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Does playing a video game really result in improvements in psychological well-being in the era of COVID-19?

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ABSTRACT

This study examines the structural relationships between the perceived value dimensions of quality, emotional, price, and social, positive and negative emotions, psychological well-being, and loyalty in the video game context along with the moderating role of the perceived severity of COVID-19. This study collected data from 258 video game consumers in the United States via three waves of surveys. The findings of structural equation modeling revealed significant associations among the perceived value dimensions, emotions, psychological well-being, and loyalty. In addition, the moderating role of the perceived severity of COVID-19 showed that the impact of video game consumers' positive emotions on psychological well-being would be weaker with a high level of perception of the severity of COVID-19. Based on the empirical results, this research proposes theoretical (i.e., extension of the cognitive appraisal theory in a digital environment, and integration of the cognitive appraisal theory with the two-factor theory of motivation) and practical implications (i.e., how to increase levels of users' psychological well-being and loyalty via video games) for the video game industry during and after the era of COVID-19.

1. Introduction

Playing a video game via devices, such as game consoles or personal computers (PCs) as well as smartphones and tablet PCs, has been considered one of the most popular leisure activities all around the world (Johannes et al., 2020). During the early stage of the COVID-19 pandemic, particularly, the revenue of the video game industry was larger than that of the film industry, and the number of consumers who play video games has also dramatically increased (Statista, 2020). In 2020, for example, there were approximately 214 million consumers in the United States playing a video game 1 h or more per week, and the number of video game consumers is expected to dramatically increase in 2021 (Entertainment Software Association, 2020). This is due to the fact that consumers all across the globe were encouraged or even forced to work at home to protect themselves from COVID-19 as well as to prevent the spread of the virus. Being required to spend most of their time at home at leisure and for work, consumers are more likely to rely on “home” equipment, such as video game consoles and home fitness products, to manage their mental and physical health (Stackline, 2020).

Compared to traditional video games, advanced video games provide users with digital spaces for socializing without any geographic boundaries, enabling users to enjoy video game content with others in real time. In the virtual world of the video game, consumers do not need to worry about social distance practices and virus infections while interacting with other people (King et al., 2020). Prior research on video games conducted before the COVID-19 pandemic has primarily considered the positive and/or negative impact of playing a video game on users’ perceptions, emotions, attitudes, well-being, and behaviors beyond the virtual world (King et al., 2020). However, this study was conducted to answer this question, “Can video game consumers really increase levels of positive emotions and decrease levels of negative emotions as well as fulfill their psychological needs (or enhance their psychological well-being) and establish loyalty toward the video game during and after the era of COVID-19?” In general, prior research on consumer behavior during pandemics and outbreaks has reported that consumers tend to easily change their motivations, perceptions, attitudes, and behaviors as a result of unclear situations, such as ambiguity, unpredictability, and an unsafe environment (Laato et al., 2020). Hence, consumers’ decision-making process leads to particular biases and errors, depending on their perceptions of the current pandemics and outbreaks (He and Harris, 2020; Pantano et al., 2020). This notion implies that consumers’ perceived severity of COVID-19 should play a critical role in formulating their perceptions of, emotions to, attitudes toward, and behavior for playing a video game during the COVID-19 pandemic.

As consumers have relied heavily on playing a video game at home to...
reduce stress, this study aims to explore whether playing a video game at home generates a positive and/or negative impact on consumers’ psychological well-being and loyalty toward the video game in the era of COVID-19 (i.e., the moderating role of video game consumers’ perceived severity of COVID-19). COVID-19 has generated countless negative impacts on the economy, society, and consumers, more so than those of previous outbreaks and pandemics. Also, many scholars have indicated that we may not be able to go back to life as it was prior to the COVID-19 pandemic (He and Harris, 2020; Laato et al., 2020; Mehta et al., 2020; Pantano et al., 2020). Therefore, the COVID-19 pandemic should be considered as a new research context to predict consumer behavior in all business contexts (Mehta et al., 2020; Pantano et al., 2020).

This study utilizes this ongoing situation in the United States as the basis of this study, and proposes these research objectives: (1) to investigate the influences of perceived value dimensions (i.e., consumers’ perceptions of the value of playing a video game) on emotional states (i.e., consumers’ positive and negative emotions while playing a video game); (2) to identify the impacts of positive and negative emotions on psychological well-being and loyalty toward a video game; (3) to examine the effects of psychological well-being on loyalty; and (4) to test the moderating role of the perceived severity of COVID-19 in the aforementioned impacts. To achieve the research objectives, this study focuses primarily on the roles of emotions and psychological well-being in the video game users’ loyalty formulation process based on the cognitive appraisal theory (Lazarus, 1991), which is “an especially relevant approach for understanding the emotional responses of consumers in the marketplace” (Johnson and Stewart, 2005, p. 3). This approach enables us to reflect on the current situation of the COVID-19 pandemic which has led consumers to overload their cognitive decision-making and has resulted in more emotion-influenced responses to the decision-making process (Laato et al., 2020).

As theoretical contributions, based on the concept of perceived value dimensions, this study extends Lazarus’ (1991) cognitive appraisal theory by applying its notion to a new (digital) context: the video game industry. Also, this study focuses on two respective dimensions of consumers’ emotional states (positive vs. negative) while playing a video game by combining the cognitive appraisal theory with the two-factor theory of motivation that enables scholars to identify hygiene factors, motivation factors, and critical factors. In addition, this study considers the situation of the COVID-19 pandemic as a significant moderator in the interrelationships among the constructs, making them significantly weaker or stronger. Furthermore, instead of focusing primarily on the role of emotional states, this study proposes consumers’ psychological well-being as a core driver of loyalty toward a video game. Practically, an assessment of consumers’ perceived values and severity of COVID-19 will provide developers and administrators at video game companies with new insights to increase levels of consumers’ psychological well-being and loyalty toward the video game during and after the era of COVID-19. This study is outlined as follows: literature review (the cognitive appraisal theory, perceived value, emotions, psychological well-being, loyalty, and perceived severity of COVID-19), and hypotheses development (from H1 to H6), method (data collection and measures), results (test of reliability and validity, and test of hypotheses), discussion (theoretical and managerial implications, and limitations and directions for future research), and conclusion.

1.1. Literature review and hypotheses development

1.1.1. The cognitive appraisal theory as a theoretical background

The theoretical background of this study is based on the cognitive appraisal theory (Lazarus, 1991), which assumes that individuals’ evaluations of a particular experience with a product/service or an environment/event elicit positive or negative emotions toward it (Yih et al., 2019). In other words, the fundamental notion of the theory considers emotions as outcomes of underlying motivational and evaluative roots which consequently affect consumer behavior. Hence, consumers’ underlying roots (or appraisals) of a product/service or an environment/event combine to elicit specific emotional states (e.g., positively in the case of certainty vs. negatively in the case of uncertainty) (Watson and Spence, 2007). Hence, this theory has been widely used in the consumer behavior field to explain the complete cognitive (i.e., perceived value in this study), emotional (i.e., positive and negative emotions and psychological well-being in this study), and behavioral (i.e., loyalty in this study) aspects of individuals’ consumption-related behaviors simultaneously after exposure to a particular marketing event or physical environment (Ismagilova et al., 2020).

This study applies the cognitive appraisal theory to the video game (or virtual product consumption) context because this theory focuses more on the emotional elicitation process rather than the cognitive one (Grégoire et al., 2010). Compared to other regular products, more specifically, a video game is a kind of hedonic product because consumers tend to care more about pleasure and enjoyment rather than functionality from the video game (Kim and Kim, 2020). In the case of hedonic product consumption, emotional elicitation is considered as the primary appraisal process, and cognitive evaluation is viewed as the secondary appraisal process according to this theory. However, they tend to occur almost at the same time (Moors, 2017). In other words, although Lazarus’ cognitive appraisal theory is based on the notion that consumers’ cognitive appraisals of a product or an environment lead to positive or negative emotional states, it has been insisted that consumers tend to appraise both the cognitive and emotional aspects of the product or environment because those two independent aspects occur simultaneously during their evaluation process (Moors, 2017). Hence, prior research employing the cognitive appraisal theory has considered the interaction between the emotional and cognitive evaluations in the consumer assessment process. As the construct of perceived value has been conceptualized as consumers’ cognitive (i.e., utilitarian) and emotional (i.e., hedonic) evaluations of a product/service or an environment/event (Kim and Thapa, 2018), this study considers the perceived value dimensions as core components of the cognitive appraisal theory in the video game context, eliciting consumers’ positive or negative emotions while playing a video game.

Prior research in the physical environment context has also considered the perceived value construct as an evaluative criterion of a brand/product or an environment (i.e., perceived costs vs. perceived benefits) based on the notion of the cognitive appraisal theory. For example, the study of Ismagilova et al. (2020) integrated consumers’ emotion- and cognition-based appraisals of a brand for research model formulation and reported how they significantly interacted in the decision-making process. Also, Ladhari et al. (2017) revealed the interactions of emotion-, cognition-, and conation-focused attributes in consumers’ evaluations of a product. Based on the approaches of the cognitive appraisal theory along with emotional attributes (Ismagilova et al., 2020; Ladhari et al., 2017; Moors, 2017), this study also suggests four dimensions of perceived value as cognition- and emotion-based appraisals (or evaluations), including (1) quality (cognitive); (2) price (cognitive); (3) emotional (emotion); and (4) social (emotion), which lead to video game consumers’ emotional states while playing a video game, their psychological well-being, and their loyalty toward the video game during the COVID-19 pandemic. Compared to other previous studies employing the cognitive appraisal theory within the physical environment context, the approach and application of this study enables scholars to establish an ongoing theoretical model for the video game industry by combining the personal factors with situational factors in the model.

1.1.2. Perceived value

In marketing, the perceived value construct and its dimensionality (i.e., hedonic vs. utilitarian) have been well-established and used to predict variables that influence consumers’ decision-making process, such as service quality, satisfaction, trust, and behavioral intention (Berraies et al., 2017; El-Adly, 2019; Kim and Thapa, 2018). The hedonic aspects
of perceived value focus on evaluations of emotional benefits from a product/service or environment and event, such as pleasure and enjoyment. However, the utilitarian aspects of perceived value emphasize assessment of functional benefits from the product/service or environment and event (El-Adly, 2019). The perceived value construct in this study proposes a fundamental background based on the cognitive appraisal theory, evaluating a video game from consumers’ perspectives on its perceived hedonic and utilitarian aspects. Thus, while playing a video game, consumers continually evaluate the video game based on how valuable each aspect of the video game is perceived (Gan and Wang, 2017). Theses utilitarian and hedonic value-based assessments lead consumers to arouse emotional states (i.e., positively or negatively) while playing the video game, which consequently result in psychological well-being and behavioral intention.

Consumers may not evaluate or assess a product/service based on a one-time experience. Instead, consumers perceive how valuable the product/service is from the pre-purchase stage (i.e., searching for information about the product/service), the moment-of-purchase stage, and the moment-of-use stage, to the post-purchase stage (Berraies et al., 2017; Gan and Wang, 2017). During this process, consumers are expecting the product/service to satisfy their intrinsic desires (i.e., social and emotional) and extrinsic desires (i.e., quality and economy, such as price) (Kim and Thapa, 2018). Based on the accumulated experiences with the product/service, consumers assess its utilitarian and hedonic aspects by perceiving what is given (e.g., time and money for the product/service) and what is received (e.g., hedonic and utilitarian benefits from the product/service) (Berraies et al., 2017). Thus, perceived value refers to “buyers’ perceptions of value [that] represent a trade-off between the quality/benefits they perceive in the product relative to the sacrifice they perceive by paying the price” (Monroe, 1990, p. 46).

By examining the holistic perspective on value perceptions, this study also classifies the perceived value dimensions of quality, emotional, price, and social aspects, while embracing the utilitarian (quality and price) and hedonic (emotional and social) dimensions of perceived value (Sweeney and Soutar, 2001).

1.1.3. Emotions

In marketing, emotions have been used as a core mediator in the relationship between consumer cognition (e.g., perceived value) and reactions (Lee et al., 2008). Hence, prior research has found that positive emotional states related to a product or environment result in favorable outcomes for the product or environment, including consumer satisfaction and loyalty, and vice versa (Akhoondnejad, 2018; Carneiro et al., 2019; Rychalski and Hudson, 2017). The significant role of emotional states in the consumers’ decision-making process is based on the notion that consumers are not always rational, instead being sometimes affective when making decisions (Lee et al., 2008; Rychalski and Hudson, 2017). Therefore, prior research attempted to identify the dimensionality of consumers’ emotional states that influence the decision-making process. For example, the study of Izard (1977) developed the Differential Emotions Scale (DES) by identifying 10 subdimensions of consumer emotions: joy, interest, guilt, shame, sadness, disgust, fear, contempt, surprise, and anger. These subdimensions were in turn categorized as two dimensions: negative and positive emotions. Also, the work of Sohn and Lee (2017) identified consumer emotions as a negative feeling aspect (i.e., displeased, anxious, angry, nullified, and ignored) and a positive feeling aspect (i.e., satisfied, contented, attractive, pleased, proud, and excited).

In addition to the product consumption context, some studies used positive and negative emotion dimensions, respectively, in recreational participation settings (Akhoondnejad, 2018; Lee et al., 2008). For example, Carneiro et al. (2019) focused on consumers’ emotional states while attending a historical re-enactment event. Their study found that patrons’ positive emotional states led to satisfaction with and loyalty toward the event, and negative emotional states reduced levels of satisfaction and loyalty among attendees. The empirical findings imply that it is critical in capturing consumers’ negative and positive emotional states to examine their decision-making process. While recognizing that playing a video game is one type of leisure activity, this study also captures both positive and negative emotional states while consumers play a video game.

1.1.4. Psychological well-being

The concept of psychological well-being refers to the integration of high levels of positive affect and satisfaction with life, and a low level of negative affect (Horwood and Anglim, 2019). In other words, individuals’ psychological well-being is not simply about their life satisfaction or about experiences of positive or negative emotions in their life (Kim and Kim, 2020). From a broader perspective of psychological well-being, the concept incorporates a variety of aspects of human life that give special meaning to both the mental and physical wellness of an individual (Houben et al., 2015). Based on that notion, psychological well-being embraces ‘the special meanings’ to human life, such as purpose in life, autonomy, positive relations with others, personal growth, self-acceptance, and environmental mastery (Bojanowska and Piotrowski, 2019). Hence, the broad concept of psychological well-being includes eudaimonic (i.e., positive skills facilitating optimal functioning for individuals’ lives) and hedonic (i.e., low negative affect, positive affect, and life satisfaction in individuals’ lives) dimensions (Joshanloo, 2019).

The self-determination theory describes the integrated concept of psychological well-being that “certain activities and lifestyles, particularly those associated with eudaimonic living, supply the most reliable paths to happiness and positive affect” (DeHaan and Ryan, 2014, p. 40). In addition, the broaden and build theory assumes that individuals’ psychological well-being and personal resources are enhanced by maintaining positive emotional states (Fredrickson, 2004). Similar to other leisure activities, playing a video game also requires consumers to acquire special skills or knowledge and achieve missions or goals in the virtual world. These virtual activities in the video game can give users special meaning to the eudaimonic and hedonic perspectives of their psychological well-being in real life (Kim and Kim, 2020).

1.1.5. Loyalty

Loyalty toward a particular product/service or brand tends to be exhibited as consumer behaviors, such as positive word-of-mouth, recommendations, or (repeat) purchasing of the product/service or brand (Cacher-Martínez and Vázquez-Casillas, 2021). In marketing, the level of loyalty has been measured by consumers’ favorable behaviors for a particular product/service or brand, including the proportions of simultaneous purchases and post-purchase behaviors. In other words, the construct of loyalty is based on a complex multidimensional phenomenon rather than just one or two behaviors (Kim and Thapa, 2018). This is because repeat purchase does not completely guarantee high levels of loyalty toward a certain product/service (Kaur et al., 2019).

To overcome the limitation of the conceptualization, Hwang and Choi (2020) argued that the loyalty construct should also embrace consumers’ positive attitudes toward a particular product/service or brand even though it is not exhibited as actual behaviors. Hence, consumer loyalty refers to the strength of relationships between consumers’ positive or negative attitudes toward a product/service and their behavioral intention or actual behaviors toward the product/service (Cacher-Martínez and Vázquez-Casillas, 2021; Hwang and Choi, 2020; Kaur et al., 2019). Therefore, the loyalty construct in this study implies video game consumers’ behavioral intention to favorably behave for the video game showing the strength of the relationship with the virtual product (Kaur et al., 2019).

1.1.6. Perceived severity of COVID-19

Perceived severity refers to how seriously a situation is perceived by individuals (Laato et al., 2020). The definition of perceived severity is the degree of individuals’ perceptions that they (will) suffer from a risk
or threat (Puspitasari and Firdauzy, 2019). Thus, individuals with a high level of perceived severity are more likely to formulate negative attitudes toward the risk, threat, or situation and take preventive actions in an attempt to minimize the potential risk, threat, or situation (Puspitasari and Firdauzy, 2019). Based on the definition, this study defines perceived severity of COVID-19 as the degree of video game consumers’ beliefs that they have suffered from COVID-19. More seriously, however, high levels of perceived severity often lead individuals to formulate negative emotional states and exhibit negative behaviors toward anything when they are not certain about the “actual” severity of a risk or situation (Vassilikopoulou et al., 2018). The role of the perceived severity of COVID-19 would be more important because it is still ongoing, and no one can guarantee when the era of the COVID-19 pandemic will be over. This situation leads consumers to feel inadequate to control the crisis and become more worried about the negative impacts of COVID-19 on their daily lives and even in society (Li et al., 2020). This study was thus motivated to focus on the moderating role of the perceived severity of COVID-19 in virtual recreation activities, such as playing a video game.

1.1.7. Research hypotheses

The framework of the research model is based on the cognitive appraisal theory (Lazarus, 1991). The fundamental notion of the theory is that individuals’ emotional states come from their evaluations and interpretations of a particular object, situation, event, or environment (Kim and Thapa, 2018). This theory views emotions as outcomes of consumers’ evaluations of experiences on a combination of appraisal attributes. The consumers’ evaluations are the consequences of their information-processing activities assessing the influences of the experiences on their perceived benefits and costs (Ma et al., 2013). The trade-off between perceived benefits and costs is the fundamental notion of the perceived value concept (Monroe, 1990). The appraisal attributes consumers use while playing a video game tend to serve as both cognitive (i.e., the quality and price aspects of perceived value in this study) and affective (i.e., emotional and social aspects of perceived value in this study) judgment tools, leading to a specific emotional state (i.e., positive vs. negative) (Ma et al., 2013). According to that theory, the research model proposes that cognitive appraisal of the video game play or the video game itself results in users’ positive and negative emotional status (Lazarus, 1991). Also based on the above notion, in this study, perceived values of a video game are considered as video game consumers’ evaluations of the video game as a determinant of consumers’ positive and negative emotional states.

Prior research in marketing has considered perceived value as a significant driver of consumers’ emotional responses (or reactions) to a particular brand, product, and physical environment (Zielke, 2014). In other words, consumers’ rational (i.e., the quality and price dimensions in this study) and emotional (i.e., the emotional and social dimensions in this study) evaluations of a particular product or environment drive their emotional responses to the product/service or physical environment (Ahn and Seo, 2018; Kim and Thapa, 2018; Zielke, 2014). First, from the perspective of rational evaluation, before purchasing a product/service, consumers expect higher values of their experiences with the product/service than their price and quality expectations, including money, time, and efforts as well as functionality (Ahn and Seo, 2018; Das and Varshneya, 2017). While experiencing the product/service they purchased, consumers tend to formulate emotional responses to the product/service based on the rational evaluations of the product/service (Das and Varshneya, 2017). For example, if consumers perceive that the price of a physical or virtual product/service is reasonable and its quality is greater than their expectations, these positive evaluations will influence the consumers’ positive emotional states while experiencing the physical or virtual product/service, and vice versa (Ahn and Seo, 2018; Gan and Wang, 2017). This is because the rationally positive evaluations of a product or environment result in positive product (or environment) use experiences (Das and Varshneya, 2017). The positive experiences can be a significant component of increasing positive emotional responses to the product or environment, and vice versa (Zielke, 2014). More importantly, compared to other physical products/environments, digital products and environments tend to make consumers more suspicious of the product quality and its price because consumers cannot touch and see the digital products/environments in person (Chen et al., 2017). This means that higher levels of the video game quality and its monetary value result in consumers’ higher levels of positive emotions while playing the video game (Sanchez et al., 2006). However, if the video game cannot meet consumers’ expectations of quality and monetary value, they are more likely to be angry and annoyed (Chen et al., 2017). Thus, it is arguable that consumers’ rational evaluations of a video game, such as quality and price, are significantly associated with their emotional states while playing the video game.

Second, consumers’ evaluations of a product/service are not primarily based on the utilitarian point of view (Eid and El-Gohary, 2015). From the perspective of affective evaluation, compared to other products/services, video games tend to be included in the hedonic-oriented category (i.e., focusing on enjoyment and pleasure) and considered to be a leisure activity (Kim and Kim, 2020). Hence, video game consumers’ emotional evaluations (i.e., emotional and social values in this study) can be significant attributes, formulating their emotional responses to a particular product/service (Kim and Thapa, 2018). The higher levels of enjoyment and socialization lead consumers to formulate positive experiences with a leisure product/service that contribute to positive feelings while consuming the leisure product/service and/or activity (Eid and El-Gohary, 2015). This is because feelings, emotions, and experiences of individuals who consume hedonic products tend to be derived from how well the products offer expected hedonic values to consumers, such as enjoyment, pleasure, and socialization (Kim and Stepchenkova, 2018). The emotional and social values of a product directly affect the emotional arousal of consumers who consider the hedonic values as the priority in the decision-making process (i.e., higher values lead to positive emotions, and lower values result in negative emotions) (Ha and Jang, 2010). Thus, this study proposes the following hypotheses regarding the association between perceived value dimensions and positive/negative emotions:

H1a. Quality is significantly associated with positive emotions.
H1b. Emotional is significantly associated with positive emotions.
H1c. Price is significantly associated with positive emotions.
H1d. Social is significantly associated with positive emotions.
H2a. Quality is significantly associated with negative emotions.
H2b. Emotional is significantly associated with negative emotions.
H2c. Price is significantly associated with negative emotions.
H2d. Social is significantly associated with negative emotions.

Prior research has examined how individuals’ emotional states lead to their psychological well-being from the static perspective on emotion (Houben et al., 2015). More specifically, the static perspective considers individuals’ emotions as a single monotone status, switching on and backing off in response to a particular situation or event. In other words, individuals’ emotional states can be temporarily formed while they experience and/or encounter a situation or event. After experiencing and/or encountering the event or situation, individuals’ emotional states tend to fade away (Dhir et al., 2018; Houben et al., 2015). However, continuously experiencing low levels of negative emotions and high levels of positive emotions within particular boundaries (i.e., the virtual world of a video game in this study) serves as a key determinant of consumers’ mental health, such as psychological well-being (Choi and Lim, 2016; Dhir et al., 2018). Compared to other contexts, playing a video game requires users to achieve results, increase game skill levels,
and reach a goal just like other leisure activities, which does not immediately make users happy (Knobloch et al., 2017). However, when achieving each goal and slightly increasing game skills, users develop a degree of positive emotions gradually (i.e., if they cannot, a degree of negative emotions occurs), leading them to feel good through personal, development, enrichment, and growth in real life (i.e., psychological well-being) (Knobloch et al., 2017). Hence, this study establishes the following hypotheses:

H3a. Positive emotions are significantly associated with psychological well-being.

H3b. Negative emotions are significantly associated with psychological well-being.

In the psychology and marketing fields, emotional states have been considered as one of the critical drivers of consumers’ effective action (McKechnie et al., 2018). In general, according to the hedonic continuity theory, consumers tend to avoid a particular situation and/or environment if it creates negative emotions while experiencing it. However, consumers are more likely to continuously stay with a certain situation and/or environment if experiencing it leads them to create positive emotions (Lee et al., 2015; Septianto et al., 2019). In other words, the fundamental notion of the theory is that individuals who have felt happy with a particular activity (i.e., playing a video game in this study) tend to continue the activity’s hedonic consequences (Lee et al., 2015). From this viewpoint, consumers are more likely to participate in the activity to maintain positive emotional states, such as repurchase and positive word-of-mouth (Lee et al., 2015; McKechnie et al., 2018). Also, when consumers perceive that they received benefits (i.e., positive emotions) or losses (i.e., negative emotions) from a situation and/or environment, they tend to create feelings of appreciation (i.e., in the case of positive emotions) and attempt to set a particular goal toward the situation and/or environment. One of consumers’ possible goals can be to develop and sustain the strong relationship with the situation and/or environment which facilitates positive outcomes for both themselves (i.e., higher levels of positive emotions) and the situation and/or environment (i.e., positive word-of-mouth, recommendations, and revisits) (Lee et al., 2015; McKechnie et al., 2018; Septianto et al., 2019). It can be assumed that consumers’ positive or negative emotions that result from playing a video game may influence their post-consumption behavior toward the video game, such as a high level of loyalty (i.e., in the case of positive emotions) and a low level of loyalty (i.e., in the case of negative emotions). Thus, this study proposes the following hypotheses:

H4a. Positive emotions are significantly associated with loyalty.

H4b. Negative emotions are significantly associated with loyalty.

Psychological well-being refers to individuals’ feeling of happiness in their lives (Han, 2020). Individuals’ sense of happiness tends to be formed by what they have remembered and experienced with things during their lifetimes. Thus, if individuals have a good memory and a positive experience with an object, situation, and environment, it leads them to formulate a high level of happiness and become more optimistic for the object, situation, and environment (Baloglu et al., 2019; Troebs et al., 2018). In other words, individuals are more likely to behave favorably for the objective or situation (i.e., playing a video game in this study or a video game itself) by expecting more positive consequences from it, such as a higher level of psychological well-being from a video game (Kim and Kim, 2020). From a cognitive aspect of psychological well-being, consumers tend to enhance a level of life satisfaction through various experiences that bring them happiness (Han, 2020). From an affective perspective of psychological well-being, consumers are more likely to maintain positive emotional states by continuously experiencing something that brings them happiness (Baloglu et al., 2019; Han, 2020). Hence, individuals’ psychological well-being is closely associated with their behavioral intention for something and actual behavior if it enhances their level of happiness (Baloglu et al., 2019; Kim and Kim, 2020; Troebs et al., 2018). For example, the study of Kim and Kim (2020) found that live streaming service users are more likely to be committed and loyal toward the platform when it brings them life satisfaction and happiness (i.e., psychological well-being) in their real life. They feel happy and excited while using the game-watching platform and exhibit a high level of behavioral intention to maintain the relationship with it. Therefore, this study formulates the following research hypothesis regarding the association between psychological well-being and loyalty:

H5. Psychological well-being is significantly associated with loyalty.

The fundamental notion of the risk-resilience model is that individuals’ perceptions of risk and adversity result in an increase in the tendency toward an undesirable outcome (Li et al., 2020). If they believe that they have sufficient capabilities to offset anticipated negative impacts of adversity and risk, it can be replaced as resilience via overcoming the undesirable outcome. However, when they perceive that the risk and adversity are still ongoing and directly related to themselves, such as with COVID-19, they tend to include all kinds of internal and external risk- and adversity-related factors in their risk calculations (Oh et al., 2020). This tendency may make measuring their capabilities to overcome the risk and adversity much harder and more challenging (Laato et al., 2020; Yildirim et al., 2021). Consequently, higher levels of perceived severity of risk and adversity play a critical role as a burden in consumers’ daily lives, including work and leisure activities, in order to reduce (anticipated) negative influences of the risk and adversity. In other words, individuals with higher levels of the perceived severity of COVID-19 would be more influenced by the risk perception and expect worse outcomes (i.e., lower levels of positive emotions and psychological well-being through playing a video game in this study) than those with lower levels of the perceived severity of COVID-19 (Oh et al., 2020; Yildirim et al., 2021). The empirical findings of Li et al.’s (2020) study also revealed that consumers’ perceived severity of COVID-19 generates more negative behavioral outcomes as well as undesirable emotional states, negatively influencing their mental health. Hence, this study formulates the following hypothesis with respect to the moderating role of the perceived severity of COVID-19 in hypothesized relationships:

H6. Perceived severity of COVID-19 moderates the associations among perceived values, emotions, psychological well-being, and loyalty (i.e., making the hypothesized associations significantly weaker).

2. Method

2.1. Data collection

The unit of analysis in this research was adult consumers in the United States who frequently play a video game via a game console, personal computer, or smartphone. The author conducted three waves of data collection with different approaches during the COVID-19 pandemic in order for this study to avoid any bias that results from sample selection (Neuendorf, 2002). First, a snowball sampling approach was used during the month of November 2020 by contacting 10 members of an online video game community and encouraging them to invite their video game friends and to post the survey link on their social media pages. Second, a random sampling approach was used during the month of December 2020 by posting the survey link on randomly selected video games’ social media pages. During the first and second weeks of January 2021, the author conducted the third wave of data collection by posting the survey link along with screening questions on Amazon’s Mechanical Turk (i.e., “Please indicate [1] how often you play a video game; [2] what device(s) you own for playing a video game; and [3] what video game(s) you are playing”). To identify appropriate samples from online panels, the author carefully reviewed all the answers of each participant. Twenty-two samples were removed during
this sample purification stage. Consequently, 258 participants were finalized as the study samples used for multivariate analyses, such as reliability analysis, confirmatory factor analysis, correlation analysis, and structural equation modeling. Table 1 demonstrates the demographic characteristics of the study samples. They represented the demographic characteristics of the target population in the United States well (e.g., between 18 and 34 years old: 38%; between 35 and 54 years old: 26% according to Entertainment Software Association [2020]).

2.2. Measure

Instead of developing new measures, the author adapted and revised multiple items from prior studies (Kim and Kim, 2020; Kim and Thapa, 2018; Laato et al., 2020; Lee, 2018; Lee et al., 2008; Sweeney and Soutar, 2001). The items measuring each construct in this study were selected based on the rigor of a prior study’s scale development processes and data analysis procedures. The items revised by the author were reviewed by three professionals in the business and e-sport fields. Then, a pilot test was conducted among 30 video game consumers for minor changes in each item. After finalizing the measures, the author developed a questionnaire by randomly ordering the items to control common method bias as recommended by Podsakoff et al. (2012). This procedural remedy can reduce respondents’ perceptions of redundancy and similarity of the survey items, leading to common method bias while they respond to the survey items. All survey items for measuring this study’s constructs were measured on a 7-point Likert scale (from “1 = strongly disagree” to “7 = strongly agree”). Table 2 demonstrates how each variable was measured by items in this study and where the items were originally from.

3. Results

3.1. Test of reliability and validity

As exhibited in Anderson and Gerbing (1992), this study employed the two-step approach by testing reliability and validity via (1) Cronbach alpha coefficients of each variable and (2) confirmatory factor analysis (CFA) before testing the significant associations among the variables in this study. In the first step, as indicated in Table 2, Cronbach’s alpha coefficients of all variables exceeded 0.70, the acceptable level of reliability in the social science fields (Hair et al., 2019). In the second step, confirmatory factor analysis (CFA) was performed for the measurement model consisting of all indicators after checking reliability. The fit indices of the measurement model were: χ² = 972.905, degree of freedom = 489, p < 0.001, RMSEA = 0.062, NFI = 0.823, CFI = 0.902, IFI = 0.904. In addition to the good fit indices overall, all indicators’ standardized factor loadings were more than 0.50 at the

Table 1
Demographic analysis of respondents.

| Variables (N = 258) |
|---------------------|
| Characteristics     | Frequency (%) |
| Gender              |               |
| Female              | 125 (48.4%)   |
| Male                | 133 (51.6%)   |
| Age                 |               |
| 19–29               | 76 (29.4%)    |
| 30–39               | 128 (49.6%)   |
| 40–49               | 37 (14.3%)    |
| 50 and over         | 17 (6.7%)     |
| Education           |               |
| High school         | 41 (15.9%)    |
| 2- or 4-year college| 190 (73.6%)   |
| Graduate school     | 27 (10.5%)    |
| Number of hours per playing a video game |        |
| Less than 1 h       | 108 (41.8%)   |
| Between 1 and 2 h   | 100 (38.8%)   |
| More than 3 h       | 50 (19.4%)    |
| Occupation          |               |
| Student             | 12 (4.6%)     |
| Employed            | 97 (37.6%)    |
| Self-employed       | 144 (55.8%)   |
| Etc.                | 5 (2.0%)      |

Table 2
Measurement model from confirmatory factor analysis.

| Constructs        | Items                                                                 | Confirmatory factor analysis |
|-------------------|-----------------------------------------------------------------------|-----------------------------|
|                   |                                                                      | FactorLoading | StandardizedError | CriticalRatio |
| Quality (α = 0.811) | This video game has consistent quality.                              | 0.764          | Fixed             | Fixed         |
|                   | This video game is well made.                                         | 0.646          | 0.105             | 9.920         |
|                   | This video game has an acceptable standard of quality.               | 0.759          | 0.098             | 11.698        |
|                   | This video game would perform consistently.                          | 0.721          | 0.089             | 11.199        |
| Emotional (α = 0.817) | This video game is one that I would enjoy.                           | 0.804          | Fixed             | Fixed         |
|                   | This video game is one that I would feel relaxed.                    | 0.502          | 0.099             | 8.091         |
|                   | This video game would make me feel good.                             | 0.878          | 0.064             | 15.859        |
|                   | This video game would give me pleasure.                              | 0.842          | 0.064             | 15.081        |
| Price (α = 0.782)   | This video game is reasonably priced.                                 | 0.530          | Fixed             | Fixed         |
|                   | This video game offers value for money.                               | 0.580          | 0.129             | 8.707         |
|                   | This video game is a good product for the price.                     | 0.838          | 0.160             | 8.266         |
| Social (α = 0.883)  | This video game would help me to feel acceptable.                    | 0.783          | Fixed             | Fixed         |
|                   | This video game would improve the way I am perceived.                | 0.813          | 0.068             | 13.925        |
|                   | This video game would make a good impression on other people.        | 0.877          | 0.069             | 15.185        |
|                   | This video game would give its owner social approval.                | 0.771          | 0.068             | 13.059        |
| Positive emotions (α = 0.834) | While playing this video game, I feel ...                           |               |                  |              |
|                   | Happy                                                                 | 0.689          | Fixed             | Fixed         |
|                   | Energetic                                                            | 0.794          | 0.110             | 11.146        |
|                   | Excited                                                              | 0.746          | 0.112             | 10.578        |
|                   | Relaxed                                                              | 0.772          | 0.096             | 10.886        |
| Negative emotions (α = 0.903) | While playing this video game, I feel ...                           |               |                  |              |
|                   | Bored                                                                | 0.870          | Fixed             | Fixed         |
|                   | Angry                                                                | 0.862          | 0.047             | 18.017        |
|                   | Sleepy                                                                | 0.816          | 0.052             | 16.431        |
|                   | Annoyed                                                              | 0.802          | 0.055             | 15.948        |
| Psychological well-being (α = 0.830) | Playing this video game satisfies my overall needs during the era of COVID-19. | 0.596          | Fixed             | Fixed         |
|                   | Playing this video game plays a very important role in my social well-being during the era of COVID-19. | 0.570          | 0.141             | 7.397         |
|                   | Playing this video game plays a very important role in my game plays a very important role in my social well-being during the era of COVID-19. | 0.766          | 0.118             | 9.041         |

(continued on next page)
**Table 2 (continued)**

| Constructs Items | Confirmatory factor analysis |
|------------------|----------------------------|-----------------|
|                  | Factor Loading | Standardized Error | Critical Ratio |
| Leisure well-being during the era of COVID-19 | 0.578 | Fixed | Fixed |
| Loyalty (α = 0.858) I intend to purchase products associated with this video game. | 0.664 | 0.097 | 11.177 |
| From: Kim and Kim (2020) I attempt to search for my shopping needs related to this video game. | 0.910 | 0.200 | 9.951 |
| I encourage friends and relatives to play this video game. | 0.886 | 0.184 | 9.912 |
| I say positive things about this video game to others. | 0.674 | Fixed | Fixed |
| Perceived severity of COVID-19 (α = 0.768) The negative impact of COVID-19 is very high. | 0.682 | 0.172 | 7.385 |
| From: Laato et al. (2020) COVID-19 can be life-threatening. | 0.631 | 0.175 | 7.138 |
| 5. Quality | 0.605** | 1 |
| 3. Price | 0.575** | 0.551** | 1 |
| 4. Social | 0.531** | 0.564** | 0.565** | 1 |
| 5. Positive emotions | 0.542** | 0.536** | 0.524** | 0.408** | 1 |
| 6. Negative emotions | −0.439** | −0.538** | −0.424** | −0.357** | −0.451** | 1 |
| 7. Psychological well-being | 0.511** | 0.526** | 0.426** | 0.356** | 0.623** | −0.539** | 1 |
| 8. Loyalty | 0.335** | 0.406** | 0.299** | 0.302** | 0.468** | −0.451** | 0.557** | 1 |
| 9. Perceived severity of COVID-19 | 0.224** | 0.116 | 0.228** | 0.078 | 0.357** | −0.093** | 0.339** | 0.204** | 1 |
| Mean | 5.822 | 6.186 | 5.794 | 6.194 | 5.725 | 1.619 | 5.908 | 5.923 | 4.956 |
| SD | 0.952 | 0.799 | 0.924 | 0.908 | 0.904 | 0.807 | 0.916 | 1.070 | 1.460 |
| CCR | 0.814 | 0.850 | 0.762 | 0.885 | 0.838 | 0.904 | 0.781 | 0.851 | 0.701 |
| AVE | 0.524 | 0.595 | 0.452 | 0.659 | 0.564 | 0.702 | 0.478 | 0.507 | 0.439 |

### 3.2. Test of hypotheses

After testing the reliability and validity of the measurement model, this study investigated the hypothesized model in an empirical way (i.e., maximum likelihood estimates) via a covariance matrix of AMOS 27.0. The fit indices of the hypothesized model were assessed, such as $\chi^2 = 823.527$, degree of freedom $= 412$, $p < 0.001$, RMSEA = 0.062, NFI = 0.841, CFI = 0.913, and IFI = 0.914 (Hair et al., 2019). First, the empirical findings revealed that video game consumers’ positive emotions were significantly influenced by their perceptions of the video game’s quality (standardized estimate $= 0.418$, critical ratio $= 3.733$, $p < 0.01$), emotional (standardized estimate $= 0.248$, critical ratio $= 2.486$, $p < 0.05$), and price (standardized estimate $= 0.263$, critical ratio $= 2.133$, $p < 0.05$), supporting H1a, H1b, and H1c. Second, the empirical results showed that video game consumers’ negative emotions were significantly influenced by their perceptions of the video game’s emotional (standardized estimate $= -0.427$, critical ratio $= -4.332$, $p < 0.01$) and social (standardized estimate $= -0.356$, critical ratio $= -3.775$, $p < 0.01$), and H2d. Third, the empirical findings indicated that video game consumers’ psychological well-being was significantly influenced by positive emotions (standardized estimate $= 0.682$, critical ratio $= 5.845$, $p < 0.01$) and negative emotions (standardized estimate $= -0.254$, critical ratio $= -2.690$, $p < 0.01$), supporting H3a and H3b. Fourth, the empirical results addressed that video game consumer loyalty was influenced not by positive emotions and negative emotions but by psychological well-being (standardized estimate $= 0.641$, critical ratio $= 2.375$, $p < 0.05$), supporting H5 only (see Table 4). In addition, this study assessed the indirect paths from perceived value dimensions to loyalty via the Monte Carlo and Bias Corrected bootstrapping methods. These methods generate significance levels and confidence intervals of each indirect impact by rigorously estimating direct, indirect, and total impacts among independent variables, multiple mediators, and dependent variables (Tofighi and Kelley, 2020).
cal well-being would be weaker when they have a high level of the impact of video game consumers

0.562, critical ratio

- 4.305, degree of freedom values. This method assumed positive emotions to psychological well-being (Lazarus, 1991), this research confirms that the impact of video game consumers’ positive emotions on psychological well-being became weaker when consumers were worried about the negative impact of COVID-19 on their lives and society. Therefore, this study contributed to the existing video game and well-being literature by applying the COVID-19 pandemic situation to the research context and proposing practical implications for video game consumers’ self-mental condition management through playing a video game during and even after the COVID-19 pandemic.

4. Discussion

This study explored the respective impacts of each dimension of perceived values on video game consumers’ emotional states while playing a video game, and the psychological well-being and loyalty toward the video game. The empirical results also found that video game consumers’ positive and negative emotions were significant determinants of psychological well-being, making consumers more loyal toward the video game. During the era of the COVID pandemic, more consumers have been stressed due to the negative impacts on the economy, society, and their daily lives (e.g., being encouraged to stay at home and work at home). However, interestingly, during this global crisis, some business industries have dramatically increased sales for products such as home fitness equipment and video games (Stackline, 2020). One of the main reasons for their success is that consumers have attempted to manage their health and mental conditions by exercising and participating in recreation activities in home isolation (Güzel et al., 2020).

Under the stressful situation of COVID-19, consumers are more likely to pursue their physical and mental well-being, and many organizations have been trying to introduce and develop products/services that encourage target consumers to enhance their physical and mental well-being states (Li et al., 2020). Playing a video game could be one of the most effective and safest recreation activities at home during the pandemic, making consumers excited and pleased as well as happy. However, if the global crisis continues and consumers become more worried about its (potentially and currently) negative impact on their lives and society, will a home-based recreation activity work for consumers’ psychological well-being and favorable behaviors toward the activity? This study was conducted to answer this question and found that the impact of video game consumers’ positive emotions on psychological well-being became weaker when consumers were worried about the negative impact of COVID-19 on their lives and society.

4.1. Theoretical implications

From the first theoretical perspective, the research model of this study expanded Lazarus’ (1991) cognitive appraisal theory with consideration of a virtual product’s perceived value dimensions that consisted of both cognitive and emotional evaluations of consumers. In other words, this study confirmed that the cognitive appraisal theory could be applied to a digital context, such as the video game industry. Prior research that employed the cognitive appraisal theory was conducted in the brand and tangible product/event contexts by considering both cognition- and emotion-based appraisal of consumers (Ismagilova et al., 2020; Kim and Stepchenkova, 2018; Kim and Thapa, 2018; Ladhari et al., 2017; Moors, 2017). Based on the cognitive appraisal theory and its fundamental notion (Lazarus, 1991), this research confirms that video game consumers’ emotional states (i.e., positive and negative) while playing a video game result in appraising or assessing the “digital” attributes of the video game that they cannot experience in person (Kim and Kim, 2020). The approach of this study provides scholars in the digital product or virtual environment fields with a new avenue for applying the cognitive appraisal theory or framework to their research contexts.

Second, similar to previous studies’ approaches (Berraies et al., 2017; El-Adly, 2019; Kim and Thapa, 2018), this research also divided perceived values into quality and price (i.e., utilitarian or cognitive) and emotional and social (i.e., hedonic or emotional) dimensions of a digital

Indicated in Table 4, among perceived value dimensions, quality (indirect effect: 0.169, p < 0.01; 95% bootstrap CI = 0.069 Lower Level (LL), 0.303 Upper Level (UL)) and emotional (indirect effect: 0.155, p < 0.01; 95% bootstrap CI = 0.030LL, 0.265UL) had a significant indirect impact on loyalty.

Lastly, this study tested the moderating role of the perceived severity of COVID-19 in the hypothesized relationships (H6) via a chi-square difference test after dividing total samples into two independent groups according to the mean score of the combined perceived severity of COVID-19 items (i.e., relatively low vs. high perceived severity of COVID-19 groups) (Kim et al., 2021). After doing so, this study rigorously compared the denominated (or restricted) paths of low- and high-perceived severity of COVID-19 groups along with the changes in the respective $\chi^2$ and degree of freedom values. This method assumed “the denominated path to be equal across groups while the other, more general model allows this parameter to differ across groups” (Wagner, 2011, p. 946). The empirical findings of the $\chi^2$ and degree of freedom difference test revealed a significant difference in the path from video game consumers’ positive emotions to psychological well-being ($\chi^2 (1) = 3.331, p < 0.10$): the low group (standardized estimate = 0.733, critical ratio = 4.305, p < 0.01) vs. high group (standardized estimate = 0.562, critical ratio = 2.317, p < 0.05) (see Table 5). This implied that the impact of video game consumers’ positive emotions on psychological well-being would be weaker when they have a high level of perception of severity of COVID-19, partially supporting H6 (see Figs. 1 and 2).
product. However, this study focuses on investigating the respective roles of each dimension in arousing video game consumers’ positive and negative emotions compared to the approach of prior research, predicting their positive outcomes of perceived values (e.g., flow experience from Kim and Thapa, 2018). Consequently, this study’s empirical findings revealed that the quality and price factors would influence video game consumers’ positive emotions only, while the social aspects would affect only their negative emotions. However, emotional aspects would influence both positive and negative emotions of video game consumers. The empirical findings could imply that perceived value dimensions based on the cognitive appraisal theory are aligned with the two-factor theory of motivation (Herzberg, 1968; Kim and Stephen- kova, 2018) which assumes that there are two independent factors that arouse employees’ emotional states in a workplace setting: (1) hygiene factors (i.e., arousing only negative emotional states but cannot arouse positive emotional states); and (2) motivation factors (i.e., arousing only positive emotional states but cannot arouse negative emotional states). However, more current research found that there are two more factors: (1) critical factors (i.e., arousing both positive and negative emotional states simultaneously); and (2) neutral factors (i.e., cannot arouse both positive and negative emotional states) (Lu and Stephenkova, 2012).

Based on the notions of the cognitive appraisal theory and the two-factor theory of motivation, this study could empirically categorize perceived value dimensions into quality and price aspects as motivation factors (i.e., leading to higher levels of video game consumers’ positive emotional states, but their negative emotional states will not be aroused if the factors do not exist). Also, the social aspect could be categorized as a hygiene factor that results in higher levels of video game consumers’ negative emotional states, but it cannot arouse consumers’ positive emotional states even if the factor’s impact becomes stronger. Furthermore, the emotional aspect serves as a critical factor that results in high levels of positive and negative emotions of video game consumers. The empirical findings of this study enable scholars in the digital product and virtual environment areas to consider the distinct roles of the respective aspects of perceived value in their contexts and to establish more sophisticated research models accounting for different roles and various aspects of perceived values to explain virtual product consumers’ decision-making processes according to the role of emotions.

Third, compared to previous digital product consumption studies focusing on favorable outcomes for organizations (Ahn and Seo, 2018; Berraies et al., 2017; Gan and Wang, 2017), this study focuses on the favorable outcomes of consuming a digital product for consumers themselves, as with psychological well-being. For instance, prior research has emphasized the roles of satisfaction, trust, and commitment as outcomes of consumers’ emotional states to predict their favorable behaviors for organizations (Akhoondnejad, 2018; Carneiro et al., 2019; Rychalski and Hudson, 2017). However, in the COVID-19 era, particularly, consumers have been stressed, causing them to continuously pursue pleasure, happiness, and quality of life via consumption. More seriously, the ongoing crisis may lead consumers to easily change their perceptions, attitudes, and behaviors toward a company at any time (Laatto et al., 2020). Hence, this study proposes that the research trend during and after the COVID-19 pandemic needs to focus more on exploring how product consumption supports consumers’ physical and mental well-being rather than other motivations to predict their favorable behaviors for organizations (Kim and Kim, 2020).

Responding to this ongoing situation of the COVID-19 pandemic, this study considers consumers’ perceived severity of COVID-19 as a core

### Table 5

| Path | Low Group (N = 122) | High Group (N = 136) |
|------|---------------------|----------------------|
|      | Standardized estimates | Standardized error | Critical ratio | Standardized estimates | Standardized error | Critical ratio |
| Quality → Positive emotions | 0.406 | 0.150 | 2.383* 0.353 | 0.122 | 2.020* 1.853 |
| Emotional → Positive emotions | 0.216 | 0.125 | 1.410 | 0.283 | 0.165 |
| Price → Positive emotions | 0.386 | 0.245 | 1.813 | 0.005 | 0.127 | 0.033 |
| Social → Positive emotions | 0.116 | 0.123 | -0.744 | -0.036 | 0.096 | -0.255 |
| Quality → Negative emotions | -0.205 | 0.181 | -0.157 | -0.162 | 0.119 | -1.219 |
| Emotional → Negative emotions | -0.382 | 0.164 | -2.445* 0.509 | 0.174 | -3.940** |
| Price → Negative emotions | 0.082 | 0.300 | 0.406 | 0.338 | 0.140 | 2.389* |
| Social → Negative emotions | -0.357 | 0.160 | -2.270* | -0.411 | 0.103 | -3.846** |
| Positive emotions → Psychological well-being | 0.733 | 0.200 | 4.305** | 0.562 | 0.155 | 2.317* |
| Negative emotions → Psychological well-being | -0.182 | 0.119 | -1.401 | -0.280 | 0.090 | -1.533 |
| Positive emotions → Loyalty | 0.405 | 0.350 | 1.180 | 0.103 | 0.197 | 0.445 |
| Negative emotions → Loyalty | -0.093 | 0.119 | -0.619 | 0.055 | 0.102 | 0.357 |
| Psychological well-being → Loyalty | 0.935 | 0.336 | 2.409* | 0.311 | 0.389 | 1.063 |

**SMC (R²)**

Endogenous variables SMC (R²)

| Positive emotions | 0.682 | 0.304 |
| Negative emotions | 0.406 | 0.555 |
| Psychological well-being | 0.749 | 0.597 |
| Loyalty | 0.467 | 0.129 |

δχ²(1) = 1392.502, d.f. = 824

| Quality → Positive emotions | 0.315, p > 0.10 |
| Emotional → Positive emotions | 0.351, p > 0.10 |
| Price → Positive emotions | 2.635, p > 0.10 |
| Social → Positive emotions | 0.173, p > 0.10 |
| Quality → Negative emotions | 0.372, p > 0.10 |
| Emotional → Negative emotions | 0.142, p > 0.10 |
| Price → Negative emotions | 0.379, p > 0.10 |
| Social → Negative emotions | 0.000, p > 0.10 |
| Positive emotions → Psychological well-being | 0.331, p > 0.10 |
| Negative emotions → Psychological well-being | 0.026, p > 0.10 |
| Positive emotions → Loyalty | 1.587, p > 0.10 |
| Negative emotions → Loyalty | 0.471, p > 0.10 |
| Psychological well-being → Loyalty | 0.504, p > 0.10 |

*p < 0.01

*p < 0.05

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**Note:** The table presents standardized structural estimates and critical ratios for two divided groups. The empirical findings enable scholars in the digital product and virtual environment areas to consider the distinct roles of the respective aspects of perceived value in their contexts and to establish more sophisticated research models accounting for different roles and various aspects of perceived values to explain virtual product consumers’ decision-making processes according to the role of emotions.
Fig. 1. Estimates of SEM with low perceived severity of COVID-19 group (N = 122).

Note. **p < 0.01, *p < 0.05, standardized coefficient (critical ratio), solid line: significant path, dotted line: insignificant path, red line: significant difference between two groups.

Fig. 2. Estimates of SEM with high perceived severity of COVID-19 group (N = 136).

Note. **p < 0.01, *p < 0.05, standardized coefficient (critical ratio), solid line: significant path, dotted line: insignificant path, red line: significant difference between two groups.
moderator in the proposed relationships. However, prior research has primarily viewed the perceived severity of COVID-19 as a predictor of the self-prevention behavior of individuals (Yıldırım et al., 2012) or unusual purchase patterns of consumers (Laato et al., 2020). Interestingly, the empirical findings of this study confirmed the aforementioned scenario by revealing that the path from positive emotions to psychological well-being became weaker when video game consumers were more worried about the negative impact of COVID-19 on their lives and society. Also, although the difference between the low- and high-perceived severity of COVID-19 groups in the path from psychological well-being to loyalty was not statistically significant, the impact of psychological well-being on loyalty was not significant when video game consumers were more worried about the COVID-19 outbreak and its negative impacts (i.e., low group: standardized estimate = 0.935, critical ratio = 2.409, p < 0.05 vs. high group: standardized estimate = 0.311, critical ratio = 1.063, n.s.). These empirical findings of this study bring some meanings to the extant literature in consumer behavior and marketing. Therefore, this study provides scholars in consumer behavior and marketing with a new perspective on the moderating role of a contextual factor, such as the perceived severity of COVID-19, in their research model which makes any impact much weaker or stronger.

4.2. Managerial implications

From a managerial perspective, video game companies should focus on the development and maintenance of a high quality of virtual products. To do so, developers and administrators at video game companies should frequently visit online gaming communities and social media pages to conduct research on consumers’ complaints, needs, and expectations. Compared to other industries, consumers in the video game industry are more likely to express their opinions about video games on the Internet because they rely heavily on Internet information to learn how to play the games, complete missions, and increase game skills (Kim and Kim, 2018). In addition, developers and administrators at video game companies may conduct user surveys when updating their video game content to measure changes in consumers’ perceptions of their virtual products. In other words, real quality may be different from perceived quality among video game users. Although the game companies attempt to enhance the quality of their virtual products via technical updates (e.g., speed, servers, graphics), video game consumers may not recognize the improvements or may not even like the updates by perceiving that the video games have changed too much. This means that video game organizations need to provide clear information about the updates and details about how the updates improve the video game for users. Hence, this study proposes that it is critical for developers and administrators at video game companies to continue to understand consumers’ perceptions of virtual product quality after improving its real quality. This sustainable effort enables developers and administrators to enhance consumers’ positive emotional states while consuming their digital products (e.g., video games), which in turn lead to psychological well-being and loyalty toward the products.

The empirical findings of this study identified that video game consumers’ positive and negative emotional states while playing a video game were derived from the perceived emotional value of the virtual product. It implies that consumers play a video game and evaluate the game not only based on effort, money, and time, but also based on pleasure, enjoyment, and positive feelings from consuming the digital product. In fact, playing or watching a video game has been considered a recreation activity (Kim and Kim, 2020). In this type of hedonic aspect-focused consumption, consumers are more likely to rely on their emotional values rather than utilitarian values to make decisions (Kim and Thapa, 2018). Because consumers tend to expect high levels of emotional values from a hedonic product (i.e., video games in this study), they are involved and engaged in expending more resources to reap emotional benefits from recreational activities. The psychological benefits will increase the levels of positive emotional states and reduce the levels of negative emotional states while participating in the recreational activities. In particular, during the COVID-19 pandemic, video game companies should attempt to develop more new and exciting games offering entertainment and fun to consumers rather than serious games dealing with heavy subjects. Also, during the era of COVID-19, particularly, video game companies need to consider and control the difficulty of video games to make consumers feel relaxed while playing the video games. Therefore, this study suggests that developers and administrators at video game organizations need to provide more entertaining and enjoyable (and not complicated) goals and missions in their video game world to increase emotional values among consumers. Ultimately, this effort results in higher levels of psychological well-being and loyalty toward the video games.

Also, this study revealed that price value also led to video game users’ positive emotional states while playing a video game. This finding implies that developers and administrators at video game companies should establish a well-balanced price policy (between product price and quality) when developing a new video game and deciding its price. However, the price policy should not be primarily based on competitor- or cost-based pricing approaches. Instead, developers and administrators at video game companies may use their target consumers’ reference price that is an acceptable price range of consumers for purchasing a virtual product, such as a video game or virtual items in the video game world. To do so, developers and administrators at video game organizations provide consumers with a beta version of a new video game and then collect information about its acceptable price range and cash item prices from the consumers. Therefore, video game companies that want to increase levels of consumers’ positive emotions while consuming their digital products need to place a greater focus on balancing quality value and price value from consumers’ perspective on quality and price of the products accordingly. This new pricing strategy will result in higher levels of consumers’ positive emotional states, leading to high levels of psychological well-being and loyalty toward the products.

Compared to traditional video games, more advanced video games and devices enable users to be interconnected within the virtual world via the Internet. Hence, one of the main reasons for playing a video game is to make and meet virtual friends and interact with them for one mutual goal in the virtual game world (Kim and Kim, 2020). The empirical findings of this study also confirmed that if this aspect of a video game’s social value is not provided well to users, consumers tend to arouse negative emotions while playing the video game, consequently reducing levels of psychological well-being and loyalty toward the video game. This implies that a video game needs to provide consumers with various opportunities to interact socially with other users to complete a particular mission and achieve a goal. In addition, developers and administrators at video game organizations may be able to work with social media platforms, sharing each user’s achievements and missions on their social media pages and allowing consumers to invite their social media friends to enjoy the video game together. When developing the collaborative culture and place in the virtual game world and online gaming communities, video game companies need to establish a particular standard of “netiquette” among consumers. In particular, during the era of COVID-19, many consumers have been stressed so that this pandemic situation may lead them to offend other users with aggressive words and virtual misbehaviors (e.g., interrupting other users’ play). Such words and misbehavior may destroy the collaborative culture and place in the virtual game world, which consequently makes consumers leave the video game.

This study found that video game users’ positive and negative emotional states while playing a video game increase a level of psychological well-being, which in turn results in loyalty toward the video game. Hence, developers and administrators at video game organizations should strive to increase consumers’ positive emotions and reduce negative emotions to enhance consumers’ psychological well-being from the perspectives of the perceived value dimensions. Controlling consumers’ emotional states ultimately leads to a high level of loyalty.
toward video game companies’ virtual products. More specifically, the integrated quality, emotional, and price value dimensions embody video game consumers’ emotional states, leading to psychological well-being and loyalty, whereas the combined emotional and social value dimensions arouse negative emotional states among consumers, resulting in lower levels of psychological well-being and loyalty. In other words, all aspects of perceived value dimensions should be working together to manage and control video game consumers’ emotional states, psychological well-being, and loyalty.

Lastly, as expected, the perceived severity of COVID-19 made the path from psychological well-being to loyalty toward a video game significantly weaker. During the era of COVID-19, consumers have relied on home-based technologies since they were encouraged to stay home and work at home. Such situations and trends could lead consumers to participate in a digital (or virtual) recreational activity to reduce their stress level at home. Therefore, consumers are expecting higher levels of psychological well-being from consuming digital products at home, such as video games. However, if consumers become more worried about the situation of COVID-19, they will not increase a level of psychological well-being although a video game gives them positive emotions “while” playing the video game. As mentioned in the literature review section, individuals’ emotional states tend to easily fade away after experiencing an event or situation. The empirical findings indicated that both positive and negative emotions cannot directly enhance consumers’ level of loyalty toward a video game. Instead, they are able to enhance it only through consumers’ psychological well-being. Thus, developers and administrators at video game companies may need to create new characters in the virtual game world who regularly tell video game consumers how to protect themselves from COVID-19. For example, the delivered information could be about how wearing a facemask correctly, keeping social distance, and washing hands all prevent the negative impact of COVID-19 on people and society. Also, video game companies may show their target consumers how they are committed to responding to the pandemic, making consumers less worried about the ongoing situation. Video game companies should remember that their success cannot be guaranteed if the COVID-19 situation becomes more serious so that consumers are more worried about it.

4.3. Limitations and directions for future research

Based on three limitations of this research, the author proposes directions for future research in the video game (or digital product) industry. Even though this study found the significant impact of the perceived value dimensions on positive and negative emotions, psychological well-being, and loyalty along with the moderating role of the perceived severity of COVID-19, the significant associations among the constructs may vary, depending on the types of game devices (e.g., game console vs. smartphone vs. personal computer) or types of game genres (e.g., casual games vs. action games vs. shooter games). For instance, the influence of positive emotions on psychological well-being might be different between casual video game users and action video game users or smartphone users and game console users. Therefore, future research needs to consider a variety of game genres and game devices as moderators in the proposed associations. Second, this research relied on the self-report approach to measure video game users’ emotional states while playing a video game. Although this study adapted reliable and valid measures from prior studies, and the empirical findings of this study confirmed the survey items’ reliability and validity, a limitation of the self-report approach might exist when measuring the emotional states of consumers. This is because this study measured participating consumers’ emotional states while playing a video game indirectly by asking them to recall their emotional states instead of directly measuring their emotional states while playing a video game. Thus, future research should employ a mixed-method approach, including a lab experimental design or field observation, to measure levels of video game consumers’ emotional states while playing a video game in real time. Third, this study identified the dimensionality of perceived value, which might result in a potential bias even though the dimensions were well-studied and documented in the extant literature. Hence, future studies need to identify other missed subdimensions of perceived value, focusing more on the video game context, which might influence emotions, psychological well-being, loyalty, and perceived severity of COVID-19, by conducting case studies, in-depth interviews, and surveys among video game users.

5. Conclusion

Digital product consumption has received attention from the consumer behavior and marketing fields as a core driver of psychological well-being and loyalty toward the digital product (Kim and Kim, 2020). However, since the COVID-19 pandemic has negatively influenced consumers’ perceptions, emotions, attitudes, and even behaviors, there is a need to consider the moderating role of consumers’ perceived severity of COVID-19 in their decision-making process of consuming a digital product at home for their emotional states and psychological well-being formulations. Thus, this study established a research model of the decision-making process, and revealed the significant finding that the impact of consumers’ positive emotions on psychological well-being would be weaker when they have a high level of perception of severity of COVID-19. By integrating the cognitive appraisal theory and the two-factor theory of motivation, this study proposed theoretical and practical implications for the digital product consumption context during and after the era of COVID-19, focusing on the favorable outcomes for organizations and consumers, respectively.

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