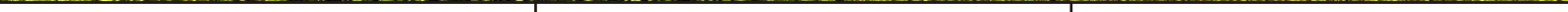# CSRDA Discussion Paper

Development of the eSportsmanship Scale and Analysis of its Relationship to Well-being, Physical Health Problems, Gaming Addiction Tendencies, Aggressive Feelings, Empathy, and Self-positivity

No.	Date	SDGs
46	**May. 2023**	3 GOOD HEALTH AND WELL-BEING 4 QUALITY EDUCATION 11 SUSTAINABLE CITIES AND COMMUNITIES

Name

Shiroh Ohno

Development of the eSportsmanship Scale and Analysis of its Relationship to Well-being, Physical Health Problems, Gaming Addiction Tendencies, Aggressive Feelings, Empathy, and Self-positivity

Shiroh Ohno

Institute of Social Science, University of Tokyo

Author Note

ORCID iD: 0000-0003-4039-5265

The author declares that they have no conflict of interest.

Correspondence concerning this article should be addressed to Shiroh Ohno, Institute of Social Science, University of Tokyo, Room 522, Akamon General Research Building, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan

Email: siro.ono@gmail.com

Development of the eSportsmanship Scale and Analysis of its Relationship to Well-being, Physical Health Problems, Gaming Addiction Tendencies, Aggressive Feelings, Empathy, and Self-positivity

Abstract

A steep increase in young people's participation in eSports in Japan has demonstrated potential adverse health effects as well as impacts on their well-being. Therefore, protective guidelines are required to address this issue. Hence, a novel measurement tool was used in this study to understand the social and health effects of sports. Using an online survey ($n=$ 1,612), factor analysis yielded a two-factor structure for the 12-item eSportsmanship scale. Analysis of covariance was used to test whether the factors of cooperative and normative eSportsmanship and time spent playing eSports were associated with well-being, physical health problems, gaming addiction tendencies, empathy, and self-positivity. Cooperative eSportsmanship was associated with favorable psychological tendencies, such as well-being, empathy, and positive affect. The findings also suggest that increasing normative eSportsmanship can inhibit physical health problems and the degree of gaming addiction. The analysis of covariance demonstrated that more time spent on eSports was significantly negatively associated with physical health problems, gaming addiction tendencies, and aggressive feelings. Future research should aim to clarify the causal relationship between these psychological tendencies and eSportsmanship and conduct a detailed analysis of whether the effects and impacts of eSportsmanship differ according to game genre.

Keywords: eSports, video games, Sportsmanship, WHO-5, BSI-18, GAS7-J

With the growing size of the market and number of competitors, eSports is increasingly being incorporated into the curricula and extracurricular activities of several high schools and universities. In a social environment that promotes the participation of young people in eSports, it has been reported that it may have harmful effects on health (van Hilvoorde, 2016; van Hilvoorde & Pot, 2016).

eSports often demand long hours of gaming, which causes psychological stress and adversely affects sitting posture and vision. Long hours spent learning and competing in eSports can result in unhealthy lifestyles (Chan et al., 2022; Yin et al., 2020). Another major concern is the possibility that eSports may increase gaming addiction (Griffiths, 2017). Furthermore, gaming disorder, which is the excessive use of video games, was formally added to the list of International Classification of Diseases (ICD-11), developed by the World Health Organization (WHO) in May 2019. The American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) also includes proposed diagnostic criteria for Internet Gaming Disorder (American Psychiatric Association, 2013).

On the one hand, some previous quantitative studies have shown that high levels of eSports use may be associated with mental illness and aggressive behavior (Smith et al., 2022; Wattanapisit et al., 2020; Yin et al., 2020), physical problems, such as vision impairment, musculoskeletal pain, and metabolic disorders (Yin et al., 2020), and addiction and substance dependence (Yin et al., 2020). On the other hand, other studies have reported that participation in eSports does not negatively affect the health of adolescents (Trotter, 2022), and games with exercises contribute to better health (Yin et al., 2020) and enhance cognitive performance (Kelly & Leung, 2021). In addition, Emara et al. (2020) stated that the positive impact of playing sports on teams must be fully explored.

The report on a workshop attended by 64 participants representing academic and

industry stakeholders, cited health as an important topic for the sustainable development of sports (Nyström et al., 2022). ESports' players and spectators require guidelines for supportive and healthy programs (Yin et al., 2020). There is a lack of empirical research and detailed examinations of predictors, such as motivations for eSports use and content (Kelly and Leung, 2021). Gaming activities have been characterized under the umbrella of "eSports"—a term that promotes these activities while concealing their negative impacts (Chung et al., 2019). Given the range of its associated adverse effects, unregulated eSports are a major public health concern and can potentially be harmful to society. To minimize the harmful effects, specific guidelines are required. Moreover, new predictors linked to healthy and prosocial use of eSports need to be identified.

This study defines "eSportsmanship" as a moral guideline that players must follow, which is essential to the sports genre. As it has not been adequately discussed in previous studies, its potential to promote healthier use of eSports is examined here.

eSports in Japan

As of January 2023, there were 302 professional license holders from the Japan Sports Union (JeSU) and 10 professional teams in Japan (JeSU official site, 2023). The domestic eSports market was worth 370 million yen in 2017 (Famitsu, 2021), and saw rapid growth, thereafter reaching 4.83 billion yen in 2018 and 6.68 billion yen in 2020. It is expected to reach approximately 12.7 billion yen in 2022. Additionally, the number of eSports fans reached 4.83 million in 2019 and is expected to double to 9.667 million in 2022 and reach 12.148 million by 2023 (KADOKAWA Game Linkage, 2020).

Digital gaming competitions in Japan did not develop in online games, but through arcade games played in game centers, especially combat games (such as Street Fighters). Umehara, Japan's first professional gamer and world-class player, is active in the combat game genre. Smartphone games have become popular in Japan. For example, Shadowverse, a

digital collectible card game by the Japanese company Cygames, is popular worldwide, and the Japanese player Feg won the 2018 World Tournament (Shadowverse World Grand Prix 2018), winning a prize of 1 million dollars (Cygames, Inc, 2018). In recent years, the popularity of diverse genres, such as first-person shooters and the multiplayer online battle arena has also increased. According to Nielsen Esports Fan Insights (The Esports Observer, 2020), the top five most popular eSports games in Japan as of 2020 (in ascending order) are "Super Smash Bros.," "Street Fighter," "Splatoon 2," "Call of Duty," and "Mario Kart."

The general gaming information media "Famitsu" stated that among the factors that contributed to the expansion of the market size in 2020 was a stronger eSports title line-up that included the launch of "Valorant," the expansion of the market through online tournaments for popular titles such as "Shadowverse," "PlayerUnknown's Battlegrounds," "Tom Clancy's Rainbow Six Siege," and "League of Legends," as well as the launch of the eSports league brand "X-Moment" (Famitsu, 2021).

As the number of competitors and the size of the market increased, an increasing number of high schools and universities in Japan and overseas started incorporating eSports into their curricula and club activities. This led to its acceptance as a healthy hobby and a sophisticated form of entertainment. The fourth edition of the "National High School eSports Championship" was held in December 2021, organized by the Japan High School eSports Federation and the Mainichi Shimbun, and supported by the Ministry of Education, Culture, Sports, Science and Technology and the Parliamentary Group for Online Gaming and eSports. It featured titles such as "Rocket League," "League of Legends" and "Fortnite," and 346 teams from 194 schools participated (Japan High School Esports Federation, 2021). Globally trending games have also been largely played by Japanese players.

Awareness, Participation, Spectatorship, and Self-Perceived Health of eSports in Japan

A national online survey conducted in Japan in March 2020 ($n = 3,651$) (Ohno, 2021)

reported that awareness, participation, spectatorship, and self-perceived health in eSports were as follows:

The percentage of respondents who answered, "I know what eSports are" was 47.8% overall, 58.7% of these were teenagers (aged 15–19), and 44.1% to 48.8% were in their 20s and above. Only 11.8% of respondents answered, "I do not know the term 'eSports'." From the responses, 4.9% of all respondents reported participating in eSports, including those who played alone. Of these, 10.9% were teenagers, 10.3% were in their 20s, 5.9% in their 30s, 4.5% in their 40s, 2.2% in their 50s, and 0.4% in their 60s. The number of spectators who did not participate were 5.8% of the total, of which 13.8% were teenagers, 8.3% were in their 20s, 7.1% in their 30s, 6.2% in their 40s, 3.5% in their 50s, and 1.7% in their 60s. The total number of participants and spectators of eSports was 10.7% ($n = 3,651$), and the rates were particularly high among younger age groups, at 24.7% for teenagers and 18.6% for those in their 20s.

The significant positive effects of participating in eSports on self-perceived health were "I enjoy more every day" (54.4%), "my reflexes have improved" (44.4%), "I have more close friends" (41.7%), "I have learned to accept others" (37.8%), and "I have learned to accept myself" (37.2%). The negative effects of participating in eSports on self-perceived health were "my eyesight has deteriorated" (43.3%), "I have become physically unhealthy" (32.8%), "I can no longer sleep well" (28.3%) and "my motor skills have decreased" (27.2%). Some of these changes may be attributed to prolonged screen times. The results suggest that despite the many benefits of participating in eSports, some participants experienced a strong negative impact on their physical health. Thus, guidelines on how to effectively manage health must accompany eSport marketing.

eSportsmanship: Development of a Measurement Scale

In a review of articles on sports and health, Emara et al. (2020) reported that athletes

are exposed to several health risks, including gamer's neck, hand, and wrist pain, metabolic disorders, and deep vein thrombosis, as they spend long hours in the same position in a gaming chair. They identified "health promotion and performance optimization recommendations" as guidelines for injury prevention and risk management in eSports for players and suggested that organizations and educational institutions involved in eSports adopt and disseminate this information as part of their coaching.

In addition, as an educational guideline, it is also important to cultivate "eSportsmanship" for eSports players as a mindset and habit that corresponds to general sportsmanship. There are no existing scales to measure eSportsmanship, but a novel measurement tool is needed to understand the social aspects of eSports. Therefore, to measure eSportsmanship, the author developed the following 12-item "eSportsmanship Scale" based on the Sportspersonship Scale developed by Perry et al. (2015). Respondents were asked to rate their agreement on a scale of 1 (strongly disagree) to 4 (strongly agree) for the following 12 items, as presented in Figure 1.

Although items 11 and 12 are considerations for deteriorating living conditions, they are original items. Physical conditions during eSports practice are not always favorable, and concern for the well-being of teammates and oneself is an important factor in eSportsmanship. The June 2021 survey asked participants to respond to the eSportsmanship Scale.

Methods

Sample

An online survey was conducted between June 24 and 28, 2021. Respondents between the ages of 15 and 39 were recruited across Japan via their smartphones using registered monitors of the research firm Testee Inc. First, a preliminary survey ($n = 20,307$) was conducted targeting those who had recently used eSports more than once a month. The

following variables controlled for differences in the sample age in 5-year increments to be within 10% of the total sample size: gender differences in self-identification to be within 2% of the total sample size and non-gender self-identification to be within 15% of the total sample size. Data inappropriate for analysis and those of professional license holders (who played eSports as a profession) were excluded, resulting in a final sample size of 1,612.

Instruments

Psychological well-being, physical health problems, gaming addiction tendencies, aggressive feelings, empathy, and self-positivity were measured and scored as subjective assessment scores.

Time Spent Engaging in ESport

The respondents were asked to indicate the average amount of time they spent using eSports on weekdays and holidays. The amount of time spent on weekdays was multiplied by five and the amount of time spent on holidays was multiplied by two. These were then added and converted to hours per week.

Psychological Well-being

Psychological well-being[1] over the previous two weeks was measured using five items from the Japanese version of the WHO-5 Well-Being Index (α= 0.89) (Awata, 2002). Sample items included, "I have felt cheerful and in good spirits."

Physical Health Problems

Using 9-items taken from the Brief Symptom Inventory 18 (BSI-18; Derogatis, 2001), physical health problems[2] in the previous seven days were assessed (α= 0.93). The items used were fainting and dizziness, heart and chest pain, nausea and upset stomach,

---

[1] Well-being variables: The total score of the 5 items assessed by the 4-item method divided by the number of items was used in the analysis. The mean and standard deviation were 2.54±0.73 and Cronbach's α was 0.89.
[2] Physical health problems variables: The total score of the 5 items assessed by the 4-item method divided by the number of items was used in the analysis. The mean and standard deviation were 2.00±0.77 and Cronbach's α was 0.93.

breathlessness, persistent cold and heat, numbness and tingling in parts of the body, eye

fatigue, neck and back pain, and hand and wrist pain.

Gaming Addiction Tendencies

Gaming addiction tendencies[3] were measured using an adapted version of the 5-item

Japanese version of the Game Addiction Scale (GAS7-J; Koga and Kawashima, 2018). Ten

items of the scale, such as "Have you been thinking about games recently?" and "Do you

have days when you only think about games?" were used (α= 0.93).

Measures of Psychological Disposition

Aggression. Aggressive feelings[4] were measured using four items from the Japanese

version of the Buss-Perry Aggression Questionnaire (Ando et al., 1999). Selected items

included, "If you were hit, would you hit back?" (α= 0.80).

Empathy. Empathy[5] was measured using three items from the Cognitive and

Emotional Empathy Scale for Children (CEES-C: Murakami et al., 2014). An example of a

selected item is, "Do you feel happy when someone around you is happy?" (α= 0.79).

Self-Positivity. Self-positivity[6] was measured using three items from the Self-

Positivity Scale developed by Tanaka (2005), based on Rosenberg's Self-Esteem Scale

(Rosenberg, 1965). It includes items such as, "Do you feel that you are important?" (α= 0.80).

Design

Factor analysis was conducted using IBM SPSS Statistics Version 28. Covariance

structure analysis was conducted using the Mplus Version 8.8. The significance level was set

---

[3] Gaming addiction tendencies variables: The total score of the 5 items assessed by the 4-item method divided by the number of items was used in the analysis. The mean and standard deviation were 3.69±1.19 and Cronbach's α was 0.93.

[4] Aggressive feelings variables: The total score of the 4 items assessed by the 4-item method divided by the number of items was used in the analysis. The mean and standard deviation were 2.39±0.73 and Cronbach's α was 0.80.

[5] Empathy variables: The total score of the 3 items assessed by the 4-item method divided by the number of items was used in the analysis. The mean and standard deviation were 2.65±.0.70 and Cronbach's α was 0.79.

[6] Self-positivity variables: The total score of the 3 items assessed by the 4-item method divided by the number of items was used in the analysis. The mean and standard deviation were 2.59±0.75 and Cronbach's α was 0.80.

at 5% for all analyses.

Results

The distribution of study participants by gender included men (38.3%), women (39.5%) and those who were undecided (15.1%), including (X-gender, nonbinary, etc.). 7.1% of participants were unable or unwilling to answer. Age distributions included 15–19-year-olds (23.4%), 20–24-year-olds (24.8%), 25–29-year-olds (18.2%), 30–34-year-olds (17.4%) and 35–39-year-olds (16.3%).

The results of the factor analysis using the maximum likelihood method and promax rotation confirmed a two-factor structure (Table 1). The internal consistency of the total score was $\alpha= 0.92$, with $\alpha= 0.86$ for the first factor (cooperative factor) and $\alpha= 0.89$ for the second factor (normative factor).

Subsequently, an analysis of the covariance structure of the time spent playing eSports and two factors of the eSportsmanship score was carried out using a model that assumes an effect on health and psychological trends (well-being, physical health problems, gaming addiction tendencies, aggressive feelings, empathy, and self-positivity). When the non-significant paths were removed, the value of the adjusted BIC improved from 19865.42 to 19853.04. The results are shown in Figure 2.

Higher cooperative factor scores were significantly positively associated with well-being (0.11), empathy (0.13), and self-positivity (0.13). There was also a significant negative association between physical health problems (0.11) and gaming addiction tendencies (0.12). Higher normative factor scores were significantly positively associated with well-being (0.20), physical health problems (-0.20), gaming addiction tendencies (-0.27), empathy (0.28), and self-positivity (0.14).

More time spent playing eSports had a significant negative association with physical health problems (0.12), gaming addiction tendencies (0.19), and aggressive feelings (0.08).

Discussion

Two factors of eSportsmanship were identified in this study: cooperative eSportsmanship and normative eSportsmanship. These were associated with well-being, physical health problems, gaming addiction tendencies, empathy, and self-positivity, and their coefficients were higher than those associated with time spent on e-Sports. While cooperative eSportsmanship is associated with favorable psychological tendencies such as well-being, empathy, and positive affect, there are also concerns about its negative effects on physical health and tendencies toward gaming addiction. In eSports, cooperation with peers sometimes leads to loss of control over oneself, implying negative social effects. Conversely, normative eSportsmanship is associated with higher levels of favorable psychological tendencies such as well-being, empathy, and self-positivity. However, it is also associated with detrimental effects such as physical health problems and higher tendencies toward gaming addiction.

Although the causal relationship is currently unknown, it is possible that increasing normative eSportsmanship could inhibit physical health problems and the degree of gaming addiction tendencies. Note that eSportsmanship itself was not associated with aggressive feelings. Instead, longer gaming times were related to aggressive feelings. In the future, causal estimation should be performed to clarify the causal relationship between these psychological tendencies and eSportsmanship, that is, whether increasing eSportsmanship leads to good psychological tendencies and health outcomes. It is also necessary to conduct a detailed analysis of whether the effects and impacts of eSportsmanship differ by game genre.

Conclusion

In this study, the eSportsmanship scale was developed. The findings also demonstrate that eSportsmanship is associated with greater well-being, empathy, and self-

positivity, and with reduced physical health problems and gaming addiction tendencies. The cultivation of eSportsmanship may reduce a variety of negative outcomes associated with a player's engagement with eSports, as well as promote the positive effects of obtaining psychological support from other players and the game itself. Particularly, it is advisable to encourage the observance of eSportsmanship in educational settings, public events, social media content and campaigns, and other settings that promote eSports to a young audience. This includes the well-being and prevention of physical health problems among the young, by spreading awareness of the "recommendations for health promotion and performance optimization." Raising awareness of and education on items related to normative eSportsmanship may be particularly effective in preventing physical health problems and gaming addiction. Further research is required to examine the causality and effectiveness of these measures. Kelly and Leung (2021) noted that there is limited research on various forms of game participation, including viewing streams and their impact on health, and noted that game influencers may represent a useful means of reducing negative health effects. eSportsmanship through influencers should also be studied to determine how and to what extent eSportsmanship is being cultivated and being adhered to by young gamers and influencers.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental*

   disorders, 5th edition: DSM-5. American Psychiatric Publishing.

   https://doi.org/10.1176/appi.books.9780890425596

Ando, A., Soga, S., Yamasaki, K., Shimai, S., Shimada, H., Utsuki, N., Oashi, O., & Sakai,

   A. (1999). Development of the Japanese version of the Buss-Perry Aggression

   Questionnaire (BAQ). *The Japanese Journal of Psychology, 70,* 384–392.

Awata, S. (2002). *WHO-5 seishin-teki kenkō jōtai-hyō* [WHO-5 Well-being Index],

   http://www.med.oita-u.ac.jp/oita-lcde/WHO-5%5B1%5D.pdf

Chan, G., Huo, Y., Kelly, S., Leung, J., Tisdale, C., & Gullo, M. (2022). The impact of

   eSports and online video gaming on lifestyle behaviours in youth: A systematic

   review. *Computers in Human Behavior, 126*, 106974.

   https://doi.org/10.1016/j.chb.2021.106974.

Chung, T., Sum, S., Chan, M., Lai, E., & Cheng, N. (2019). Will eSports result in a higher

   prevalence of problematic gaming? A review of the global situation. *Journal of

   Behavioral Addictions*, *8(3)*, 384–394., https://doi.org/10.1556/2006.8.2019.46.

Cygames, Inc. (2018, December 16). *News: We Have a Winner!*

   https://shadowversewgp.com/en/news_id738.html

Derogatis, L. R. (2001). *BSI 18, Brief Symptom Inventory 18: Administration, scoring and

   Procedure Manual*. NCS Pearson, Incorporated.

Emara, A.K., Ng, M.K., Cruickshank, J.A., Kampert, M.W., Piuzzi, N.S., Schaffer, J.L., &

   King, D. (2020). Gamer's health guide: Optimizing performance, recognizing

   hazards, and promoting wellness in Esports. *Current Sports Medicine Reports,

   19*(12), 537–545. https://doi.org/10.1249/jsr.0000000000000787

Famitsu. (2021, April 16). 2020-Nen Nihon eSports shijō kibo wa 66. 8 Oku-en [2020 Japan

eSports market size is 6.88 billion yen].

https://kadokawagamelinkage.jp/news/pdf/news210416.pdf.

Griffiths, M. (2017). The psychosocial impact of professional gambling, professional video gaming and eSports. *Casino & Gaming International*, *28*, 59–63.

Japan High School Esports Federation. (2021, December). *Zenkoku kōkō eSports senshuken kōshiki site* [All Japan High School Esports Championship Official Website]. https://www.ajhs-esports.jp/

JeSU Official site. (2023, January 26). *Players*. https://jesu.or.jp/contents/member_list/

KADOKAWA Game Linkage. (2020, February 13). *KADOKAWA Game Linkage, Nihonkokunai eSports shijō dōkō wo happyō* [Announced eSports market trends in Japan]. https://kadokawagamelinkage.jp/news/pdf/news200213.pdf

Kelly, S., & Leung, J. (2021). The new frontier of Esports and gaming: A scoping meta-review of health impacts and research agenda. *Frontiers in Sports and Active Living, 3*. https://doi.org/10.3389/fspor.2021.640362

Koga, Y., & Kawashima, D. (2018). Development and validation of Japanese Version of the game addiction scale for adolescents. *The Japanese Journal of Personality*, *27*(2), 175-177. https://doi.org/10.2132/personality.27.2.10.

Murakami, T., Nishimura, T., & Sakurai S. (2014). Relation between cognitive/emotional empathy and prosocial and aggressive behaviors in elementary and middle school students. *The Japanese Journal of Developmental Psychology*, *25*(4), 399–411. https://doi.org/10.11201/jjdp.25.399

Nyström, A. G., McCauley, B., Macey, J., Scholz, T. M., Besombes, N., Cestino, J., Hiltscher, J., Orme, S., Rumble, R., & Törhönen, M. (2022). Current issues of sustainability in esports. *International Journal of Esports, 1*(1). https://www.ijesports.org/article/94/html

Ohno, S. (2021) ESports to kenkō [eSports and Health], *Nihonjin no jōhō kōdō* 2020 [Information Behavior 2020 in Japan], 315-330, *Tōkyō daigaku shuppankai* [University of Tokyo Press].

Perry, J. L., Clough, P. J., Crust, L., Nabb, S. L., & Nicholls, A. R. (2015). Development and validation of the compliant and principled sportspersonship scale. *Research Quarterly for Exercise and Sport*, *86*(1), 71–80. https://doi.org/10.1080/02701367.2014.980938.

Rosenberg, M. (1965). *Society and the Adolescent Self-Image* (p. 326). Princeton University Press.

Smith, M., Sharpe, B., Arumuham, A., & Birch, P. (2022). Examining the predictors of mental ill health in eSport competitors. *Healthcare, 10*, 626. https://doi.org/10.3390/healthcare10040626.

Tanaka, M. (2005). A study of attempts to construct and examine a self-positivity scale. *Tokiwa Journal of Human Science, 13*, 15–27. http://self-esteem.life.coocan.jp/SAver.2.pdf

The Esports Observer. (2020, September 29). *Traditional Sports vs. Esports Rankings*. https://archive.esportsobserver.com/nielsen-sports-vs-esports-rankings/

Trotter, M. G. (2022). *Health and psychological factors associated with in-game rank, and positive youth development in esports* [Unpublished PhD thesis]. Queensland University of Technology.

van Hilvoorde, I. (2016). Sport and play in a digital world. *Sport, Ethics and Philosophy*, *10*(1), 1–4. https://doi.org/10.1080/17511321.2016.1171252

van Hilvoorde, I., & Pot, N. (2016). Embodiment and fundamental motor skills in eSports. *Sport, Ethics and Philosophy*, *10*(1), 14–27. https://doi.org/10.1080/17511321.2016.1159246

Wattanapisit, A., Wattanapisit, S., & Wongsiri, S. (2020). Public health perspectives on

      eSports. *Public Health Reports*, *135*(3), 295–298.

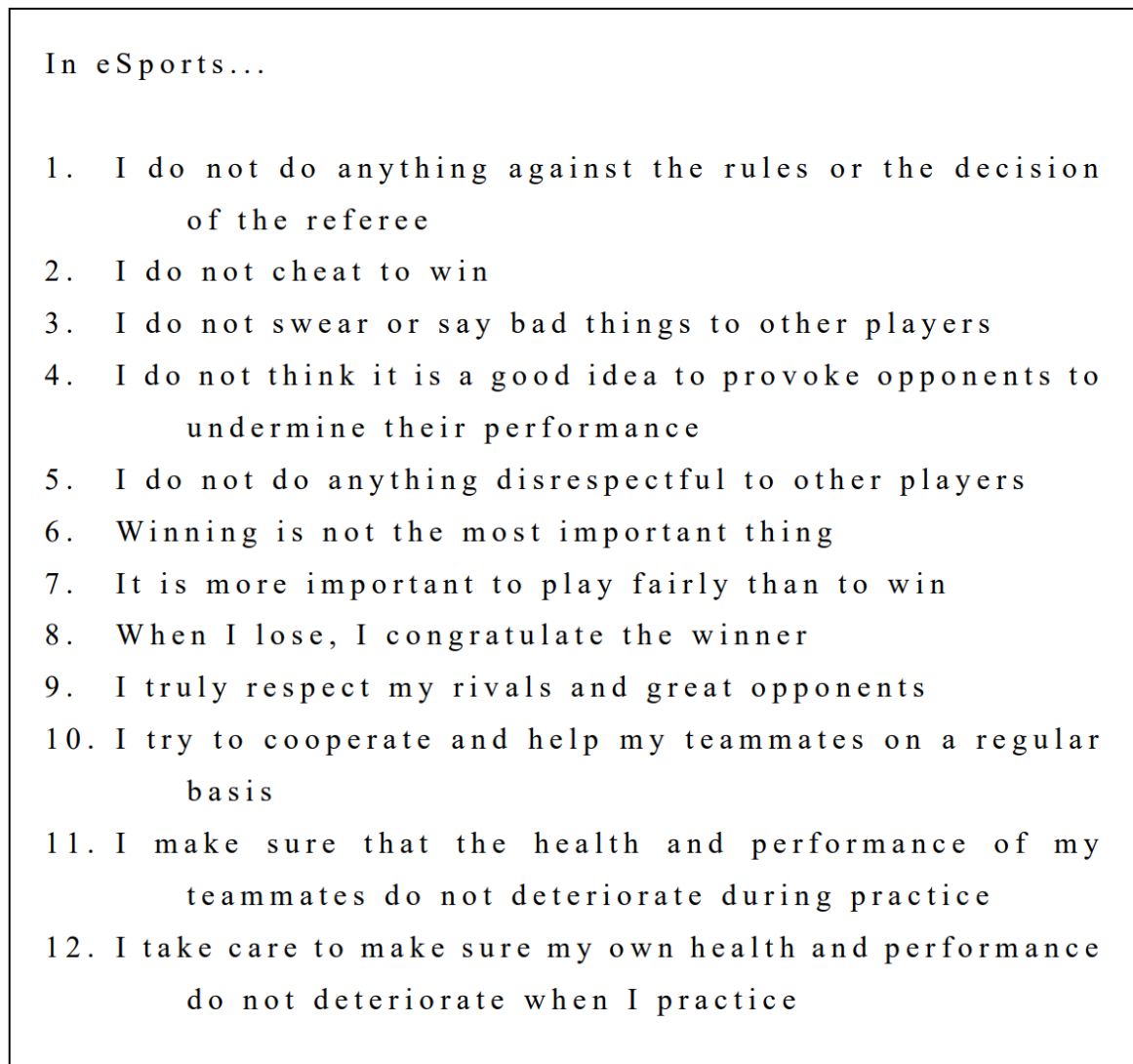   https://doi.org/10.1177/0033354920912718

Yin, K., Zi, Y., Zhuang, W., Gao, Y., Tong, Y., Song, L., & Liu, Y. (2020). Linking Esports

      to health risks and benefits: current knowledge and future research needs. *Journal of*

      Sport and Health Science, 9(6), 485–488. https://doi.org/10.1016/j.jshs.2020.04.006

Table

Table 1

Factor Analysis of the eSportsmanship Scale

Items	M	SD	Cooperation factor α=.86	Normative factor α=.89	Communality
Item 11: Consideration for teammates	3.02	.81	**.82**	-.08	.58
Item 8: Congratulating others	2.99	.83	**.69**	-.03	.44
Item 9: Respect	3.11	.81	**.67**	.06	.52
Item 10: Cooperation	3.10	.81	**.66**	.11	.55
Item 12: Care for physical health	3.05	.80	**.65**	.07	.50
Item 7: Fair play	3.04	.83	**.50**	.22	.47
Item 6: Significance	2.84	.83	**.50**	.05	.28
Item 2: Cheating	3.27	.89	-.09	**.90**	.70
Item 1: Compliance with rules	3.17	.92	-.10	**.89**	.67
Item 4: Provocation	3.21	.87	.20	**.59**	.57
Item 3: Swearing	3.19	.88	.21	**.59**	.57
Item 5: Respect	3.29	.84	.28	**.58**	.65
Proportion Var			48.9%	5.4%	
Interfactor Correlation			.75		

Note. Maximum Likelihood Method and Promax Rotation.

Figure

In eSports...

1. I do not do anything against the rules or the decision
    of the referee
2. I do not cheat to win
3. I do not swear or say bad things to other players
4. I do not think it is a good idea to provoke opponents to
    undermine their performance
5. I do not do anything disrespectful to other players
6. Winning is not the most important thing
7. It is more important to play fairly than to win
8. When I lose, I congratulate the winner
9. I truly respect my rivals and great opponents
10. I try to cooperate and help my teammates on a regular
    basis
11. I make sure that the health and performance of my
    teammates do not deteriorate during practice
12. I take care to make sure my own health and performance
    do not deteriorate when I practice

Figure 1. eSportsmanship Scale[7].

---

[7] The Japanese version of the scale was used. This is the same as Figure 1.
e スポーツで…
1.　　　　　ルールや審判の決定に反することはしない
2.　　　　　勝つためにズルをしない
3.　　　　　他のプレイヤーに悪口を言ったり悪態をついたりはしない
4.　　　　　対戦相手のパフォーマンスを落とすために挑発するのは良くないと思う
5.　　　　　他のプレイヤーへの敬意を欠くようなことはしない
6.　　　　　勝つことは最も重要なことではない
7.　　　　　勝つことよりも、フェアにプレイすることが重要だ
8.　　　　　自分が負けたときには、勝者を祝福する
9.　　　　　ライバルやすごい対戦相手を心から尊敬する
10.　　　　日頃から、仲間と協調し、助け合うようにしている
11.　　　　練習の際、仲間の健康や成績が悪化しないように配慮している
12.　　　　練習の際、自分自身の健康や成績が悪化しないように注意している
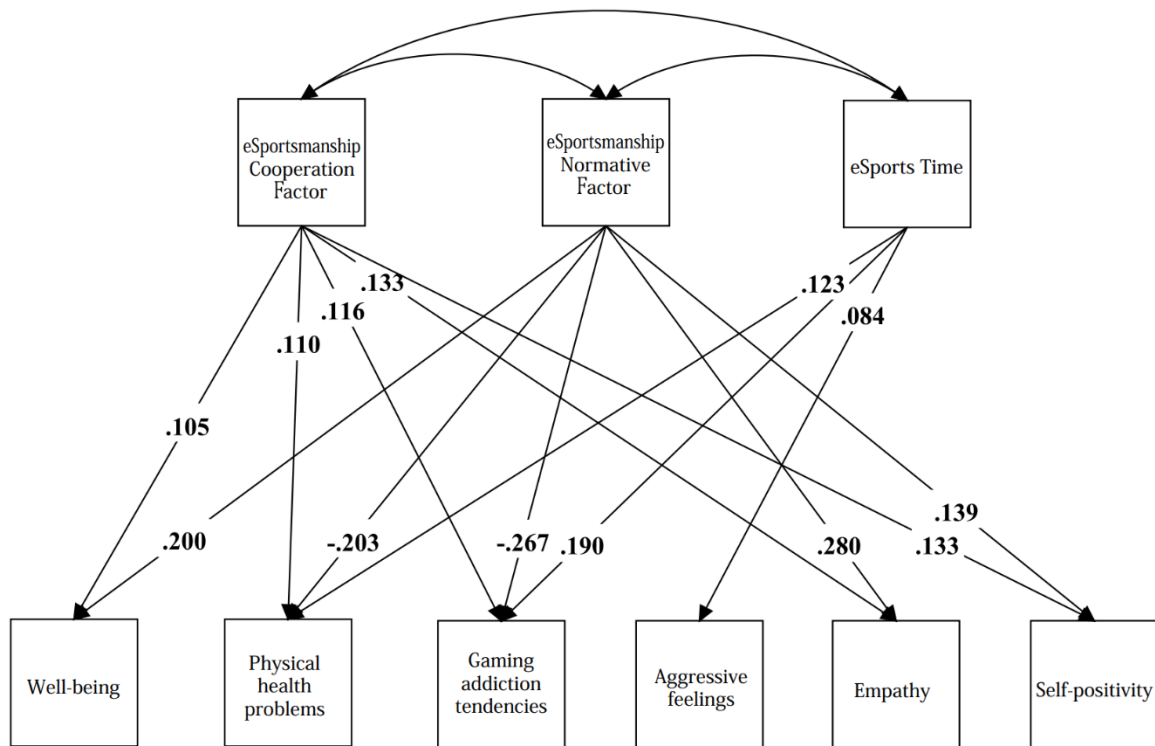Options: とてもそうだ, ややそうだ, ややちがう, まったくちがう

Figure 2. SEM: eSportsmanship scores and health and psychological trends

Note. The values listed are standard values and all are significant at the 1% level.