

The Effect of Anxiety, Mental Toughness, Critical Thinking on Decision Making of Badminton Umpire

Fahmi Abdul Fatah^{1*}, Herman Subarjah², Helmy Firmansyah³

^{1,2,3}Universitas Pendidikan Indonesia

*Corresponding author, e-mail: fahmiabulfatah4@gmail.com

Received Agustus 02, 2022;

Revised Agustus 30, 2022;

Accepted September. 10, 2022;

Published Online 2022-09-25

Conflict of Interest Disclosures:

The authors declare that they have no significant competing financial, professional or personal interests that might have influenced the performance or presentation of the work described in this manuscript.



This is an open access article distributed under the Creative Commons 4.0 Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. ©2017 by author

Abstract: The purpose of this study is to determine the mediating role of mental toughness influencing the direct and indirect anxiety, critical thinking on decision making of badminton umpire. The research used a descriptive method with the analysis used path analysis. The sample consisted of 37 umpires from West Java Province who were selected using an incidental sampling method from the population of PBSI West Java umpire. The research hypothesis was tested using path analysis techniques. The research findings are: 1) Anxiety has a significant negative contribution to badminton umpire decision making. 2) Thinking critically does not contribute significantly to badminton umpire decision making. 3) Anxiety through mental toughness is significant for the decision making of the umpire. 4) Critical thinking through mental toughness contributes significantly to umpire in decision making. This conclusion is an indication that the issue of mental toughness related to decision making among umpires is a very complex problem.

Keywords: Anxiety, Mental Toughness, Critical Thinking, Decision Making

How to Cite: Fahmi Abdul Fatah, Herman Subarjah, Helmy Firmansyah. 2022. The Effect of Anxiety, Mental Toughness, Critical Thinking on Decision Making of Badminton Umpire. *Bisma*, 6 (2): pp. 242-248, DOI: [10.23887/bisma.v6i2.51576](https://doi.org/10.23887/bisma.v6i2.51576)

Introduction

The umpire is generally an intermediary or court figure in a badminton match. Badminton is a sport that has been practiced and enjoyed all over the world (Waegeneer & Willem, 2016). Umpires have an important mission to make an accurate assessment of competitive performance according to the sport's official regulations, nearly one-third of all sports recognized by the International Olympic Committee (IOC) are considered to have a performance ranking system in which ratings play a major role. The role of the referee in the sports domain can be summarized as judgment and decision making to ensure that competitive events are played by formal rules (Luis et al., 2018). Sport performance appraisal is usually related to one of three dimensions of assessment, in evaluative assessment, identification and in the assessment of cause (Å & Haar, 2006). The function of a umpire is leading a match from the start or from the start of preparations before the

match to the end of the match. From the perspective of applied sports psychology, cognitive behavioral models are often used as the dominant approach in this field (Winter & Collins, 2014). To support this, Fortin-guichard et al., (2017) critically experience sports psychology with behavioral cognitive approaches being the most widely used in practice, regardless of level of experience. Emotional support is often the main intervention given (Collins et al., 2019). Psychological problems such as stress adaptation, concentration problems due to external distractions, frustration after poor performance or personal and clinical problems as symptoms of anxiety (Williams & Andersen, 2012). The hope for success and achieving a goal is basically a precursor to anxiety (Palazzolo, 2020). These psychological resources enable a person to organize cognitive, emotional, and behavioral to achieve challenging and specific goals (Bédard Thom et al., 2020).

Learning to think critically and acquiring emotional intelligence can be described as a continuous cumulative process. Critical thinking provides a vital link between intelligence and emotions, and seeks to determine the quality of emotional intelligence (Kaya et al., 2018). These skills will be very helpful in finding the best alternative solutions to solve problems. Individuals express new ideas through this interpretation by activating their own knowledge with their cognitive processes (Polat & Aydın, 2020). When individuals develop critical thinking skills, they learn to go beyond the reception of surface information to make a wise review of arguments, ideas and evidence (Berdahl et al., 2020). Basically, the key to critical thinking is questions, accurate and relevant information, establishing assumptions, making reasonable and logical judgments, and making conclusions (Ryall, 2010). Behavior that is developed in an experiential and inherent manner influences the way the individual approach responds, and assesses pressures, challenges and pressures that are interpreted negatively and positively (Gucciardi & Gordon, 2011).

Similar to mental toughness, Yankov et al., (2019) revealed sports performance and was more consistent and better than your opponent in staying determined, focused, confident, and controlled under pressure. Mental toughness is usually defined as psychological resources that enable a person to maintain or improve performance in challenging situations (Bédard Thom et al., 2020). Mental toughness is a psychological factor that influences sports success (Sorensen et al., 2016). Encouraging adaptive responses in a positive and negative way towards stresses, situations and events (Cowden & Cowden, 2017). These symptoms will affect the individual's performance, especially the referee, who is required to stay focused on pressure and make decisions. Making the right decisions about how he will train, but he has confidence in his ability to know that he is making the right decisions (Jones, 2010). One of the conceptual disagreements that are examined in the decision making of referees is whether they are based on their decisions (Aragão et al., 2018). Just like expert athletes, the selective attention of elite referees, namely, paying attention to relevant information and ignoring irrelevant information, enables a more efficient decision-making process (Samuel et al., 2020). Expert referees were found to use less gaze fixes for longer periods of time, resulting in more accurate decision making than referees sub-elite (Spitz et al., 2016). Performance in collective sports depends on individual competence to make efficient decisions (Machado et al., 2020).

Method

Samples of badminton umpires (N = 37) are 76% male and the remaining 24% female participating in badminton umpiring which have a provincial certificate. Participants had a mean age of 20-50 years. 70% aged 20-30, 22% aged 30-40, and 8% aged 40-50. The analysis used is path analysis to determine cause and effect, with the aim of explaining the direct effect and indirect effect of a set of variables, as a causal variable on other variables which are effect variables.

This study used 4 instruments and those are a questionnaire regarding mental toughness, a questionnaire on critical thinking skills, anxiety and rules of the game BWF. The first instrument regarding mental toughness uses an instrument in the form of a closed questionnaire with a grid adapted from (Gucciardi et al., 2014) consisting of 13 items that are measured with 7 sub-scales: Meticulous Preparation, Motivation, Focus, Composure Handling the Pressure, Commitment, Discipline, Understanding the Game. The California Critical Disposition Inventory (CCTDI) was developed in 1990 with the Delphi Project carried out by the American Philosophy Association. This instrument is also used by Bulgurcuoglu, (2016) and Erkan, (2019) with a grid of 7 subcomponents: Systematicity, open-mindedness, Analytics, seeking truth, self-confidence, Inquisitiveness, Mature.

The decision making for this instrument is a research sheet adopted from the rules of the game BWF in Instructions to Technical Officials (ITTO) (BWF, 2020). What is assessed in the performance of the umpire

contains two points, namely, about controlling the field how the umpire starts to enter the field, leading the match until he leaves the field as for cooperation, assessing how the referee cooperates with the service judge team and line judges during the match (Subarkah et al., 2020). From the three instruments (mental toughness, critical thinking, decision making) are provided on a five-point Likert scale, varying from 1 (disagree) to 5 (strongly agree), the higher the score the better the mental toughness.

Measuring anxiety in this study used the instrument Sport Anxiety Scale (SAS) (Smith et al., 2007). Some of the initial SAS items were based on items found on existing measures of cognitive and somatic anxiety, such as the Competitive State Anxiety Inventory (CSAI-2) by Martens, Vealey, and Burton (1990). The Sport Anxiety Scale measures anxiety traits and is understood to be relatively stable with individual personality characteristics, and that refers to the subject's tendency to respond with anxiety to situations that are considered threatening. This instrument is also used by Vila et al., (2020) with a grid covering 3 items, somatic anxiety, worry, concentration disruption. Evaluating this anxiety is provided on a four-point Likert scale, varying from 1 (not at all) to 4 (very). The higher the score, the greater the intensity of the anxiety.

This research is quantitative where the resulting data will be in the form of numbers. From the data obtained, a path analysis was carried out using software SPSS 16 and AMOS 26. This study aims to analyze the contribution of cognitive function in it, namely, anxiety, critical thinking, to decision making mediated by mental toughness with the purpose that is based being able to find out the direct and indirect effects of the four sub cognitions.

Testing the normality of the residual Kalmogorov Semirnov (KS) shows that the resulting value in Asymp.sig is $0.275 > 0.05$. Multicollinearity shows that both mental toughness, critical thinking and anxiety have a tolerance value greater than > 0.10 .

Results and Discussion

The significant value of anxiety is ($0.00 < 0.05$), the large correlations of anxiety and critical thinking are 0.18 and from the number of standardized coefficients, the direct contribution of anxiety to mental toughness is 0.763 or 76.3%. The significant value of critical thinking is ($0.18 > 0.05$), critical thinking on mental toughness has a direct contribution of 0.142 or 14.2%.

Table 1. Model Summary Anxiety, critical thinking

Model	1
R	.801 ^a
R Square	.641
Adjusted R Square	.620
Std. Error of the Estimate	3.698

From the table above, it can be seen that the R value is Square 0.641 or 64.1%. This figure shows the large contribution of anxiety and critical thinking to mental toughness combined, while the rest is for the value of $e1 = \sqrt{(1-0.641)} = 0.359$, influenced by other factors.

The magnitude of the significant value of anxiety on decision making is ($0.726 > 0.05$), the value is constant (-0.013), from the number of standardized coefficients, the direct contribution to anxiety is -0.018 or -01.8%, negatively contributing to badminton umpire in decision making.

Critical thinking towards decision making is ($0.407 > 0.05$), constant value (0.010), a positive contribution to badminton umpire decision making is 0.027 or 02.7%. Mental toughness towards decision making is significant ($0.00 < 0.05$), there is a significant positive contribution with a constant value (1.043) with a positive effect of 0.990 or 99%.

Table 2. Model Summary Mental toughness, Anxiety, Critical thinking

Model	2
R	.984 ^a
R Square	.968
Adjusted R Square	.965
Std. Error of the Estimate	1.185

It can be seen that the R Square value is 0.968 or 97%. This figure shows the combined magnitude of the effect of anxiety, critical thinking and mental toughness on decision making, while the value of $e_2 = 1 - 0.968 = 0.032$ or 3% is influenced by factors other.

Table 3. Linear Regression Analysis

Model 1	Beta	t	Sig.
1 (Constant)		5.726	.000
Anxiety	.763	7.310	.000
critical thinking	.142	1.364	.181
Model 2			
2(Constant)		3.493	.001
Anxiety	-.018	-.353	.726
critical thinking	.027	.840	.407
Mental toughness	.990	18.985	.000

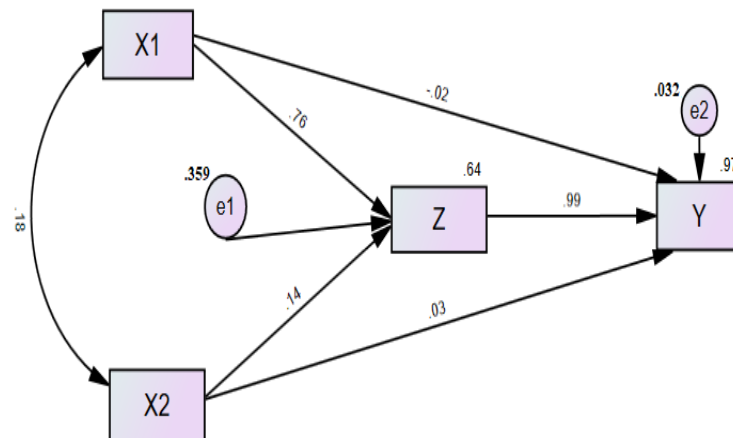


Figure 1. Analysis Anxiety, Critical thinking, Mental toughness, Decision-making

The investigation aims to analyze the direct and indirect effects of anxiety in decision making of badminton umpire. In essence, the findings of this study show the effect of mental toughness on passing decision making in badminton refinancing which strengthens the hypothesis of this study. Decision making is considered a complex phenomenon, involving perception, anticipation, attention, memory and motor action (Fortes et al., 2018), therefore decision making includes aspects of what to do and how to do it. Badminton is identified as a sport with rally points and is an individual sport with a high level of physical fitness.

Considering decision making, the findings of this study reveal that the regression model explains that the percentage of indirect influence through mental toughness is 96.8% and the remaining 3.2% is influenced by

other variables that are not examined, it can be concluded that, indirectly, it can be shown. that critical thinking mediated by mental toughness influences and contributes significantly to badminton umpire in decision making which can be supported, Sonuga-barke et al., (2017), which is when mental toughness has an influence on decision making and mentally disturbed, the decision making will have a negative bias value, with the influence factor to what extent there are differences between individuals in processing of decision which is contradicting and whether this correlates with the anxiety nature of avoidance behavior is the increased level of intolerance to uncertainty found in anxious individuals.

An ideal umpire, besides having to understand the rules of the game, must also have the good psychological aspects, the ability to think, and being like an anxious situation with a certain difficulty level to be able to make good decisions as well. This is considered to start from the pattern of coaching and training a umpire. In the process of molding a umpire, ideally it also involves a pattern of mental training in particular as well as the formation of critical thinking patterns, as well as controlling anxiety for making a decision.

Conclusion

This study reveals several conclusions. Together, anxiety, critical thinking, and mental toughness are predictors of badminton umpire in decision making in West Java. Among the three variables, the predictive power of mental toughness has the strongest explanation for decision making compared to anxiety and critical thinking.

However, the realization of the umpire's decision making is not sufficient only to be supported by mental toughness. Even though the contribution of the direct effect of anxiety is the smallest on decision making, after being analyzed independently, anxiety is still a psychological attribute that serves as a driving force to realize the umpire's decision making. The contribution is negative, where when the umpire experiences excessive anxiety it will affect inappropriate decision making.

Although superior critical thinking contributes directly to the umpire's decision making, the referees' critical thinking skills are still low so that there is little influence. This empirical evidence consistently supports the conclusion that critical thinking skills are positively correlated with umpire decision making.

Regarding decision making, among the three variables of anxiety, critical thinking and mental toughness of badminton umpires, it is revealed that the indirect contribution is greater than the direct effect where anxiety through mental toughness on decision making, the results show the ability to control anxiety which is involved. contributes to mental toughness, because this ability is relevant in mental toughness in controlling anxiety in the sense that the positive effect of anxiety will form mental toughness, with this ability forming better decision making.

In contrast to the indirect contribution of critical thinking skills through mental toughness to umpire decision making, where the contribution of critical thinking skills through mental toughness is very small, in the sense that the influence of critical thinking skills forms mental toughness with smaller contributions and positively contributes to badminton umpire decision making.

This conclusion is an indication that the issue of mental toughness related to decision making among umpires is a very complex problem. Excessive anxiety problems and critical thinking skills in umpiring, are influenced by many factors. In other words, only with mental toughness this is not enough to guarantee the maintenance of the quality of decision making where the indirect contribution of anxiety through mental toughness to decision making is only 76%, the rest is influenced by other factors. For critical thinking through mental toughness towards decision making, only the remaining 16% is influenced by other factors.

References

- Ã, H. P., & Haar, T. (2006). *Sports performance judgments from a social cognitive perspective*. 7, 555–575. <https://doi.org/10.1016/j.psychsport.2006.03.007>
- Aragão, J., Passos, A. M., Carvalho, H., Travis, M., Aragão, J., Passos, A. M., Carvalho, H., Travis, M., Passos, A. M., & Carvalho, H. (2018). To be or not to be an excellent football referee : different experts ' viewpoints. *Journal of Sports Sciences*, 00(00), 1–9. <https://doi.org/10.1080/02640414.2018.1522940>

-
- Bédard Thom, C., Guay, F., & Trottier, C. (2020). Mental toughness in sport: The Goal-Expectancy-Self-Control (GES) model. *Journal of Applied Sport Psychology*, 0(0), 000. <https://doi.org/10.1080/10413200.2020.1808736>
- Berdahl, L., Hoessler, C., Mulhall, S., & Matheson, K. (2020). Teaching Critical Thinking in Political Science: A Case Study. *Journal of Political Science Education*, 0(0), 1–16. <https://doi.org/10.1080/15512169.2020.1744158>
- Bulgurcuoglu, A. N. (2016). *Relationship between critical thinking levels and attitudes towards reading habits among pre-service physical education teachers*. 11(8), 708–712. <https://doi.org/10.5897/ERR2016.2713>
- BWF. (2020). *BWF STATUTES*. Kuala Lumpur: BADMINTON WORLD FEDERATION
- Collins, D., Winter, S., Collins, D., & Winter, S. (2019). Psychological Models in Sport Psychology : A Preliminary Investigation. *European Journal of Sport Science*, 0(0), 1–25. <https://doi.org/10.1080/17461391.2019.1694588>
- Cowden, R. G., & Cowden, R. G. (2017). *Mental Toughness and Success in Sport : A Review and Prospect*. 27(0), 1–14. <https://doi.org/10.2174/1875399X01710010001>
- Erkan, H. A. (2019). *Decision-making styles , anxiety levels , and critical thinking levels of nurses*. 309–321. <https://doi.org/10.1111/jjns.12240>
- Fortes, L. D. S., Christinne, R., Lima, R. De, Almeida, S. S., Maia, R., Fonseca, C., Paes, P. P., Elisa, M., & Ferreira, C. (2018). *Effect of Competitive Anxiety on Passing Decision-Making in Under-17 Soccer Players Efeito da Ansiedade Competitiva Sobre a Tomada de Decisão do Passe em Atletas de Futebol da Categoria Sub-17 Efecto de la Ansiedad Competitiva Sobre Toma de Decisiones de*. 28, 1–7.
- Fortin-guichard, D., Boudreault, V., Gagnon, S., & Trottier, C. (2017). *Experience , Effectiveness and Perceptions Towards Sports Psychology Consultants : A Critical Review of Peer-Reviewed Articles*. 3200(May), 1533–1571. <https://doi.org/10.1080/10413200.2017.1318416>
- Gucciardi, D. F., Hanton, S., Gordon, S., Mallett, C. J., & Temby, P. (2014). *The Concept of Mental Toughness : Tests of Dimensionality , Nomological Network , and Traitness*. <https://doi.org/10.1111/jopy.12079>
- Jones, G. (2010). *Journal of Applied Sport What Is This Thing Called Mental Toughness ? An Investigation of Elite Sport Performers*. August 2013, 37–41. <https://doi.org/10.1080/10413200290103509>
- Kaya, H., Şenyuva, E., & Bodur, G. (2018). PT. *Nurse Education Today*, #pagerange#. <https://doi.org/10.1016/j.nedt.2018.05.024>
- Luis, V., Fariñas, A. C., Javier, F., Márquez, D., & Martín, J. M. (2018). Author. *Psychology of Sport & Exercise*. <https://doi.org/10.1016/j.psychsport.2018.03.004>
- Machado, G., González-Villora, S., Sarmiento, H., & Teoldo, I. (2020). Development of Tactical Decision-making Skills in Youth Soccer Players: Macro- and Microstructure of Soccer Developmental Activities as a Discriminant of Different Skill Levels. *International Journal of Performance Analysis in Sport*, 00(00), 1–20. <https://doi.org/10.1080/24748668.2020.1829368>
- Palazzolo, J. (2020). Anxiety and performance. *Encephale*, 46(2), 158–161. <https://doi.org/10.1016/j.encep.2019.07.008>
- Polat, Ö., & Aydın, E. (2020). The effect of mind mapping on young children's critical thinking skills. *Thinking Skills and Creativity*, 38. <https://doi.org/10.1016/j.tsc.2020.100743>
- Ryall, E. (2010). *Critical Thinking for Sports Students*. Learning Matters.
- Samuel, R. D., Tenenbaum, G., & Galily, Y. (2020). An integrated conceptual framework of decision-making in soccer refereeing. *International Journal of Sport and Exercise Psychology*, 0(0), 1–23. <https://doi.org/10.1080/1612197X.2020.1766539>
- Smith, R. E., Smoll, F. L., Schutz, R. W., Smith, R. E., Smoll, F. L., & Measurement, R. W. S. (2007). *Measurement and correlates of sport-specific cognitive and somatic trait anxiety : The sport anxiety scale SPORT-SPECIFIC COGNITIVE AND SOMATIC TRAIT ANXIETY: THE SPORT ANXIETY SCALE*. 7779(May). <https://doi.org/10.1080/08917779008248733>
- Sonuga-barke, E. J. S., Cortese, S., & Fairchild, G. (2017). *Annual Research Review : Transdiagnostic neuroscience of child and adolescent mental disorders – differentiating decision making in attention-deficit / hyperactivity disorder , conduct disorder , depression , and anxiety*. 3(2016), 321–349. <https://doi.org/10.1111/jcpp.12496>
- Sorensen, S., Jarden, A., & Schofield, G. (2016). *Lay perceptions of mental toughness : Understanding conceptual similarities and differences between lay and sporting contexts*. 6, 71–95. <https://doi.org/10.5502/ijw.v6i3.3>
- Spitz, J., Put, K., Wagemans, J., Williams, A. M., & Helsen, W. F. (2016). Visual search behaviors of association football referees during assessment of foul play situations. *Cognitive Research: Principles and Implications*, 1–11. <https://doi.org/10.1186/s41235-016-0013-8>
-

-
- Subarkah, A., Marani, I. N., & Akbar, R. F. (2020). *The Analysis of Badminton Referee Performance*. 21(Icsshepe 2019), 136–139. <https://doi.org/10.2991/ahsr.k.200214.038>
- Vila, G. O., Rodr, R., Javier, F., Tom, M., & Robles, A. (2020). *Competitive Anxiety in Young Basketball Players from the Real Madrid Foundation*. 1–9.
- Waegeneer, E. De, & Willem, A. (2016). *Conceptualizations of Fair Play : A Factorial Survey Study of Moral Judgments by Badminton Players* *Conceptualizations of Fair Play : A Factorial Survey Study of Moral Judgments by Badminton Players*. 8422(February). <https://doi.org/10.1080/10508422.2015.1019071>
- Williams, D. E., & Andersen, M. B. (2012). Journal of Sport Psychology in Action Identity , Wearing Many Hats , and Boundary Blurring : The Mindful Psychologist on the Way to the Olympic and Paralympic Games Identity , Wearing Many Hats , and Boundary Blurring : The Mindful Psychologist on the Way. *Journal of Sport Psychology inAction*,

Article Information (Supplementary)

Conflict of Interest Disclosures:

The authors declare that they have no significant competing financial, professional or personal interests that might have influenced the performance or presentation of the work described in this manuscript.

Copyrights Holder: < Fatah > <2022>

First Publication Right: BISMA The Journal of Counseling

<http://dx.doi.org/10.23887/bisma.v6i2.51576>

Open Access Article | CC-BY Creative Commons Attribution 4.0 International License.

Word Count:

