intention to stay, and mediates relationships between retention and other factors such as pay satisfaction and job satisfaction (Tickle et al., 2011). Whether or not officials feel that they are treated fairly by the association may have a similar effect on their retention. Part of that is whether or not officials feel their performance matches the game assignments they receive, rather than politics determining their assignments. High performers among the leisure and hospitality industry show similar sentiments, where they say advancement opportunities are a significant reason for retention (Hausknecht et al., 2009). Officials association administrators and assigners therefore may play a significant role in determining the success of retention efforts by ensuring their support in a fair manner, especially toward their most talented officials.

The RRS factor of interest to this study, continuing education, had a prediction relationship with retention likelihood that was slightly negative ($\beta = -0.11$), meaning that the more positive scores were for officials' evaluation of their continuing education, the less likely

they are to return to officiating when controlling for other factors. This result, however, was marked as well outside the threshold of statistical significance ($p = .128$) meaning that the data available through this study does not give great confidence toward continuing education's predictive influence on retention likelihood, positive or negative. This is not to say that continuing education is not relevant in aiding retention, only that it does not directly predict retention among high school basketball officials. Several studies in employment sectors outside of officiating have linked training with constructs of job satisfaction (Fletcher et al., 2018), work engagement (Memon et al., 2016), and job commitment (Jaworski et al., 2018), each of which are linked to measures of retention. Ryan et al. (2014) directly related officials' time in training positively to job satisfaction and negatively with turnover intention, and other studies have described officials' frustrations with training as factors toward turnover intention (Livingston & Forbes, 2016; Warner et al., 2013). The preponderance of research evidence linking continuing education and retention-related constructs suggests that training and development have roles in impacting retention at some level, even if it is not an independent predictor of retention.

It should also be noted that the age of officials had a statistically significant score as a correlation with retention likelihood, ($r = -.18$, $p = .008$). No other demographic had a statistically significant relationship or difference between groups with retention likelihood. Tables demonstrating those tests are in Appendix D. The correlation coefficient, at less than $r = -0.2$, is low enough to say there may be no meaningful relationship between the variables. This relationship makes sense, however, that the older an official gets, the more likely they are to discontinue their avocation, in other words "retire," similar to a profession. This makes more sense when also considering the physical requirement of movement within basketball officiating. When added to the regression model along with the RRS, the age variable strengthens the model

overall, as $R^2 = 0.21$ without age included as a predictor, while $R^2 = 0.24$ ($p = 0.000$) with age of the official included as a predictor. While this still only means that 24 percent of the variance in retention likelihood is explained, it is worth noting that in that model, age was a statistically significant predictor, ($\beta = -0.17$, $p = 0.005$). Age is not likely something that would significantly affect other factors, as it does not correlate with them; it is an independent factor. While other demographic factors tested in this study were not able to help explain more of the variance in retention likelihood, a new search for other factors should be conducted to help identify predictors.

Theoretical Contributions

This study provides contributions to the theoretical study of high school basketball officials' training, development, and retention. The first of which is that it provides a set of broadly defined categories for both training and development outcomes and methods. Each of these correlated positively with continuing education, a sub-factor within the referee retention scale (Ridinger et al., 2017). Because of this, further research can be conducted exploring finer details of each outcome and method. As their frequency of use positively correlate with officials' continuing education ratings, they demonstrate validity within the construct of continuing education, a factor that has been linked to factors such as job satisfaction and turnover intention within officiating (Ryan et al., 2014).

The study also furthered the establishment of the RRS as a tool for predicting retention likelihood among high school basketball officials. Because the original study used officials across all sports, Ridinger et al. (2017) suggested that the scale be tested among smaller populations within officiating in order to validate its use. While intrinsic motives were not supported as they were in the primary study (Ridinger et al., 2017), administrator consideration

was added to the factors that can be considered predictors of retention likelihood for this population. In addition, age was identified as a predictive variable for retention likelihood when combined with the RRS.

Practical Implications

While continuing education is not among the factors which directly predict retention, it may be one of the most practically and immediately adjustable by associations. Lack of stress and remuneration rely on entities outside of the officials' associations such as schools, coaches, players, and spectators. Intrinsic motivators are determined by the official and minimal practical steps have been proposed, such as advertising (Livingston & Forbes, 2016), to enhance them through associations. The other factors with a large degree of association control are mentoring, sense of community, and administrator consideration, which may require long-term change in the culture of the organization or a change in organizational leadership in order to improve, particularly for improving administrator consideration. However, training and development are programs that most associations already have but can add to or adjust the format and content rather quickly. Some technologies or methods of training may produce financial and time-related barriers, but generally each method and outcome is adjustable to the resources available to the association. For example, ZOOM™, a video analysis sharing system designed specifically for officials and partner with NASO, offers packages for associations that range from \$3 per official per year to \$30 per official per year (ZOOM, 2019). In addition, training and development can impact other factors, for example many mentors for young officials come from their initial training (Livingston & Forbes, 2016). In addition, if association administrators lead training and development or make large investments in enhancing it, they may impact PIED as

discussed in Lee & Bruvold (2013) and improve organizational commitment from officials, along with officials' perceptions of administrator consideration.

In order to help officials' associations plan their training and development programs, the data provided in this study examines the training outcomes and methods with strongest relationships to officials' rating of continuing education. While causality cannot be determined in correlational studies, the information provided about these relationships help associations better understand what the most relevant training methods and outcomes are, and ideally which ones they need to improve within their organization. Because frequency of use of all methods and all outcomes included in this study significantly correlated with continuing education ratings, associations can evaluate whether or not they include them in their training and development programs, and if they could be doing more to utilize each.

Finally, the RRS is provided as a tool that can be used by associations to evaluate how well they are performing within each factor that could impact retention. Knowing that lack of stress, sense of community, and administrator consideration directly predict retention likelihood, associations will be able to value those factors most, while still considering their performance in the factors intrinsic motivation, continuing education, mentorship, and remuneration. From that information, associations will make decisions on how to improve each factor and aim for better retention of their officials.

Limitations and Future Research Considerations

Several limitations occurred throughout the study. The first is the method of participant selection. The sample gathered was a non-random sample and therefore results may not be truly indicative of the entire population of high school basketball officials. Primarily this limitation

manifested in the high kurtosis of officials' intrinsic motives ratings, as use of the Facebook™ group may have disproportionately selected officials with high intrinsic motivation to officiate. In addition, the overall sample was large enough, however certain subpopulations made it difficult to determine whether or not any significance could be held by data analysis. For example, female officials accounted for 5.2% of respondents, meaning there were only 17 female participants. No significant relationships were marked in comparisons between gender and continuing education or retention likelihood, however the sample size may have affected the lack of statistical significance. There is evidence that females have a more difficult experience, particularly with receiving abuse and in administrator consideration (Livingston & Forbes, 2016). The same goes for low-experience officials; the NFHS reports a high drop-off rate in retention from years 1-3 (Scandale, 2017), however only 29 participants had 3 or fewer years of experience officiating basketball, so the power and external validity of statistical analyses are subject to a high level of scrutiny, despite some promising and statistically significant results. Future research should be conducted with these populations in mind during recruitment, if possible, in order to further examine the potentially significant differences they display related to retention factors. It is noted, however, that researchers should evaluate the practicality of dividing subgroups and whether, for example, separating training into female and male groups would be feasible.

Limitations of this study also included the measurement of training methods and outcomes. First, it included only a summary of available research and the lists of training outcomes and methods were developed from current research. While generally, it is safe to say that the most prevalent outcomes and methods for officials' training were included, many associations at the local or state level may develop unique programs of their own. In addition,

the lists of outcomes and methods were vague, as this preliminary research sought only to relate their frequency of use to continuing education ratings as a basic measure of effectiveness, as how Ryan et al. (2014) established that more time spent in formalized training was positively associated with job satisfaction and negatively associated with turnover intention. However, more detailed analyses of how different associations produce and distribute training materials could be useful to add on to this research. For example, a comparison to determine which methods are best used to deliver certain outcomes, or what format of video analysis is most effective in improving officials' ratings of continuing education could be the next step in advising associations how to create and deliver training content. Lastly, although this study was able to establish relationships between particular training outcomes and methods and continuing education ratings, it did not establish causal relationships. A more detailed evaluation of each outcome and method with multiple measures could be used in a regression analysis to show a more practically viable conclusion.

This study focused on continuing education because of the practicality in implementing solutions to improve officials' ratings of that factor. In the future, research should be done to evaluate practical solutions for the most relevant factors, specifically lack of stress, sense of community, and administrator consideration. Research currently lacks references to practical solutions for improving officials' ratings of those factors. Identifying potential solutions and then determining their effectiveness will be crucial to resolving the issue of officials' retention.

CHAPTER VI

CONCLUSION

Sport officials are a crucial element in the ability for athletes to experience sports in a safe and fair manner. In recent years, a crisis of officials' retention has risen to a point where solutions are necessary to the continuation of high school sports. This study examined the training and development of high school basketball officials, both the outcomes intended for officials to learn and the methods used to teach them, in order to see which are most related to positive ratings of their continuing education. Continuing education is one of several factors associated with retention likelihood and related constructs in officiating and other industries. This study also sought to determine continuing education's relevance among other factors related to retention through an examination of the Referee Retention Scale (RRS) (Ridinger et al., 2017).

A cross-sectional survey design was implemented to gather data to analyze these objectives. Analysis revealed statistically significant positive relationships between frequency of all proposed training outcomes and officials' ratings of their continuing education, as well as statistically significant positive relationships between frequency of all proposed training methods and continuing education ratings. While significant, these relationships were not extremely strong, ranging from moderate to low in magnitude. Additionally, evaluation of the RRS shows that for high school basketball officials, the most significant factors that predict retention are lack of stress, sense of community, and administrator consideration. Age of the official also influences retention likelihood, as older officials tend to retire.

While continuing education was not a significant predictor of retention likelihood, its support and connection to related constructs validate use of these results by officials' associations in making attempts to do what they can against the retention crisis. Use of video analysis in training, as well as broadening training topics beyond rules and mechanics toward confidence development may generate positive growth in officials, as well as benefit satisfaction with the association's program. However, taking these steps alone will not likely improve retention. Future research is needed to give associations knowledge and deeper understanding of how to implement these methods and outcomes into their training and development programs. In addition, practical solutions which address the most relevant factors, lack of stress, sense of community, and administrator consideration, need to be identified, developed, and evaluated. The RRS will be able to help associations identify their strengths and weaknesses in ensuring retention of officials and have agency to change many of the factors. Research can provide them a plan toward implementing the most practical and effective initiatives to improve retention likelihood. The first step toward increased retention can be taken with training and development, as officials look to keep the ball in play.

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LIST OF APPENDECIES

APPENDIX A: RECRUITMENT EMAIL

Association administrator(s),

My name is Nathan Ferdinand and I am a graduate student in the Department of Health, Exercise Science, and Recreation Management at University of Mississippi. I would like to invite the officials of your association to participate in a brief survey that seeks to identify specific training and development methods and outcomes and connect them to ratings of continuing education, which is linked to retention.

If you could forward this email to your officials, that would be greatly appreciated. It is anticipated that the survey will take about 10-15 minutes to complete. Their answers will be kept confidential; no identifying characteristics (name, contact information, etc.) will be recorded by the survey.

To access the survey, please click the link below:

[Qualtrics Link]

Your officials' participation in this study will be greatly appreciated and will be beneficial in identifying the most effective training and development methods that associate with higher job satisfaction levels among high school basketball officials. Again, if you could forward this email to them, that would be very much appreciated.

Thank you for your time, effort, and consideration.

Sincerely,

Nathan Ferdinand

Graduate Student, Sport and Recreation Administration
Department of Health, Exercise Science, and Recreation Management
The University of Mississippi
220 Turner Center
University, MS 38677
614-315-7997 | nferdina@go.olemiss.edu

APPENDIX B: ELECTRONIC INFORMED CONSENT FORM

Please read this consent document carefully before you decide to participate in this study.

- By checking this box I certify that I am 18 years of age or older.

Title: Basketball Officials' Training and Development: Links to Retention

Purpose of the research study:

This study is designed to examine factors surrounding retention of high school basketball officials, including methods of training and development. Results of this survey will be used to determine the impact training and development have on continuing education, a predictor of retention.

What you will be asked to do in the study:

You will be asked to fill out a questionnaire that will take approximately 10-15 minutes to complete.

Risks and Benefits:

There are no known risks associated with this study. We do not anticipate that you will benefit directly by participating in this research. There is no compensation to you for participating in the study.

Confidentiality & Voluntary participation:

This survey is confidential; no identifying information (name, contact information, etc.) will be recorded. Your participation in this study is completely voluntary. There is no penalty for not participating. You have the right to withdraw from the study at any time without consequence.

Whom to contact if you have questions about the study:

Nathan Ferdinand

Graduate Student, Sport and Recreation Administration
Department of Health, Exercise Science, and Recreation Management
The University of Mississippi
220 Turner Center
University, MS 38677
614-315-7997 | nferdina@go.olemiss.edu

IRB Approval: This study has been reviewed by The University of Mississippi's Institutional Review Board (IRB). If you have any questions, concerns, or reports regarding your rights as a participant of research, please contact the IRB at (662) 915-7482 or irb@olemiss.edu.

Agreement: By clicking below, I acknowledge that I have read the procedure described above and I voluntarily agree to participate in the procedure.

- I agree

APPENDIX C: DEMOGRAPHICS' RELATION TO CONTINUING EDUCATION

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.30	4	1.07	2.27	.063
Within Groups	106.19	224	.47		
Total	110.48	228			

Dependent Variable: Continuing Education Rating

Table 14: Difference Between Ethnicities' Continuing Education Average Rating (ANOVA)

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances assumed	0.37	225	0.709	0.09	0.23	-0.37	0.54
Equal variances not assumed	0.38	12.30	0.712	0.09	0.23	-0.41	0.58

Dependent Variable: Continuing Education Rating

Table 15: Difference Between Genders' Continuing Education Average Rating (Independent Samples T-Test)

Demographic	Correlation Coefficient	<i>p</i>
Age	0.07	0.265
Years of Experience	0.11	0.084
Number of Games	0.02	0.805

Dependent Variable: Continuing Education Rating

Table 16: Correlations Between Age, Years of Experience, Games, and Continuing Education Ratings

APPENDIX D: DEMOGRAPHICS' RELATION TO RETENTION LIKELIHOOD

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.44	4	.36	.36	.835
Within Groups	223.11	224	1.00		
Total	224.56	228			

Dependent variable: Retention Likelihood

Table 17: Difference Between Ethnicities' Retention Likelihood Average (ANOVA)

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances assumed	-0.96	225.00	0.339	-0.28	0.29	-0.86	0.30
Equal variances not assumed	-1.17	13.01	0.262	-0.28	0.24	-0.80	0.24

Dependent Variable: Retention Likelihood

Table 18: Difference Between Genders' Retention Likelihood Average (Ind. Samples T-Test)

Demographic	Correlation Coefficient	<i>p</i>
Age	-0.18	0.008
Years of Experience	-0.06	0.346
Number of Games	0.08	0.204

Dependent Variable: Retention Likelihood

Table 19: Correlations Between Age, Years of Experience, Games, and Retention Likelihood

VITA

NATHAN FERDINAND

EDUCATION

B.A., History, The Ohio State University, 2017