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## Media Effect to Risk Perception and Protective Behavior During COVID-19 in Indonesia Partial Least Squares Modeling Analysis

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### ARTICLE INFO

#### **Article History:**

Received May, 9<sup>th</sup>, 2023

Accepted Nov, 15<sup>th</sup>, 2023

Published online Dec, 31<sup>st</sup>, 2023

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#### **Keywords:**

COVID-19;

media use;

health behavior;

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### ABSTRACT

Indonesia has implemented a Large-Scale Social Distancing policy, limiting major public activities to control the COVID-19 pandemic. This study investigates the media content information, the perception of its role, and its contribution to forming the general public's risk perception and protective behavior during this situation. This study was an observational study using a cross-sectional design. Data was collected through an online semi-structured questionnaire using Google Forms. A total of 522 participants were obtained through snowball sampling for two weeks. The data analyzed used the Partial Least Squares (PLS) technique. The results showed the structural model of media content information and the perception of media's role in influencing risk perception and protective behavior. Media content information and perception of media's role directly influence protective behavior significantly. The only perception of the media's role is that it significantly influences risk perception. Then, risk perception directly influences protective behavior. The structural model of media content information and perception of media's role in influencing risk perception and protective behavior during COVID-19 when the transition period to the new normal era in Indonesia has been conducted.

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## INTRODUCTION

Coronavirus disease 2019 (COVID-19) has been announced as a global pandemic, with the primary reproductive number ( $R_0$ ) around 3.28.<sup>1</sup> This pandemic affected more than 200 countries, including Indonesia. By the end of June 2020, there have been 56,385 confirmed cases, including 2,876 deaths, reported within the country.<sup>2</sup> To control the transmission, Indonesia implemented a large-scale social distancing policy, *Pembatasan Sosial Berskala Besar (PSBB)*, limiting major public activities, except in vital sectors. In early June 2020, Indonesia entered a transitional period as the government started to prepare to enter a 'new normal.' The transition period allows for the opening of public places, but only with several restrictions, such as limiting the space down to only 50% of its average capacity and implementing a restrictive health protocol called 3M (*Menggunakan Masker, Mencuci tangan, Menjaga jarak*) (Wearing masks, Washing hand, and Social distancing).

Despite many new cases per day ( $\pm 1000$  cases per day by the end of June 2020), the government has started to open several public places during the transition period. This high rate of social mobility is likely to increase the risk of the virus being transmitted between people. On the other hand, some public members need to go out to fulfill their duties and, in some cases, even need to use public transportation. Eventually, the transition period to a new normal has pushed people to be ready to take personal measures to protect themselves from virus transmission. In this case, the media provides information during this transitional period.

The role of media during the transitional period and into a new normal, in the case of the COVID-19 pandemic in Indonesia, is essential. Media exposure to COVID-19 related information will continue to increase since every type of media platform provides updates about the pandemic daily. Sources of media consumption, media content, and the frequency and ability to access that information will impact the change in knowledge, risk perception, and the acute psychological outcome of the pandemic.<sup>3,4</sup>

The media is responsible for ensuring that the information it provides is accurate. Therefore, people will be more likely to follow this

information, ensuring that it continues to adhere to its role in preventing the spread of diseases.<sup>3,5</sup> Media content also defines what information people have access to. Previous studies demonstrated that the increase in media exposure is in line with the change in perception of risk and protective behavior, as shown in the case of the Zika virus.<sup>6</sup> Therefore, media content related to the protective behavior specific to COVID-19, which has been promoted by WHO, such as washing hands, wearing a mask, social distancing, and adequate food for immune improvement, is important in preventing the transmission of the virus.

Transitional periods before the new normal have caused high social mobility during the middle of the pandemic. It has led to a change in behavior amongst the general public as an extra measure to prevent infection during public activity. Throughout this crucial period, it is important to understand the role of media, as it significantly impacts how the general public reacts to the virus and what information, if any, the general public has access to. Therefore, this study aims to investigate the media content information and perception of the media's role in contributing to the formation of perception risk and protective behavior during the transitional period before the new normal in Indonesia.

## MATERIAL AND METHOD

This study was an observational study using a cross-sectional design. Data collection was conducted in June 2020. The population of this study was Indonesian citizens. Then, the sample was Indonesian citizens over 18 years old with Internet access. The exclusion criteria are somebody with high awareness due to information exposure and better knowledge, like health workers, COVID-19 cases/ suspected/recovered cases, or somebody living with them.

The sample collection technique needed to be more robust with the snowball sampling method. Data was collected by an online semi-structured questionnaire using Google-form for two weeks. WhatsApp and social media rolled out the Google-form link to as many people as possible.<sup>4,7,8</sup> Finally, the total number of participants after selection using exclusion criteria was 522 participants.

Then, the data analyzed used the Partial Least Squares (PLS) technique using the SmartPLS 3.2.6 software ([www.smartpls.com](http://www.smartpls.com)). The first test in the PLS technique was the validity and reliability of the measures. After the study model had been fit, the analysis examined the hypothesized relationship.<sup>9</sup> The ethical approval was obtained from the Health Research Ethics Commission at Muhammadiyah University of Prof. Dr. Hamka (UHAMKA) with approval number 03/20.06/0473.

## RESULTS

The number of participants in this study is 522, which consists of 413 (79.1%) female and 109 (20.9%) male participants each, with an average age of 28 years old ( $SD = 8.3$ ). Based on educational characteristics, 264 participants (50.6%) did not graduate from high school and 258 participants (49.4%) did. Based on occupational characteristics, 219 participants (42%) were formal workers, 209 participants (40%) were students, 54 participants (10.3%) were housewives, and 40 participants (7.7%) were informal workers.

### Protection Behavior

The result in Table 1, showed protective behavior participants had good. The majority of participants always used maskers when using public transportation (91.4%), always hand-washed after going outside (84.6%) and social distanced when queuing up (59%).

### Media Use

Media use assessment in this study has consisted of content information. That was because all media content information could be found on all media sources both of the conventional media (TV, radio, printed newspaper) and the new media (electronic-newspaper, information, and videos on social media e.g. Instagram, Facebook, Youtube, WhatsUp, Line, Telegram). The media content information assessment a frequency participants view of this content on media. The questionnaire involved 5 questions like case update, viral news, the pandemic policy of the government, updated national situation, and protective behavior (never = 1, until always = 4).

Based on the type of information, 258 participants (49.4%) were actively looking for information about COVID-19 prevention during

the transitional period. For COVID-19 outbreak response information, viral information, and policy information, usage was 9.2%, 7.9%, and 7.7% respectively. Out of 522 participants, 196 participants (37.5%) usually use social media to access videos as a media source of information, and 155 participants (29.7%) usually used social media news outlets instead. On the other hand, tv, radio, printed newspapers, and online newspapers were rarely used by participants.

### Perception of Media's Role

The participants have a good perception of the role of the media. This is clear from the proportion of participants' answers, which stated that the role of the media to increase the obligation of approval was 316 (60.5%) participants. 297 (56.9%) participants have stated that the perception of the media's role is to educate the community on what they need to do during the transitional period. 310 (59.4%) participants stated that the media's role is to spread awareness to the wider community of COVID-19 during the transitional period.

### Risk Perception

Risk perception for all item questioners showed the participants did not falls risk for transmission of COVID-19. Only 22% of participants always feel worried about possible infection at the workplace and 24% of participants always feel dangerous to go outside.

### Measurement Model Analysis

To assess the measurement model two types of validity were being examined - first the convergent validity and then the discriminant validity.<sup>10</sup>

#### Convergent Validity

The convergent validity of the measurement was usually ascertained by examining the loading factor, average variance extracted (AVE), and composite reliability. The loadings were all higher than 0.708, the composite reliabilities were all higher than 0.7 and the AVE of all constructs were also higher than 0.5 as suggested in the literature.<sup>11</sup> The results in table 2, show the data is convergent valid.

#### Discriminant Validity

Discriminant validity analysis was done to measure the cross-loading value. Cross loading

value showed the magnitude of the correlation between the construct and their indicator and indicator with another construct (Table 3). Discriminant validity was valid if the correlation between the construct and their indicator was higher than the correlation indicator with other constructs as Table 3.

### Structural Model Analysis Testing Model Fit

Several parameters were used to declare the study model had been fit and ready to continue analysis. This study used the value of the Standardized Root Mean Square Residual (SRMR) dan the Normed Fit Index (NFI). The analysis results showed The SRMR (0.063) was considered a good fit because less than 0.08.<sup>13</sup> The second NFI (0.822) was above 0.9 which is an incremental fit.<sup>12</sup>

**Table 1. Frequency Distribution of Media Use**

| Constructs                  | Item  | Always |      |
|-----------------------------|---|--------|------|
|                             |   | n      | %    |
| Media Sources               | TV  | 31     | 5.9  |
|                             | Radio   | 5      | 1    |
|                             | Printed newspaper   | 0      | 0    |
|                             | Online newspaper  | 37     | 7.1  |
|                             | Video on social media                                     | 196    | 37.5 |
|                             | News on social media                                      | 155    | 29.7 |
| Content Information         | Case update   | 67     | 12.5 |
|                             | Viral news  | 41     | 7.9  |
|                             | The pandemic policy of the government                     | 40     | 7.7  |
|                             | Update national situation                                 | 48     | 9.2  |
|                             | Protective behavior                                       | 258    | 49.4 |
|                             | Educate people to prevent covid-19                        | 221    | 41.4 |
| Perceptions of Media's role | Increase protective behavior                              | 203    | 38   |
|                             | Increase awareness  | 208    | 39   |
|                             | Educate illness behavior                                  | 223    | 41.8 |
|                             | Fell dangerous to go outside                              | 128    | 24   |
| Risk Perception             | Fell covid-19 is more dangerous than cough and cold       | 227    | 42.5 |
|                             | Worried about possible infection at the workplace         | 118    | 22.1 |
|                             | Worried about possible infection at the public area       | 234    | 43.8 |
|                             | Worried about possible infection at public transportation | 243    | 45.5 |
| Prevention Behavior         | Mask use when making conversation with people             | 334    | 62.5 |
|                             | Mask use when used public transportation                  | 488    | 91.4 |
|                             | Handwashing after going outside                           | 452    | 84.6 |
|                             | Handwashing after shaken hand, area                       | 370    | 69.3 |
|                             | Handwashing after touching an object in the public areas  | 361    | 67.6 |
|                             | Social distanced with other people                        | 276    | 51.7 |
|                             | Social distanced when queuing up                          | 315    | 59.0 |

Source: Primary Data, 2020

**Table 2. The Results of Convergent Validity**

| Constructs                       | Item | Loadings | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|----------------------------------|------|----------|------------------|-------|-----------------------|----------------------------------|
| Content Information (CI)         | CI.1 | 0.791    | 0.824            | 0.826 | 0.878                 | 0.592                            |
|                                  | CI.2 | 0.786    |                  |       |                       |                                  |
|                                  | CI.3 | 0.842    |                  |       |                       |                                  |
|                                  | CI.4 | 0.801    |                  |       |                       |                                  |
|                                  | CI.5 | 0.605    |                  |       |                       |                                  |
| Perception of Media's role/ (PM) | PM.1 | 0.846    | 0.904            | 0.910 | 0.933                 | 0.776                            |
|                                  | PM.2 | 0.910    |                  |       |                       |                                  |
|                                  | PM.3 | 0.889    |                  |       |                       |                                  |
|                                  | PM.4 | 0.877    |                  |       |                       |                                  |
| Risk Perception (RP)             | RP.1 | 0.724    | 0.834            | 0.844 | 0.876                 | 0.504                            |
|                                  | RP.2 | 0.597    |                  |       |                       |                                  |
|                                  | RP.3 | 0.771    |                  |       |                       |                                  |
|                                  | RP.4 | 0.874    |                  |       |                       |                                  |
|                                  | RP.5 | 0.863    |                  |       |                       |                                  |
| Prevention Behavior (PB)         | PB.1 | 0.619    | 0.825            | 0.837 | 0.879                 | 0.597                            |
|                                  | PB.2 | 0.590    |                  |       |                       |                                  |
|                                  | PB.3 | 0.743    |                  |       |                       |                                  |
|                                  | PB.4 | 0.792    |                  |       |                       |                                  |
|                                  | PB.5 | 0.789    |                  |       |                       |                                  |
|                                  | PB.6 | 0.706    |                  |       |                       |                                  |
|                                  | PB.7 | 0.707    |                  |       |                       |                                  |

Source: Primary Data, 2020

### Hypothesis Testing Results

Path coefficient assessment is included in the structural model indicating the power of the relations among the R<sup>2</sup> value, independent variable, and dependent variable. To define the consequence level of the paths definite within the structural model which looks at the R<sup>2</sup>, beta ( $\beta$ ), and the corresponding t-values via a bootstrapping procedure with a resample of 5.000. Hair et al. (2017). This study used a 5% significance level ( $p < 0.05$ ) as a statistical conclusion measure. The level of significance using the extent of the identical factor estimates between the constructs is indicated in the resultant t-value when the t-statistic more than 1.96.

From Table 4 showed content information, perception of media's role and risk perception are influence directly the protective behavior significantly. And indirectly, the perception of media's role through the risk perception is influence significantly the protective behavior.

The relationship between content information and protective behavior was supported and significant with the original

sample ( $\beta$ ) = 0.285, statistics (t) = 7.213 and significant p-value = <0.001 indicates that protective behavior is influenced directly and positively by conten information.

The relationship between perception of media's role and protective behavior was supported and significant with the original sample ( $\beta$ ) = 0.094, statistics (t) = 2.004 and significant p-value = 0.044 indicates that protective behavior is influenced directly and positively by perception of media's role.

The relationship between risk perception and protective behavior was supported and significant with the original sample ( $\beta$ ) = 0.176, statistics (t) = 3.590 and significant p-value = <0.000 indicates that protective behavior is influenced directly and positively by risk perception.

The relationship between between perception of media's role and protective behavior through risk perception was supported and significant with the original sample ( $\beta$ ) = 0.053, statistics (t) = 2.776 and significant p-value = <0.000 indicates that protective behavior is influenced directly and positively by risk perception.

From Figure 1, the results R2 value is 0,149. That means the protective behavior is influenced by that variable 14,9% and the remaining can be obtained by other factors which were not examined in this study. Then the only perception of media's role influenced directly the risk perception significantly, with R2 value is 0,100. That means the risk perception is influenced by the perception of media's role 10% and the remaining can be obtained by other factors which were not examined in this study.

**Table 3. The Results of Discriminant Validity**

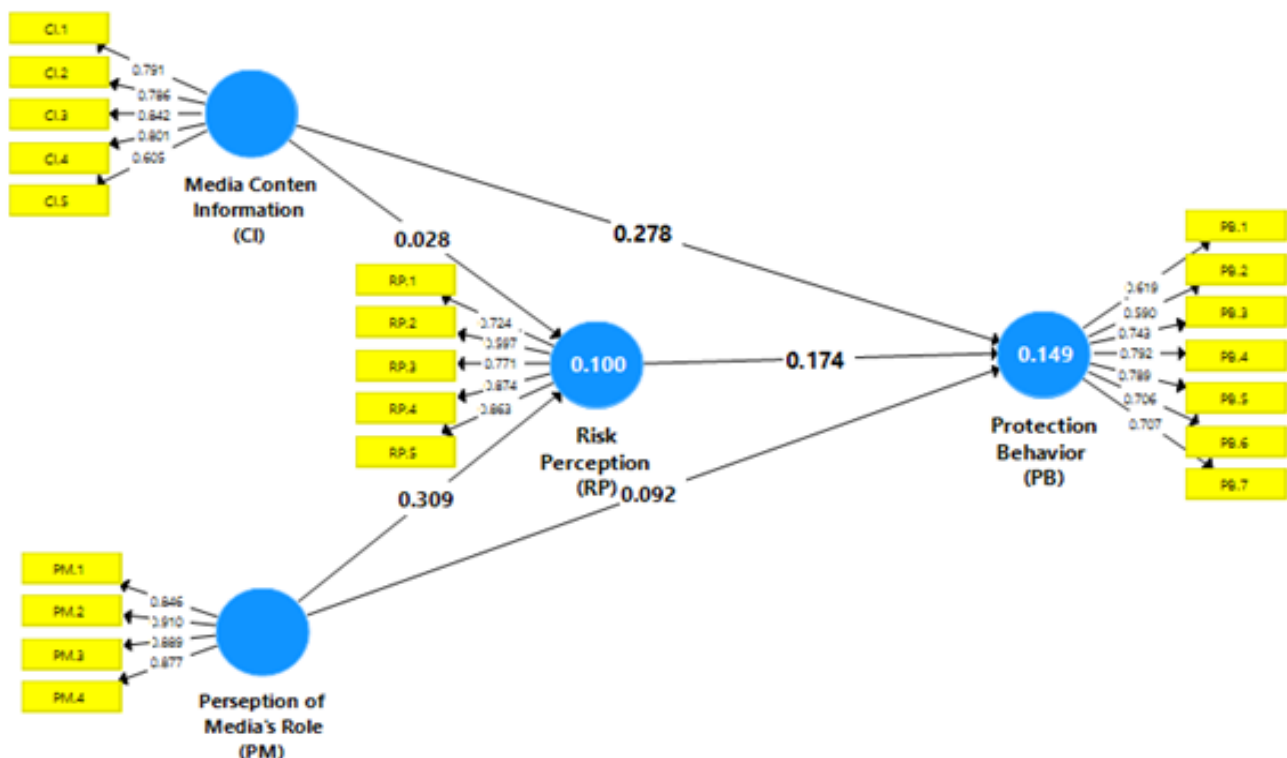
|                               | 1     | 2     | 3     | 4     |
|-------------------------------|-------|-------|-------|-------|
| 1. Media conten information   | 0.769 |       |       |       |
| 2. Perseption of media's role | 0.243 | 0.881 |       |       |
| 3. Protective behavior        | 0.319 | 0.215 | 0.710 |       |
| 4. Risk behavior              | 0.103 | 0.315 | 0.232 | 0.773 |

Source: Primary Data, 2020

**Table 4. The Result of Hypothesis Testing**

|    | Relationship   | Original Sample ( $\beta$ ) | Sample Mean | SD    | Statistics (t) | p-values | Influence   |
|----|----------------|-----------------------------|-------------|-------|----------------|----------|-------------|
| H1 | CI -> PB       | 0.285                       | 0.288       | 0.039 | 7.213          | 0.000    | Significant |
| H2 | CI -> RP       | 0.007                       | 0.010       | 0.048 | 0.148          | 0.544    | -           |
| H3 | PM -> PB       | 0.094                       | 0.093       | 0.047 | 2.004          | 0.044    | Significant |
| H4 | PM -> RP       | 0.303                       | 0.303       | 0.053 | 5.729          | 0.000    | Significant |
| H5 | RP-> PB        | 0.176                       | 0.177       | 0.049 | 3.590          | 0.000    | Significant |
| H6 | CI -> RP -> PB | 0.001                       | 0.002       | 0.009 | 0.141          | 0.565    | -           |
| H7 | PM -> RP -> PB | 0.053                       | 0.054       | 0.019 | 2.776          | 0.006    | Significant |

Source: Primary Data, 2020



Source: Primary Data, 2020

**Figure 1. Presenting The Final Path Model and Showing the Bootstrapping Diagram**

## DISCUSSION

The main results of this study showed the structural model of media content information, perception of media's role, and risk perception to influence risk protective behavior during COVID-19 during the transition period to the new normal era in Indonesia. The amount of research on the topic of media effect on protective behavior supported this model.<sup>4,6,13,14</sup> and risk perception.<sup>4,6,15,16</sup>

The study showed that new media sources (electronic newspapers and social media) were used more than old ones (paper newspapers, TV, and radio). That was because the use of new media was indeed high among respondents. The development of technology causes the development of information media to be more robust, making the use of old media sources decline.

The other reason is that new media sources present the information by visual imagery. The utilization of visual imagery will affect message effectiveness through social.<sup>17</sup> For the case when the video showed off feeling afraid, that would increase perceptions of severity and risk.<sup>18</sup>

Low access to old media also occurs in other related studies about infectious disease.<sup>19</sup> This is due to reduced public interest in old media and lack of actuality in providing information. In contrast, the information provided through new media sources continues to grow and is updated regularly. The use of social media has changed the way people obtain and use information.<sup>16</sup> Looking at the development aspect of new media sources, it can be used as a guide in dealing with pandemic situations.<sup>20</sup>

The first funding is that media content information influences directly protective behavior directly. The media content information was associated with media use. That is because it is also part of the media exposure, which also affects preventive behavior.<sup>14</sup>

The content information shows a significant relationship between protective behavior and negative emotion variables. The results of the Social Network Site (SNS) study show that people use social media as a useful tool to obtain relevant information during outbreak periods.<sup>19</sup> Someone will seek information according to their needs. Based on this, the most sought-after information content by respondents in this study was the content of protective behavior.

This shows that the contents are the most needed information in the community.

According to Green & Murphy,<sup>21</sup> The media plays an essential role in behavior change in the theory of Health Belief Models (HBM). In the HBM theory, the information content presented in the media is included in variable cues for action. Furthermore, in the context of the HBM theory, the search for protective behavior and policy contents affect a person's perception of benefits, thereby increasing the occurrence of protective behavior. One of the information content related to policies influenced increasing protective behavior.

This align with Green's study, which stated that policy is a reinforcing factor for behavior.<sup>15,21,22</sup> Stated that information protective behavior contents are used to develop perception controllability that influences the risk perception and increases self-efficacy.<sup>15</sup> This tends to influence the protective and preventive behaviors associated with health.<sup>23</sup>

Meanwhile, the information content rarely sought is related to developments in the COVID-19 case. This can indicate that the information is the type of information that the respondent does not like or avoids. This is possible because the content mentions an increase in the number of COVID-19 cases, which is increasing daily. So, it can cause negative emotions such as fear, worry, anxiety, and so on. Because information from the mass media can also have a negative emotional effect.<sup>3,16,24</sup> This was proven in this study, and correlation analysis results showed that the information content about the case update was associated significantly with negative emotionality, although in the results of the multivariate analysis, the information content was not the most influential factor in increasing negative emotions.

The second funding was the perception of the media's role in significantly influencing the perception of protective behavior directly. Moreover, the media's role indirectly influenced protective behavior through risk perception. It means the perception of the media's role supports increasing risk perception, which influences protective behavior. The perception of the media role could also be seen as trust in the media, which aligns with the perception of the media role as an influential variable.

This perception of media roles describes trust in society and from the questions asked. Participants show a high confidence level in the role of education carried out by the media because they provide the proper education and information regarding the pandemic. High levels of belief and trust related to information obtained through the media were usually related to the formation of public risk perceptions.<sup>25</sup> That could amplify the effect of media use on health behavior compliance levels.<sup>13</sup>

The study's findings indicate a link between media exposure and protective behavior during the epidemic. This research also faces limits in interactions in this pandemic era. During a pandemic, this is a factor for the health and safety of researchers and respondents. So, data collecting methods using the non-purposive sampling technique through the Internet can reach many respondents safely. However, that sampling technique has limitations, as the study's findings cannot be generalized. The findings of this study can only indicate the population that has access to the Internet.

## CONCLUSION AND RECOMMENDATION

The structural model of media content information and perception of media's role in influencing risk perception and protective behavior during COVID-19 when the transition period to the new normal era in Indonesia has been conducted. Media content information, perception of media's role, and risk perception directly influence protective behavior.

According to the results, the government can use the media to spread health information. The government must maintain the veracity of the content of valid and accurate media. That is by creating a government's mass media account. This account will allow the public to obtain and verify health information easily.

The next study explores the kind of media with the highest effect on risk perception and protective behavior in Indonesia.

## AUTHOR CONTRIBUTIONS

All authors conceptualized and designed the study. ENA and IA drafted the manuscript, ENA conducted the data analysis, IS and MPS provided additional analysis. All authors have read and approved the manuscript. All authors equally contributed to this study.

## CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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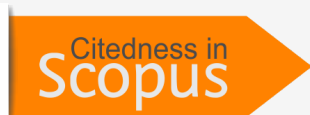
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