



# Effect of Social Isolation and Sports Broadcast Viewing Type on Level of Depression

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## Abstract

This study demonstrates that the effects of social isolation on depression levels may be partially mitigated by sports broadcast viewing activities. In the experiment, two versions of sample sports broadcasting videos were created and shown to test subjects to identify differing effects of traditional viewing and social viewing. The basic data collection involved a survey of 48 male and female participants in their twenties and thirties, the age group known to engage in social viewing most actively. The repeated ANOVA for 2(Perceived Isolation: High vs. Low) × 2(Social Disconnectedness: High vs. Low) × 2(Viewing Type: Traditional Viewing vs. Social Viewing) was conducted in order to test the hypotheses. The subjects' levels of depression were measured three times using the Visual Analogue Scale (VAS); before watching the sample video, after watching the video, and five minutes after the end of viewing. The results of the experiment support the main effect of perceived isolation on the level of depression as well as the interaction effect between social disconnectedness and viewing type.

**Keywords:** Social viewing, Social isolation, Depression, Sports media

## Introduction

Currently, almost all countries around the world are enforcing some form of social distancing as a response to the global pandemic COVID-19. As a result of prolonged social isolation, there has been a surge in the number of people suffering from restlessness and depression. This phenomenon even introduced a new term into our daily lexicon: “corona blues,” referring to the widespread depression caused by the coronavirus (Jung, 2020).

As a phenomenon of “corona blues” and previous research, social isolation is a powerful predictor of depression with high correlation

(Cacioppo, Hughes, Waite, Hawkley, Thisted, 2006; Hawkley & Cacioppo, 2003; Heikkinen & Kauppinen, 2004; Holt-Lunstad, Smith, Baker, Harris, & Stephenson 2015; Jung, 2020). Social isolation is linked to cognitive decline, higher stress level, alcohol dependency, loss of inhibition, self-harm, and higher suicide and death rate (Cornwell & Waite, 2009; Trout, 1980; Twenge, Catanese, & Baumeister, 2002; Williams, Takeuchi, & Adair, 1992). Furthermore, depression has various debilitating effects on people’s physical and mental health. In the United States, for instance, more than half of the elderly people who have considered suicide have also had symptoms of depression (Conwell, 1997).

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Since the 1960s, shortly after the second industrial revolution, most Western developed countries experienced a shift in demographics due to lower birth rates, later and fewer marriages, higher divorce rates, and increased number of single parents and single-person households. These trends have collectively contributed to higher levels of social isolation (Burch & Matthews, 1987). Social isolation may be subdivided into two concepts: social disconnectedness and perceived isolation (Holt-Lunstad et al., 2015). These two factors are known to have a causal relationship (Van Baarsen, Snijders, Smit, & Van Duijn, 2001), where social disconnectedness causes one to feel perceived isolation, which in turn affects the overall level of depression.

Social isolation is one of the pressing issues of modern society with globally widespread influences. Researchers predict that the effect of social isolation will be much more starkly observed by 2030 (McPherson & Smith-Lovin, 2006; Victor & Yang, 2012; Wilson & Moulton, 2010). The government of the United Kingdom has officially appointed a Minister for Loneliness, who oversees various public functions to address the issue of social isolation (Pimlott, 2018). This illustrates that social isolation is a consequential issue that warrants governmental action.

Social activity is an effective measure against perceived isolation (Jones & Carver, 1991). However, face-to-face communication is not viable when social activities are restricted due to the current context of the global COVID-19 pandemic. As a result, virtual interactions through media platforms are receiving renewed attention. Specifically, social

viewing, where the internet serves as a bridge between traditional television viewing and virtual social interaction among online community members (Choi & Lee, 2016). This type of viewing is highly interactive since it enables instant exchange of ideas with various people. Furthermore, it promotes the expansion of one's network through online interaction with people. (Bargh & McKenna, 2004; Katz & Rice, 2002; Shah, Kwak, & Holbert, 2001) From these factors, it can be surmised that social viewing has a mitigating effect against social isolation.

Meanwhile, sports broadcast viewership may contribute to the formation of social capital and promotion of social cohesion (Kang, Shim & Oh, 2011; Kim, Noh & Ryu, 2016). Here, social capital is identified as all forms of resources that may be acquired from the social group and network (Lin, 2002). Social cohesion is the state where individuals feel a sense of belonging and commonality with the social group (Chung, 2019). Since the effects of sports broadcasting are conceptually antithetical to social isolation arising from the quantitative and qualitative shortfalls of social networks (De Jong Gierveld, 1987), it is hypothesized that social viewing of sports broadcasts may counteract the effects of social isolation and depression.

Amidst the pandemic, along with other preexisting social shifts that lead to higher rates of social isolation, the population suffering from depression is increasing. To address this issue, this study establishes the hypothesis that sports-broadcast-viewing with elements of social capital formation and social cohesion (Kang, Shim & Oh, 2011; Kim, Noh

& Ryu, 2016) may partially ease the effect of social isolation on depression. Considering that interaction with others alleviates perceived isolation (Jones & Carver, 1991), it may also be hypothesized that the effects of the traditional viewing type and that of the highly interactive social viewing type will be observed differently.

### Literature Review and Hypothesis Development

In the academic sphere, researchers have identified two different forms of social isolation: perceived isolation and social disconnectedness. Perceived isolation is a psychological state of loneliness caused by qualitative and quantitative shortfalls in social networks or inadequate intimacy (De Jong Gierveld & Van Tilburg, 1999). Social disconnectedness refers to the state of physical isolation caused by a lack of social network, social interaction, and participation (Cornwell & Waite, 2009).

Most of the previous research in social isolation has focused exclusively on either one of the two concepts. Hence, there is limited availability of previous literature to conduct correlation studies or comparative analysis between the two types of social isolation (Holt-Lunstad et al., 2015). This is partly because sociological research has emphasized social disconnectedness, while psychological research has been more focused on perceived isolation (Lee & Cho, 2017). Although there is no definite answer to the question of which type of social isolation is more detrimental, it

is observed that perceived isolation displays a relatively higher correlation with mental health, while social disconnectedness is more closely correlated to physical health (Cornwell & Waite, 2009).

On one hand, it is argued that perceived isolation and social disconnectedness are disparate concepts with low correlation (Cornwell & Waite, 2009; Perissinotto & Covinsky, 2014), and therefore increased social interaction would not instantly alleviate or counteract perceived isolation (Holt-Lunstad et al., 2015). Others have stipulated that perceived isolation also stems from a quantitative deficiency in social networks, and hence should be strongly correlated to social disconnectedness (De Jong Gierveld, 1987; Van Baarsen et al., 2001). This study focused on incorporating both types of social isolation within the experiment to reflect the multidimensional aspects of individuals' isolation when identifying the effect of sports broadcasting viewership on depression levels. It presumes that the functions of social capital formation and social cohesion in sports broadcasts are conceptually opposed to social isolation (Kang, Shim & Oh, 2011; Kim, Noh & Ryu, 2016). It established the following hypotheses, based on the notions that social disconnectedness and perceived isolation are positively correlated (De Jong Gierveld, 1987; Van Baarsen et al., 2001) and that higher social support leads to decreased levels of depression (Bath & Deeg, 2005; Hur & Yoo, 2002):

Hypothesis 1: Perceived isolation level has a significant effect on depression level changes during sports broadcast

viewing.

Hypothesis 2: Social-disconnectedness level has a significant effect on depression level changes from sports broadcast viewing.

Recently, due to advancements in Information and Communication Technology (ICT) and the universal proliferation of smart devices, there has been a steady increase in social viewing, where one can watch television and simultaneously discuss its contents on live with other viewers online (Cho & Choi, 2014; Castells, 2010). Consumers can now watch media contents while sharing information and opinion in real-time through instant messaging, online communities, and news comment sections. They can also communicate with people through social network services, including Twitter, Facebook, and Instagram.

Social viewing type displays the following four characteristics: First, unlike co-viewing, where people had to assemble in the same place at the same time to watch the same program together, social viewing enables viewers to interact through online space from different locations at different times. Second, the interaction among participants of social viewing is continuous and long-term. For example, the interaction among people who watch the World Cup matches on a large screen together is temporary and is dissolved immediately after the game is over. However, a group of members of an online soccer community would continue their interaction to subsequent games. Third, discussions among social viewers differ from those of co-viewers in their contents as well. Co-viewers' interactions are mostly limited to the instantaneous expression

of emotion, but social viewers can share profound analysis and critique of the program through extensive conversations. Fourth, social viewing can bring together a diverse, heterogeneous group of people online and stimulates the exchange of more diverse ideas. All in all, social viewing transcends geographical and temporal boundaries. It enables long-term interaction, exchange of more profound critique and analysis, and interaction among a diverse group of heterogeneous people with different perspectives (Choi, 2014).

It is predicted that the number of people suffering from depression will increase in the future, given that social isolation is becoming more prevalent (Cacioppo, et al., 2006; Hawkey & Cacioppo, 2003; Heikkinen & Kauppinen, 2004; Holt-Lunstad et al., 2015; Jung, 2020) and that it is a strong predictor of depression. There are two types of burdens for chronic illnesses with a high risk of recurrence such as depression. The first is the patient's burden, including the cost of treatment, pain, and challenges in daily life; The second is the socio-economic burden, caused by reduced productivity, absence from work, unemployment, and the economic cost of caretakers, social care, and government support. (Park, 2019).

It can be conjectured that depression arising from social isolation may be partially alleviated by sports broadcast viewing activities with elements of social capital formation and social cohesion. This is because the social utility of sports broadcast viewership is conceptually a counteracting factor against social isolation.

Moreover, it is predicted that the traditional (one-way) viewing and social (two-way) activities would display different effects. This

is because social viewing enables reading, writing, and interacting with a wide range of people in virtual space while watching TV. When social viewing of sports broadcasts is employed as a remedy for depression, the effect of watching sports and the interactive function of social viewing will create a synergistic effect and lead to more significant effects when compared to traditional viewing. Thus, the third hypothesis is established as follows:

Hypothesis 3: Traditional and social viewing activity of sports broadcasting will display a significant difference in levels of depression.

## Method

### *Data Collection*

The basic data for empirical corroboration of the hypotheses were collected from March 5, 2020. Considering that more than half of Koreans under the age of 34 have responded that they have experience with social viewing of TV programs (Nielsen, 2012), the experiment recruited Korean males and females in their twenties and thirties as subjects of the experiment. The required sample size was computed by G\*power software to be 48.

Of the 48 test subjects, 36 were male (75%), and 12 were female (25%). 41.7% of the sample were between the age 30 to 34, which was more than any other age group. The second-largest group was between the age 25 to 29 (35.4%). This was followed by

between age 20 to 24 (12.5%) and between the age 35 to 39 (10.4%).

### *Experiment Design*

This experiment analyzed the effect of social disconnectedness, perceived isolation and sports broadcast viewing type on the level of depression. Base-level information on the subjects' social disconnectedness and perceived isolation were collected through a written questionnaire. To strengthen the internal validity of the experiment, one professor and three doctoral students in the sports management department was consulted to create situational variables for the sample videos and the two different types of sports viewership.

The two sample videos were based on the same 4-minute highlight clips from the 2020 Spring Camp game between the Korean national baseball team and the Japanese Amateur team. For a clearer quantitative measurement of depression level, the excerpt drew from mostly low-stimulus, monotonous parts of the game. This was under the premise that it would be more difficult to measure changes in depression level when the sample game video was too stimulating.

Subjects were randomly assigned to watch one of the two sample videos. The first sample video was a traditional, one-way version of the sports broadcast. The second sample video played the same excerpts of the same game and displayed a separate comment section with a series of live feedback from other viewers. The contents in this comment section were directly excerpted from an actual

existing Youtube channel. Also, the layout of the second sample video was identical to that of Youtube live videos.

According to Cho and Choi (2014), reading about other people's opinions within social viewing context has a positive effect on one's satisfaction with the content of the TV program and the interaction surrounding that program. Based on this finding, the social viewing condition was simulated by providing a sample video along with a comment section that displayed reactions from other people regarding the same sample video. Most of the text comments were about the game progression, the team, or the individual players.

Simultaneously, the Visual Analogue Scale (VAS) was employed to observe the changes in the level of depression. Each subject's depression level was measured three times: once before watching the video, once after finishing the video, and finally five minutes after the conclusion of the video. VAS is a useful tool not only for diagnosing the level of pain experienced by patients (Price, McGrath, Ruff, & Buckingham, 1983) but also for observing their emotional changes at an intuitive level. (Carlson, Collins, Stewart, Porzelius, Nitz, & Lind, 1989). Subjects were presented with a 10-centimeter-line with each end corresponding to opposite emotional states (Not depressed at all-Extremely depressed). The center of the line was labeled "neutral." Using this line, subjects were asked to indicate their current level of depression by drawing a point on the spectrum that corresponds to their state. The subjects' reported depression level was then measured as the length between this point and the end point, measured to the millimeters.

The procedures in this experiment received prior authorization from SNUIRB (IRB No. 2006/002-004).

### *Procedure*

The experiment took place in an enclosed, controlled environment with dimensions 2.5m x 2.5m. The location was chosen to minimize any unnecessary external stimulations that might interfere with the experiment. Once the subject was seated in the room, they were provided with basic instructions for the overall procedure of the experiment. Afterward, subjects responded to a questionnaire that asked for their basic information, including demographic profiles. Next, the participants were randomly assigned into two groups. One group participated in a traditional viewing of a sports broadcast. The second group took part in a social viewing of the same sports broadcast. Both videos were played on the same 1920 x 1080 DELL 24-inch monitor with identical screen size and brightness setting. After the experiment, a debriefing session was provided to the subjects in order to explain the purpose, underlying hypothesis, and the procedure of the research.

### *Analytical Methodology*

Frequency analysis and descriptive statistics were conducted to identify the sample's variable and demographical characteristics. Exploratory factor analysis, reliability analysis, and repeated measure ANOVA of 2(social disconnectedness) × 2(perceived isolation) × 2(viewing type) were conducted.

Subjects' level of depression was measured in three separate phases. The first measurement took place before watching the video in order to determine the base level of depression. The second and third measurements took place immediately after finishing the video and five minutes after finishing the video.

<Table 1> displays the results from descriptive statistical analysis. The mean value of depression level was 4.59 (range: 0.80-8.60, SD=1.85) for first measurement, 2.13 for second measurement (range: 0.10-5.60, SD=1.44) and 2.59 for third measurement (range: 0.00-8.00, SD=1.86). This result indicates that watching the sample video had a positive effect on decreasing depression levels.

Table 1. Descriptive statistics on depression level

| Variable                                 | N  | Min | Max  | Mean | Standard Deviation |
|--|----|-----|------|------|--------------------|
| Depression level (Before watching)       | 48 | .80 | 8.60 | 4.59 | 1.85               |
| Depression level (After watching)        | 48 | .10 | 5.60 | 2.13 | 1.44               |
| Depression level (5 mins after watching) | 48 | .00 | 8.00 | 2.59 | 1.86               |

**Instruments**

Measurement of social disconnectedness in this experiment employed the measurement scale from Waite, Laumann, Levinson, Lindau, McClintock, O’Muircheartaigh, & Schumm (2007). The five questionnaires from Cornell and Waite (2009) were adapted for this experiment. The questionnaire identifies two variables, social network, and number of friends, as determinants of social disconnectedness. Perceived isolation was measured by utilizing De Jong Gierveld and Van Tilburg’s (1999) eleven questionnaires.

According to the results, the reliability and validity of social disconnectedness measurement using the given variables are relatively low. This is notwithstanding the fact that the model adopted rigorous methodologies incorporated from the National Social Life, Health, and Aging Project (NSHAP) which has established a high level of reliability. This discrepancy might be explained by the age group of the test subjects. Participants of experiments were all in their 20s and 30s, while past experiments using this model focused on older people. Older age is correlated to less physical activity and a higher probability of widowhood

Table 2. Reliability and validity analysis of social isolation measurement

| Category   | Cronbach $\alpha$ | Number of samples |
|--|-------------------|-------------------|
| Perceived isolation  | .898              | 11                |
| - Kaiser-Meyer-Olkin measure of sampling adequacy=.838<br>- Bartlett test of sphericity: Approx. chi-square=286.485, df=55, sig.=p<0.001 |                   |                   |
| Social disconnectedness  | .533              | 5                 |
| - Kaiser-Meyer-Olkin measure of sampling adequacy =.485<br>- Bartlett test of sphericity: Approx. chi-square=31.642, df=10, sig.=p<0.001 |                   |                   |

or other family loss. In other words, the average base level of social disconnectedness among subjects of past experiments is significantly higher than that of this experiment, which exclusively recruited people in their 20s and 30s, most likely at their peak of physical and social activity.

## Results

### *Hypothesis Testing*

Mauchly test of sphericity significance level was higher than the chosen level of 0.05, confirming the hypothesis of equal variance of differences. For the three measurements of depression level, the significance level from Levene's test was computed to be lower than 0.05 for the first measurement, but higher than 0.05 for the second and third measurement, and hence retained assumption for equal variance.

Results displayed in <Table 3> confirm hypothesis 1, which posited that there would

be statistically significant difference in depression level between high-perceived-isolation (HPI) group and low-perceived-isolation (LPI) group  $F(1, 48) = 7.92, p < .05$ . Hypothesis 2 and 3 are nullified. Furthermore, the significant interaction effect between social disconnectedness and viewing type could be observed  $F(1, 48) = 5.79, p < .05$ .

Results from post-hoc analysis for the main effect of perceived isolation are summarized in <Table 4>. In both HPI group and LPI group, there were significant changes in depression level between the first measurement and the second or third measurements. However, there were no significant differences between second and third measurements in both groups. Furthermore, the overall level of depression was higher in HPI group compared to the LPI group. The mean value of depression level in LPI group was 2.611, and 3.670 in HPI group.

The results of the post-hoc analysis of interaction effect of social disconnectedness and viewing type is summarized in <Table 5>. Difference in depression level was observed only in the high-social-disconnectedness group.

Table 3. Effect of social isolation and sports broadcast viewing type on depression levels

|                              | SS       | df | MS       | F       | p     |
|------------------------------|----------|----|----------|---------|-------|
| Intercept                    | 1091.294 | 1  | 1091.294 | 278.707 | .000  |
| Perceived isolation (PI)     | 31.032   | 1  | 31.032   | 7.925   | .008* |
| Social disconnectedness (SD) | 1.168    | 1  | 1.168    | .298    | .588  |
| Viewing type (VT)            | 8.283    | 1  | 8.283    | 2.115   | .154  |
| PI * SD                      | 12.891   | 1  | 12.891   | 3.292   | .077  |
| PI * VT                      | 7.128    | 1  | 7.128    | 1.820   | .185  |
| SD * VT                      | 22.685   | 1  | 22.685   | 5.793   | .021* |
| PI * SD * VT                 | 6.443    | 1  | 6.443    | 1.646   | .207  |
| error                        | 156.623  | 40 | 3.916    |         |       |

\* $p < .05$



Table 4. Post-hoc analysis of perceived isolation effect on depression level

| PI   | Depression level        | Depression level | MD     | SE   | p     | 95% confidence interval <sup>b</sup> |                |
|------|-------------------------|------------------|--------|------|-------|--------------------------------------|----------------|
|      |                         |                  |        |      |       | Lower endpoint                       | Upper endpoint |
| Low  | 1 <sup>st</sup> Measure | 2 <sup>nd</sup>  | 2.067  | .395 | .000* | 1.079                                | 3.055          |
|      |                         | 3 <sup>rd</sup>  | 1.460  | .384 | .001* | .501                                 | 2.419          |
|      | 2 <sup>nd</sup> Measure | 1 <sup>st</sup>  | -2.067 | .395 | .000* | -3.055                               | -1.079         |
|      |                         | 3 <sup>rd</sup>  | -.607  | .340 | .244  | -1.456                               | .242           |
|      | 3 <sup>rd</sup> Measure | 1 <sup>st</sup>  | -1.460 | .384 | .001* | -2.419                               | -.501          |
|      |                         | 2 <sup>nd</sup>  | .607   | .340 | .244  | -.242                                | 1.456          |
| High | 1 <sup>st</sup> Measure | 2 <sup>nd</sup>  | 2.592  | .489 | .000* | 1.370                                | 3.814          |
|      |                         | 3 <sup>rd</sup>  | 2.399  | .475 | .000* | 1.212                                | 3.585          |
|      | 2 <sup>nd</sup> Measure | 1 <sup>st</sup>  | -2.592 | .489 | .000* | -3.814                               | -1.370         |
|      |                         | 3 <sup>rd</sup>  | -.193  | .420 | 1.000 | -1.243                               | .857           |
|      | 3 <sup>rd</sup> Measure | 1 <sup>st</sup>  | -2.399 | .475 | .000* | -3.585                               | -1.212         |
|      |                         | 2 <sup>nd</sup>  | .193   | .420 | 1.000 | -.857                                | 1.243          |

Table 5. Post-hoc analysis of social disconnectedness and viewing type

| PI   | Depression Level        | Viewing Type | Viewing Type | MD     | SE   | p     | 95% confidence interval <sup>b</sup> |                |
|------|-------------------------|--------------|--------------|--------|------|-------|--------------------------------------|----------------|
|      |                         |              |              |        |      |       | Lower endpoint                       | Upper endpoint |
| low  | 1 <sup>st</sup> Measure | traditional  | social       | -.178  | .901 | .845  | -2.000                               | 1.644          |
|      |                         | social       | traditional  | .178   | .901 | .845  | -1.644                               | 2.000          |
|      | 2 <sup>nd</sup> Measure | traditional  | social       | -.574  | .669 | .396  | -1.925                               | .778           |
|      |                         | social       | traditional  | .574   | .669 | .396  | -.778                                | 1.925          |
|      | 3 <sup>rd</sup> Measure | traditional  | social       | -.324  | .922 | .727  | -2.187                               | 1.540          |
|      |                         | social       | traditional  | .324   | .922 | .727  | -1.540                               | 2.187          |
| high | 1 <sup>st</sup> Measure | traditional  | social       | .912   | .621 | .150  | -.344                                | 2.167          |
|      |                         | social       | traditional  | -.912  | .621 | .150  | -2.167                               | .344           |
|      | 2 <sup>nd</sup> Measure | traditional  | social       | 1.284  | .461 | .008* | .353                                 | 2.215          |
|      |                         | social       | traditional  | -1.284 | .461 | .008* | -2.215                               | -.353          |
|      | 3 <sup>rd</sup> Measure | traditional  | social       | 2.162  | .635 | .002* | .878                                 | 3.446          |
|      |                         | social       | traditional  | -2.162 | .635 | .002* | -3.446                               | -.878          |

\* $p < .05$

The mean depression level was 3.969 in traditional viewing and 2.517 in social viewing. Statistically significant interaction effect was observed only in the second and

third measurements. This confirms no difference in base-level depression measured in the first round before watching the sports broadcast video.

## Discussion

The results reject hypothesis 2 and 3 and confirms hypothesis 1. Only perceived isolation had significant effect on depression level changes from sports broadcast. Higher levels of depression were observed in the group with high perceived isolation in all three measurements, before viewing, after viewing and five minutes after viewing. This result may be understood under the same context of previous research, which identifies perceived

isolation as a strong predictor of depression (Cacioppo et al., 2006; Hawkley & Cacioppo, 2003; Heikkinen & Kauppinen, 2004; Holt-Lunstad et al., 2015). The results support the notion that sports broadcasting viewership could help alleviate various negative effects of depression, such as low motivation, inability to focus, changes in eating habits or weight, insomnia, and suicidal thoughts and attempts (American Psychiatric Association, 2013).

Meanwhile, the study confirmed the interaction effect between changes in depression level and social disconnectedness during sports broadcast viewing. Only the group with high social disconnectedness displayed an interaction effect. In the first measurement of depression level before watching the video, there were no differences in depression. In the second and third round of measurements, after the video and five minutes after the video, respectively, there were significant changes in depression. Overall, those assigned to social viewing reported lower depression levels than those assigned to traditional viewing. Also, as shown in <Figure 2>, the depression levels of the traditional viewing group were more “elastic,” meaning that they had a higher tendency to return to the original level measured before the video. This result suggests that social viewing is not only more effective in lowering the level of depression but also at maintaining this effect for a longer-term. This is because when socially isolated, the desire for a sense of belonging is triggered from the human survival instinct (Baumeister & Leary, 1995; Lambert, Stillman, Hicks, Kamble, Baumeister, & Fincham, 2013) It can be seen that the depression is resolved more effectively in the

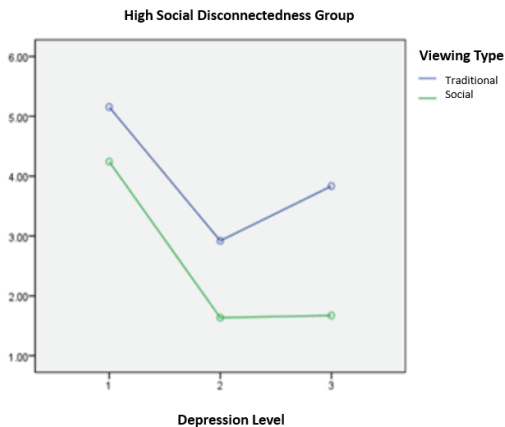


Figure 1. Interaction effect of social disconnectedness and viewing type

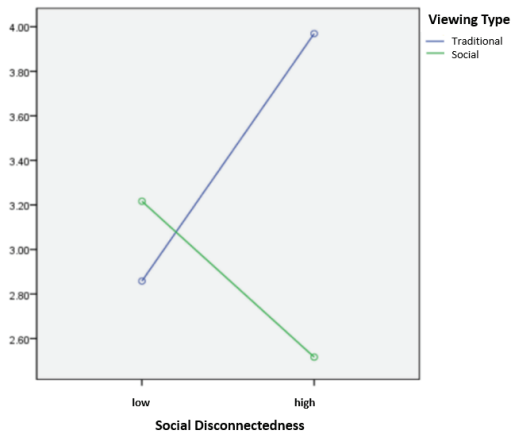


Figure 2. Post-hoc analysis of interaction effect

social viewing situation than in traditional viewing situations as it is more interactive.

This study establishes that depression arising from social isolation may be partially addressed by social viewing of social broadcasts. It offers implications for the social function of sports media in the modern society as social isolation accelerates due to the COVID-19 and other demographic and social changes. Understanding this effect of social viewing and sports broadcasts will help media providers not only improve business strategy but also promote social welfare.

### **Limitations and Future Research**

This study was conducted to prepare a way to relieve depression by paying attention to how our society is currently becoming isolated through various channels. Social isolation acts as a precursor to depression that adversely affects human mental and physical health. In particular, as Korea is undergoing rapid social isolation such as rapid aging, low fertility, and a surge in the number of single-person households, a multi-pronged approach is needed to devise countermeasures. Therefore, in this study, it is revealed that depression can be relieved through the social integration utility of sports broadcasting (Kim, Noh, & Ryu, 2016) and the interactivity of social viewing (Cho & Choi, 2014). It reexamines the functions and roles of sports broadcasting and suggests the development and application of media technology in the social isolation situation. Specifically, based on the results of this study, broadcasters, TV manufacturers, and media

platform producers can work together to make social viewing widely available in multi-generations and multi-layered groups to cope with depression resulting from social isolation.

This research contains several limitations. First, the experiment relies on a single game from baseball to measure the effects of social viewing on participants, rather than including different types of sports broadcasts or types of sports. Other sports games have different structures and characteristics, which means that they could generate different emotional responses from participants or display different social viewing patterns. The experiment was also designed to use the same 4-minute video clip with relatively low stake in all participants to compare the effect of social viewing concretely. But this setting is quite different from real sports broadcasts, which often involve higher stakes and uncertainties. Future research could benefit from designing experiments that more closely resemble real broadcasting programs.

Second, the reliability of measurements of social disconnectedness in this experiment has not been verified. The experiment used Cornwell and Waite (2009)'s model, an academically reliable methodology that has been cited more than 1,000 times. However, the sample group in this research was exclusively people in their twenties and thirties, although the model was primarily used for measuring isolation among elderly people in the past. This may have contributed to diminished reliability of measurement, since the circumstances of older people are vastly different from those of younger people. Future

research may consider a more universally applicable measurement of social disconnectedness.

Third, sample video used for the social viewing group were created by excerpting real comments from existing YouTube channels. Therefore, it can be assumed that the contents of those comments reflected unique characteristics of the YouTube platform and its users. Social viewing through other video channels may present a vastly different experience. Therefore, the external validity of this study may be reinforced by introducing social viewing in other platforms.

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