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EDITORIAL

Communication: From the Internet to the Intelligent

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According to contemporary history of new technologies, today's Internet age is inevitably going to the terminal point of its first half, and then the Internet of Things has been formed in this stage. Following the Internet and the Internet of Things, the Internet of People is coming. In the new stage, the intelligent communication will still keep the previous concern about fresh information and network technologies along with their influences on the one side, and on the other side it will focus on the connection between human and intelligent technologies. This brings three dimensions taken into consideration.

The primary issue is the way that intelligent technologies reshape the forms of communication and media, and the relations among technologies, media, the public and societies. The development trends and rules of communication and media forms correlate with the latest and also the future information technologies, such as big data, VR, AR, MR, AI and machine learning, 5G and 6G, wearable devices, and some unknown new stuff. In the future, intelligent technologies will probably have a broad and profound influence on the production and consumption of journalism [1]. So far many media organizations have taken advantages of 5G and AI in creating better journalism at a time, just like what they did during the Tokyo Olympics. They can also help the public work with overload information and access to credible content globally in a more convenient way. Furthermore, 6G. and metaverse will introduce completely new communication paradigms by building developer-friendly tools and practicing their disruptive concepts [2]. And With smart data, smart media can simplify and enrich human activities and experiences [3]. In the world of the Internet of People based on these technologies, human-machine interaction sight system will gain a benefit of higher immersion and more imaginations but lower interference and permeability. The impact of this virtual media world is uncertain but is surely accelerating the transformation towards more diverse societies and independent digital identities.

Facilitated by the crash and convergence of intelligent devices, intelligent communication activities will certainly develop by strides, and then generate pluralistic industries of intelligent communication. In the field of culture, the application of energetic smart technologies, such as big and smart data, AI and VR, can lead to the intelligentized revolution of industries of artistic creation, distant education, and intelligent real-time information. AI interaction, MR and holography, highlighting the interactive immersive experience, expand the boundless, stereo and vivid

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cultural spaces by providing virtual scenes in tourisms, exhibitions, games and performances. These initiations of the intelligent industry can develop smarter cities full of dreams and creativities. In this case, those industrial explorations need detailed thinking about how the intelligent media industry change, what the relationship between intelligent and other industries is and what impacts on culture and society.

Along with the speeding-up development of intelligent media and industry, value, ethical and social issues would be emphasized in the smart communication era, although some of them have existed for decades since the period of mass media. In news production, institutionalization of algorithms can result in new ethical challenges and shifts of responsibility for the technical potential of Algorithmic Journalism [4]. From the aspect of information security, the data may be stolen, falsified or deleted by internet companies or other authorities; besides, neural network computing may also cause memory errors and data security risks when it is able to produce and save information. From human's aspect, as individuals are increasingly equipped by smarter machines, the new cyborgs that integrate human beings and robots have caused debates on technology and virtue ethics, social morality and legitimacy. Meanwhile, intelligent technology gaps upgraded from digital gaps will still challenge the public cultural service system.

Finally, as editorial board members, we greet sub-missions based on the three perspectives of discussion, including smart technology and communication, how new tech change the ways of communication, new forms of journalism, media art and other cultural contents, cultural industry in the era of intelligent media, new media advertising and problems in all-media communication. By compiling these articles, we hope to enrich our readers and researchers with recent trends. Certainly, all intelligent communication topics could be accepted to publish on this journal.

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ARTICLE

An Analysis of the Project Incubation Model of Self-produced TV Dramas in the New Media Era

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Abstract: With the advent of the information age, the application of digital technology on the Internet has become more and more popular. Mobile phones, the Internet and other emerging media have brought a drastic impact on the traditional media era, and the status of traditional media is slowly weakening. Nowadays, new media devices and video websites are gradually becoming active in people's lives, and the increasingly sophisticated digital means have led to the rapid rise of new media. Against this backdrop, traditional media are being squeezed to a great extent. In addition to being dominated by new media in terms of communication channels, the voice of traditional media in the market is also threatened to a certain extent. In addition to the problems of the traditional media themselves, and the lagging nature of the traditional media that is not in tune with the development of the times, the traditional media industry, especially the TV side and TV people, are gradually facing more pressure. Under pressure, there must be innovation. How traditional TV media can change and innovate requires us to rise to the occasion and be fully prepared for the current environment, and self-produced dramas are one of the paths that TV stations need to explore.

1. The Impact and Influence of Traditional Television Media in the New Media Era

1.1 Technological Progress, Prompting the Renewal of Viewing Methods

Video websites have two characteristics in comparison with television: one is the non-linearity in time, and the other is the personalization in space. Viewers can no longer wait for the start time of the TV station, and can choose the programmes they want to watch at will, and can generate an interactive experience through the Internet. This new way of viewing directly transforms the audience from passive "viewers" to active "users". With the rapid advent of the multi-screen era, the "living room culture" on which television is most dependent will increasingly become a niche phenomenon. As an important mass media, television may not die out for a long time, but the impact of the Internet on traditional television will be far stronger than the impact of television

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on radio, as technological progress is unstoppable.

1.2 The Revenue Models are very Different, Resulting in a Gradual Increase in the Difference in Revenue between New Media and Traditional TV Media

For traditional TV media, its source of survival is more from the support of advertising business. However, with the advent of the new media era, advertisers have segmented the user market more clearly and are demanding more and more from the platforms they work with in terms of advertising needs. Advertisers are beginning to select platforms for placement based on user characteristics, resulting in a significant reduction in the range of advertising business available to traditional TV media and a serious diversion of the industry profits that can be made.

In contrast, the new media have ample operating capital thanks to their multi-channel revenue streams and flexible financing options. The overbearing capital of video sites fully demonstrates the nature of capital, as they push up all commercially valuable programmes, push up the price of actors, push up the total cost of programmes, push up the status of marketing, and push up the market value of the industry as a whole, even with the effect of pushing up TV ratings. It can be said that the power of capital is everywhere in the film and television industry nowadays. In the past, the "production fee-advertising revenue-production fee" agricultural production model of television stations was extremely difficult to defend against the aggressive capital offensive.

1.3 Different Mechanisms Lead to an Increasing Brain Drain

In most industries where competition exists, state-owned units are overwhelmed in the face of private enterprises. The state-owned system of television stations is no exception, and the administrative-based system that has developed over the years contrasts sharply with the pursuit of maximum benefit by private enterprises. Due to a consistent lack of training and attention to talent, TV stations have now become a net outflow of talent from private enterprises. The talents that TV stations have worked so hard to cultivate are easily poached. The saying "people are the foundation of everything" is not reflected in many TV stations.

1.4 Different Regulatory Requirements Lead to Different Scales of Programming for New Media and Traditional TV Media

All video websites position themselves as high-tech enterprises rather than media, which has allowed them to avoid content regulation to a great extent. While calls for the same standard of censorship are increasing and the authorities are stepping up their monitoring efforts, the fact remains that more and more influential variety shows and TV dramas that do not meet TV broadcast standards can be presented on the internet, where they have a wider distribution. As a result, more and more viewers are being converted to online viewers with these programmes.

2. Returning to Self-production is the Way of Survival and Innovation for TV Stations

With the rapid progress of technology, the challenge of new media to TV media will become greater and greater. Therefore, as a traditional industry, only by changing the original production model and changing the way of thinking can we survive and develop in the midst of change. The first step is to change the mindset of "separation of production and broadcasting".

In the era of television dominance, the slogan of "separation of production and broadcasting" was introduced to promote the development of the industry. Non-state companies have far surpassed state-owned enterprises and institutions in terms of output and market value, and the quality of their programmes is becoming higher and higher, gradually becoming the mainstream of the market. In this situation, more and more programmes have shifted to production by companies, while the business of TV stations has shrunk more and more. In the Internet era, TV stations whose platform value has declined sharply have all suffered to varying degrees from the loss of business back then and are struggling [1].

The best situation among the major TV stations is undoubtedly Hunan TV, where the various plans that began more than ten years ago have finally shown their value today: a highly unified approach to programme production, a flexible and efficient talent mechanism, and a highly market-oriented listed company, which together have created the top-ranked TV and Internet platform today.

In addition to Hunan, Jiangsu, Zhejiang and Shanghai in the Yangtze River Delta, with the region's ancient affluence and talent, as well as its position at the forefront of reform and opening up over the years, have also taken the lead and developed their own paths in line with their own characteristics, becoming an important TV station alongside Hunan.

Other provincial TV stations, which are also important TV stations in China, are constrained by their environment and lag behind several major stations in Jiangsu, Zhejiang, Shanghai and Hunan in terms of market development.

For example, Beijing, which has missed out on the capital expansion of television, has to hold on to the two most marketable programme genres of variety and drama, especially the highly capitalised drama industry, which is where we can seek a breakthrough in the face of the diverse and complex changes in the industry.

Objectively speaking, it is not enough for TV stations that belong to the top tier at the level of TV drama broadcasting to rely on broadcasting alone. Firstly, pure procurement is equivalent to living off the sky, whether there are quality dramas and whether we can get a hit drama all depends on the market, this is because as a broadcasting platform, it lacks control over the front end of production; secondly, nowadays, the procurement price of dramas and the advertising production value are increasingly mismatched, and broadcasting top dramas is increasingly becoming a luxury; thirdly, compared to news and variety shows, dramas lack iconic and brand recognition Thirdly, compared to news and variety shows, dramas lack iconic and brand recognition, and the stacking of top dramas may not necessarily create a top effect [2].

In this situation, getting involved in the front end of production, in the investment and creation of television series, would go some way to alleviating, and getting out of, the dilemma, yielding some benefits as follows.

2.1 Facilitating TV Stations to Lock in Boutique Dramas in Advance

By entering the market with investment in the creation of TV dramas, TV stations can further enhance their voice in the production of TV dramas, especially quality dramas, by ensuring that they are involved at the very beginning of the creation process, making it easier for them to lock in the rights and prevent projects that they have invested their efforts in from eventually falling through the cracks.

2.2 Meeting the Needs of TV Station Layout

In addition to the basic supply of space on TV and film channels, it also ensures that the station's own copyrighted masterpieces are produced at major promotional points, thus meeting the needs of layout while emphasising quality.

2.3 Reducing the Cost of Drama Purchase by Television Stations

The participation of TV stations in the creation of TV drama investment helps to balance prices and get TV dramas of satisfactory quality, at reasonable prices and with a slight surplus, so as to reduce the cost of purchasing dramas.

2.4 Inward Cultivation of Talents and Training of Teams

By investing in the creation of drama series led by the station, the team can be trained, producing and editorial talents can be nurtured, and attempts can be made for the station to realise business transformation.

2.5 Broadening Product Lines and Revenue Channels Outwards

As an industry, the revenue of TV dramas is not only from TV and internet rights sales, but also from implantation of advertisements, copyright adaptations and even peripheral product development, which will lead to more and broader business types, thus broadening the revenue channels and entering into a wider range of businesses, such as movies, animation, etc.

3. Integrating Strengths, Adjusting Mechanisms and Seeking Development in a Market-oriented Environment

It is of course a wonderful vision to produce products that meet one's own needs and also generate more benefits. But in today's highly marketed world of television drama production, where state-owned enterprises are still stretched to the limit, is it still possible for them to produce their own dramas as more strictly controlled institutions, especially secondary institutions such as television stations, which are under strict financial control?

Although it is difficult, if we can integrate some of the existing advantages and adjust some of the original institutional constraints, there is still a small possibility for TV stations to produce their own dramas.

Firstly, there must be a high degree of unity of consciousness at the television station level. Television stations must realise that when they are involved in production, they face fierce competition, and that in competition with established companies, especially private ones, state-owned entities do not have an advantage. As a result, the station's own production must be carried out in a way that is "decided by the station, relying on a platform, implemented by the company and closely linked". The production of TV dramas is now a relatively well-developed and complete industry chain, with a high level of capital investment and entry into the production of TV dramas being a distinctive feature, with hundreds of millions of dollars of investment and overcapacity making TV dramas no longer just artistic creations. Therefore, it is necessary to reach an internal agreement on whether to produce TV dramas, what mode of production to adopt

and what creative direction to set, and to rely on one's own broadcasting platform in order to gradually develop the competitiveness of TV dramas.

Secondly, self-produced dramas must be produced in collaboration with other television stations. Nowadays, the production of TV dramas is no longer a single-way model of "capitalist-script-director-actor-airing platform", and in the current TV drama market, multi-party cooperation is crucial to the output of a TV drama. In the current TV drama market, multi-party cooperation is crucial to the production of a TV drama. At the same time, external cooperation should follow the laws and rules of the market, with all parties on an equal footing, and without the boss mentality.

Thirdly, the business of self-produced dramas is a market-oriented activity that requires capitalisation, and in view of this, the term "purchase instead of investment" has arisen. As a special fund for TV stations, it is difficult to convert the purchase money into investment directly. In contrast, bank loans and cultural funds are financing methods that TV stations can consider, using the purchase money to leverage the capital market and make it investable.

Fourthly, for the station's self-produced drama business, a linkage mechanism needs to be established within the station in particular, and a sound corresponding fault-tolerant and incentive mechanism should also be set up to break down some inherent barriers so that the flow of self-produced drama projects within the station can proceed smoothly. The first and foremost responsible parties are the enterprises and film and television-related departments of the TV stations to which they belong. Inevitably, TV tower companies will have to rely on the support of the station in the early stages, but they must establish their own business model as soon as possible; the TV station's film and television-related departments must monitor the entire process of self-produced drama projects; and other business and functional departments of the TV station must also give substantial support. Without the strong support of TV stations, self-produced dramas are unlikely to succeed.

Fifthly, TV stations must establish effective personnel mechanisms to nurture talent and reduce brain drain. The market is ruthless and requires hard power, the core of which comes from talent. If the personnel mechanism is not adjusted, the traditional media will easily form a situation where the "backbone is lost", "a springboard for young people" and "a retirement home". In the various aspects of self-produced drama production, professionals such as directors and scriptwriters may not need to be trained by the TV station itself, but producers and editorial teams need to

be trained from within the station. It is unrealistic to expect external monks to recite good scriptures at the early stage of the business without fully opening up the capital, channels and mechanisms; the only way to know what kind of talents to bring in and how to use and treat them is to first improve ourselves and gradually train and build a team to form a stable business scale and model. Therefore, first we need to lay the foundation for talent internally, starting with building such a team from within the film and television department, linking up and channelling with companies owned by the station, and using the relatively flexible mechanisms of the companies to form a production team for television dramas.

Finally, I believe that the self-produced drama business should be steadily pursued and should not be over-scaled, drawing on more exotic dramas. In the initial stage, it should be mainly exploratory, with individual projects, trying first, finding problems and solving them on a small scale, and then expanding when all processes and awareness are perfected and unified.

4. Grasping the Source and Production: The Project Incubation Model for Television Self-produced Dramas

The current incubation model for self-produced TV drama projects should mainly consist of two key words: "grasping the source" and "grasping production".

4.1 Grasping the Source

Catching the source refers to the source from which the project was initially hatched. We believe that there are two types of sources to be caught by the station's self-produced drama, namely: a major publicity node to form the planning source (mainly by the stations); and a mature commercial project planning case provided by a social company as the source (mainly by the social companies).

4.2 Grasping Production

The production aspect of self-produced dramas begins with lending as much strength as possible to large companies that have strengths and productions and have worked with the station, so as to learn from the experience of the company's operations, and also to gradually cultivate promising teams and companies and identify promising writers, directors and actors, so as to lay the foundation for the further development of the station-owned company.

By focusing on the source and on production, the incubation of the station's self-produced drama projects can proceed in an orderly manner and ensure that the projects run properly and efficiently at any stage.

4.3 Work together and Joint Investment from Various TV Networks: The Business Model for TV Self-produced Dramas

From the perspective of the business model, self-produced TV dramas can be jointly incubated by the station with other platforms (other TV channels, video websites) and companies, so that the project is promoted at the request of each platform from the early stage of creativity, minimising project risks, with each platform party and other investors and producers investing together and sharing risks and interests, transforming the "production → sales model" The project is transformed into a bespoke product based on market demand (platform).

This business model is mainly applicable to TV dramas that can reach the level of broadcast on satellite TV, and it can follow the following process.

-Initiating: TV station, network or social company

-Demonstration: TV station + other TV stations + network, with the premise of broadcasting for demonstration

-investment: TV station-owned company + another companies + website + social companies

-Production and distribution: social companies are responsible for the production, with each platform monitoring the quality throughout

-Broadcast: each platform will broadcast together as agreed

-Distribution of benefits: several parties share the copyright and other revenues are distributed as agreed

Through this business model, a good combination can be achieved in terms of both TV stations' own research and development and external cooperation, which helps to further open up the cooperation between TV stations and other TV stations, and TV stations and networks, officially turning the self-produced drama business into a promising and sustainable business, rather than just satisfying the need to broadcast and survive.

5. Broadening the Market and Seeking Development: Vision and Goals for Self-produced Dramas

In order for the self-produced drama business to continue to thrive, TV stations need to start developing a vision and higher goals for their self-produced drama business.

5.1 TV Stations Should Go Deep into the Front-end and Take Ownership

Delve into the front end of production and establish a new self-production system led by TV stations to increase the platform's master control and commercial interests. Through investment, buyouts, IP development and original scripts, they can fully grasp the right to speak about their works and create a series of high-quality dramas. The brand name of "TV production" will be formed.

5.2 Deep Processing and Industry-wide Development of IP

Deep processing of purchased or original IP to make it have conversion value, so as to achieve mutual benefits with animation, film, games, derivatives and other industries.

5.3 Continuing to Broaden the Market

We will not only aim to be the only broadcasting platform, but also to serve the needs of other broadcasting platforms, and through continuous market expansion, we will broaden our self-produced drama business to become a sustainable and important business for the station.

6. Conclusions

In the era of new media, traditional television is no longer the dominant screen. The impact of new media on traditional television is not only to change the media terminal, but fundamentally, it is a challenge to the whole traditional media operation thinking. While there are certainly pressures in this process, there are also opportunities to be found. At a time of media convergence, traditional TV media should actively embrace the new media, while at the same time keep the righteousness and innovation, and seek new ideas, ultimately forming a mutually beneficial and win-win situation.

For some time now, television stations have begun to lag behind in the media camp. Faced with the difficulties of the times, we must set out again and muster the courage to strive for innovation in order to achieve better survival and development. As major TV stations have made their presence felt in recent years, they are still an important media and market terminal in China. Although the competition in the media is cruel and unpredictable, there is still a foundation for new life with the accumulated heritage of TV stations over the years, and self-produced TV dramas are undoubtedly the most worthy direction to try to break through, and it is also worthwhile for TV people to embrace better prospects for this.

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ARTICLE

The Mediation Effects of Fear on the Relationship between Gain/Loss Message Frames and Cognitive/Conative Responses

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Abstract: This study investigates the underlying mechanism of fear appeal effects on behavioral changes applying the emotions-as-frame model and protection motivation theory to the green advertising context. The results indicate that a loss-framed message arises fear increasing severity, vulnerability, response efficacy, and self-efficacy, which in turn affect the intention to purchase a green product. Furthermore, this study results that a gain frame is more effective to lead green behavior than a loss frame.

Keywords: Fear appeal, Gain/loss framing, Emotions-as-frame model, Protection motivation theory, Green advertising

1. Introduction

Fear is an emotion that an individual can feel when he/she perceives himself/herself in physical, societal, or economic danger. Communicators use fear-arousing messages to get people's attention [1]. Visual and verbal messages provoking fear lead audiences to engage in the message itself. Besides, a fear-appeal message is helpful to change audiences' behaviors instantly [2]. The effectiveness of fear appeals has been tested in various contexts; for example, studies investigated preventive COVID-19 infection behaviors [3], breast self-examination [4], and doing exercise [5]. Previous research primarily focused on the issues directly related to personal health. However, studies applying fear appeals to pro-environmental behaviors are still embryonic, although climate change, environmental pollution, and eco-friendly energy sources became critical social agendas. This research fulfills the research gap.

The goal of this study examines the effect of gain/loss message framing on environmental behavior through fear arousal and threat and coping cognitive appraisals. The emotions-as-frames model and extended parallel process model explain the proposed research claims. The claims were tested with a path analysis through an online survey experiment.

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2. Literature Review

2.1 Environmental Message Framing: Gain and Loss

Scholars have argued message framing is a critical factor to influence environmental decisions. Davis [6] tried testing the impacts of message framing on audiences' responses. Davis suggested three types of frames: gain/loss, current/future generation, and taking less/doing more. The study indicated the loss frame was more effective to increase attitude toward the message than the gain frame, but there were no main effects of other two framing types on audiences. Scholars also have actively studied on gain/loss framing among the three framings. A loss-framed message emphasizes possible negative consequences caused by action or inaction, while a gain-framed message describes possible benefits as a result of action or inaction.

However, the effectiveness of gain and loss frames on audiences' perceptions and actual behaviors has been controversial. A recent review study, Homar and Cvelbar[7], investigated 61 practical studies focused on the effectiveness of gain and loss frames and revealed that respectively 49% and 30% of individual studies argued the loss frame and gain frame is more effective than the counterpart or only the frame is effective to change behaviors or perceptions. However, 21% of exclusive studies showed each frame are effective more than another only if being with a moderator or there is no difference of outcomes between the two frames. Considering the review study, it seems that the effectiveness of gain and loss frames to influence audiences is still debating and necessary for more scholars to engage in this research area to reach a common agreement. Previous review studies investigated also indicated that the relative effectiveness of gain and loss frames are inconsistent [8,9].

The gain and loss frames tend to be mediated by emotions; however, it is still unclear to explain how and why a gain or loss frame is mediated by emotions such as fear, hope, guilt, sadness, and shame [7]. For example, a loss frame—called as negative frame by the authors—increases intention to donate to a pro-environmental project, which is mediated by shame [10]. As another example, a negative emotion (sadness) increases information seeking, policy support, and pro-environmental behaviors than a positive emotion (hope) when the message is gain-framed [11]. So far, studies on how emotions mediate the gain and loss framing effects are not prevalent.

2.2 Emotions-As-Frame Model

The emotions-as-frame model proposed by Nabi [12]

indicates that a message provokes an emotion (e.g., fear) which is used again as a frame to interpret and comprehend the message, which ultimately influences a behavior. This study applies this model to the relationships among gain/loss frames and fear, threat/coping cognitive appraisals, and green product purchase. A loss-framed message emphasizes possible negative consequences caused by action or inaction, while a gain-framed message describes possible benefits as a result of action or inaction. Thus, a loss frame is more likely to increase fear than a gain frame. Nabi, Gustafson, and Jensen [13] argued that a loss frame yields more fear than a gain frame.

H1: A loss frame will arise fear more than a gain frame.

Studies on environmental messages argue that a gain frame is more effective in leading environmental behaviors than a loss frame [14,15]. The reason that fear-arousing loss frame is not effective to change environmental behaviors could be the high knowledge-to-action gap between the cause (non-environmental behavior) and the negative outcome (degraded environment). People may consider the environment a public goods and do not believe that their actions significantly benefit the environment and finally themselves. Thus, gain frames with hope appeals will lead people to have a positive attitude toward the recommended action.

H2: A gain-framed message, compared to a loss-framed message, will increase purchase intention.

2.3 Extended Parallel Process Model

Guided by the emotions-as-frame model, a message evokes an emotion; and the emotion affects the audience's cognitive responses to the message. For example, Nabi et al. [13] showed fear aroused by a news article about climate change policy increased unfavorable attitudes toward the issues. To investigate the underlying mechanism how fear generated by a message influence the audience's psychological responses, this study adopted the extended parallel process model [16,17].

The extended parallel process model (EPPM) explains how perceived threats and efficacy motivate an individual to react [16,17]. This model consists of two components: threats and efficacy [16]. This model posits a message can be a trigger to think about the expected threat. Briefly, the model describes how that a message leads an audience to appraise perceived threats for expected negative consequences (e.g., air pollution and a respiratory disease) and the efficacy of an appropriate action (e.g., using pro-environmental products) to decrease the negative consequences.

The threat appraisals, including severity and vulnerability, and the coping appraisals involving response efficacy and self-efficacy increase intention to follow the recom-

mended behavior in a message [18]. Severity refers to the perceived degree of the seriousness of the threat; vulnerability means the perceived probability of the occurrence of the threat. Meanwhile, in the coping appraisal process, response efficacy and self-efficacy increase the response probability. Response efficacy describes the expected positive effects that will result from the recommended protective behavior on the threat (e.g., Using a LED bulb is a very effective way to prevent environmental pollution caused by excessive energy consumption and use of fossil fuel). Self-efficacy refers to the belief of one's ability to conduct the recommended action to cope with the threat (e.g., I can reduce my energy consumption). Finally, the threat and coping appraisals lead to actual behavior or behavioral intention.

The significant proposition of the EPPM is that fear appeal messages can influence individuals' attitudes, intentions, and behavioral change when four variables are evoked by the fear appeal. Furthermore, this model posits a message can be a trigger to think about the expected threat. Briefly, the model describes how that a message leads an audience to appraise perceived threats for expected negative consequences (e.g., air pollution and a respiratory disease) and the efficacy of an appropriate action (e.g., using pro-environmental products) to decrease the negative consequences.

When people perceived high threats and high efficacy, they cognitively process information, manage the threats, and accept recommended behaviors in a danger control process. This cognitive process can affect attitude, intention, or behavior change to control the danger. On the other hand, when people perceived high threat but low efficacy, they feel the threat, but they do not want to accept recommended behaviors in a fear control process. They refuse the threat and deny recommended behaviors [16,17].

The fear appeal motivates individuals to perceive greater severity and vulnerability [19]. In addition, the fear appeal results in greater threat and efficacy and interacts between threat and efficacy [19]. That is, fear appeal messages stimulate individuals to perceive greater vulnerability, severity, self-efficacy, and response efficacy [20]. Also, severity, vulnerability, response efficacy, and self-efficacy can influence a greater level of attitude, intentions, and behavior change [19]. The EPPM research indicated that fear appeal messages impact the level of perceived threat and efficacy [19-21]. Therefore, this research proposes that fear will be positively associated with four variables (severity, vulnerability, response efficacy, and self-efficacy) of EPPM, and threat and efficacy will be positively associated with an intention.

H3: Fear will be positively associated with a) severity,

b) vulnerability, c) response efficacy, and d) self-efficacy.

Previous studies explained pro-environmental behavioral changes using the four key fear appeal variables. Kim, Jeong, and Hwang [22] tested the message effectiveness using the variables for the prevention of climate change issue. Their results indicated that severity, response efficacy and self-efficacy were significant predictors affecting intention to behave in environmentally friendly ways. A year after the Fukushima accident, Hartmann, Apaolaza, D'Souza, Echebarria, and Barrutia [23] surveyed consumers about their intentions to use nuclear power and green electricity generated by wind, solar, hydro-energy, and biomass. The survey indicated that severity, coping efficacy, and fear response had a significant influence on intentions to use green electricity and to avoid nuclear power. Therefore, this study proposes high severity, vulnerability, response efficacy, and self-efficacy lead consumers to purchase environmentally friendly products with the following hypothesis.

H4: a) Severity, b) vulnerability, c) response efficacy, and d) self-efficacy will be positively associated with green product purchase intention.

The EPPM's outcomes are related to the level of perceived threat and efficacy. When fear evokes a threat, individuals determine efficacy. If efficacy is low, people perceive fear more and adopt the maladaptive recommendation. When high efficacy arouses fear, the fear affects the threat. Then the threat encourages individuals to accept recommended behaviors. However, when the perceived threat is low, there is no processing of the message [16]. This current study presumes a loss-framed message promoting a green behavior elicits fear, which in turn strengthens threat/coping appraisals relevant to the given message. A gain-framed message focuses on the positive consequences of the message. That is, the loss-framed message includes fear appeals, whereas the gain-framed message engages in avoiding fear due to adopting protective behavior. Previous research did not focus on the effects of gain-framed messages through EPPM. Thus, this research proposes what type of framing messages might be effective on four components of EPPM.

RQ1: How do gain and loss framing influence severity, vulnerability, response efficacy, and self-efficacy?

3. Materials and Methods

An online experiment was used to test the proposed hypotheses and research question. The experiment was designed with one manipulated 2-level categorical independent variable and measured six outcome variables. Specifically, the experiment tested how gain- vs. loss-framed ad messages influence purchase intention while

focusing on the mediation process: the message framing → fear arousal → threat/coping appraisals → purchase intention. Threat appraisals includes severity and vulnerability and coping appraisals involved response efficacy and self-efficacy.

3.1 Sampling

After the study protocol was approved by the organization IRB, researchers recruited 255 college students from a university in the Southeast region of the United States. They participated in an online experiment via Qualtrics and received extra credit from their course instructors as participation compensation. The mean age of subjects was 19.67 (SD = 1.60, min. = 18, max. = 25). Females were 178 (69.8%) and males were 77 (30.2%). The distribution of participants' ethnic information was the following: 217 Caucasians (85.1%), 14 African-Americans (5.5%), 5 Asians (2.7%), 9 Hispanic (3.5%), and 3 Native-Americans (1.2%). For school years, they were 96 freshmen (37.6%), 68 sophomores (26.7%), 43 juniors (16.9%), and 46 seniors (18.0%).

The subjects were recruited through a survey participation pool which a system operated by the college. Students accessed the system and select individual studies to participate after reading the title and brief research description of the study. A student who went into this study automatically moved to an online questionnaire managed by Qualtrics. The first page of the questionnaire was the informed consent form. If the student agreed on the consent, he or she started to answer the questions and look at the given advertising stimulus with the following order: advertising stimulus exposure, the degree of fear arousal, severity, vulnerability, response efficacy, self-efficacy, purchase intention, and demographic information.

3.2 Stimuli

During the experiment, participants were randomly exposed to one of the two message types: a loss-framed message (n = 125) and a gain-framed message (n = 130). The messages were delivered through an advertisement promoting LED bulb use. Detailed messages are described in Appendix A. Note that the advertising stimuli are the
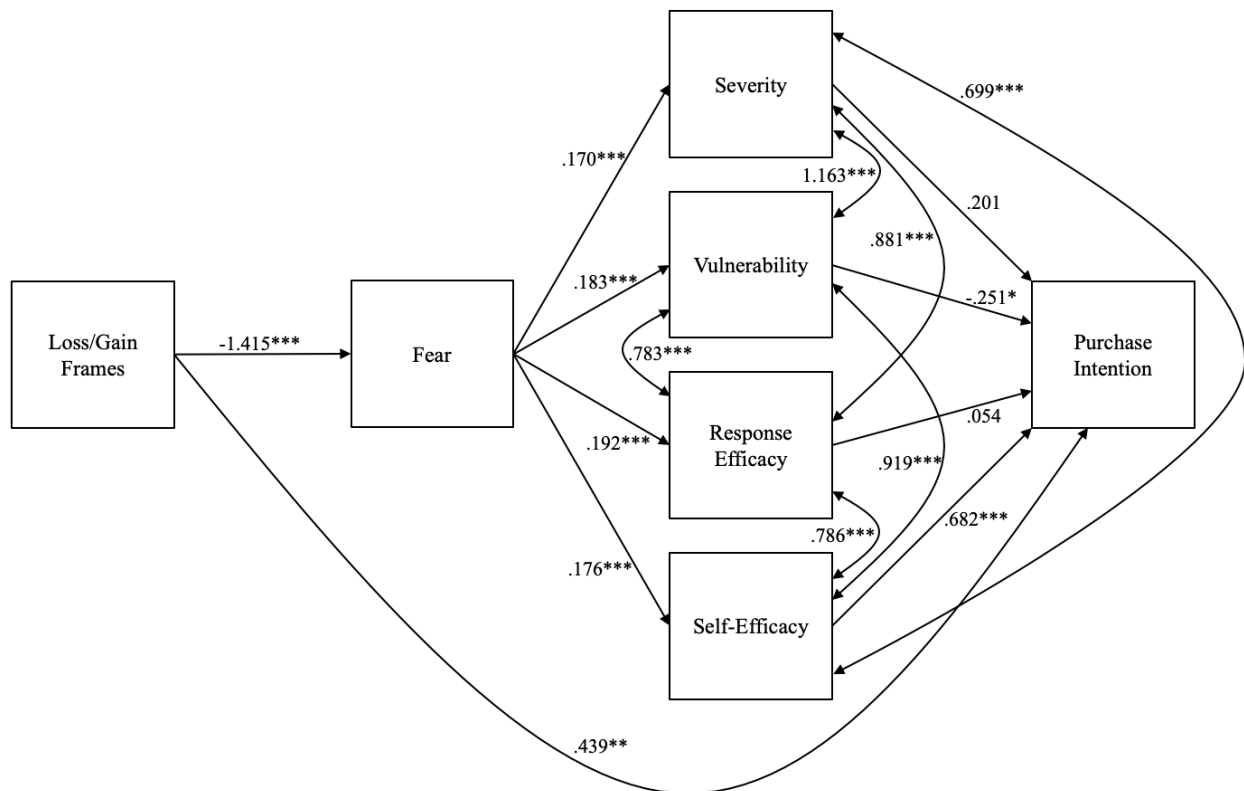

Figure 1. Path Model with Standardized Coefficients

Notes: CFI = .998; RMSEA = .036; SRMR = .328; NFI = .993; X^2 = 6.643; df = 5; n = 255. ***p < .001, **p < .01, *p < .05.

same as those used by Shin, Ki, and Griffin [24]. Originally, Shin et al. [24] divided each message frame into two based on types of the advertiser (a profit organization and non-profit organization); however, this study ignored the difference of the advertiser types because the advertiser types did not make any statistical significant differences to the outcome variables that were used in this experiment design. Figure 2 shows the example advertisements that used in the experiment.

3.3 Measurements

To measure all variables excluding control variables associated with protection motivation theory and involvement with the environment, this study uses a 7-point Likert scale ranging from "strongly disagree (1)" to "strongly agree (7)." Items used to measure the cognitive process in protection motivation are adopted from Kim et al. [22] and are partially revised.

3.3.1 Perceived Severity

This variable refers to subjects' perception of the degree of physical and psychological harms and threats resulting from global climate change. Three items are used to measure this variable: "Climate change is a serious problem," "Global climate change poses a threat to me," and "Climate change will have a negative impact on me" ($a = .914$).

3.3.2 Perceived Vulnerability

This variable is defined as the perceived probability that negative effects of climate change will occur without adaptive behavior. Three items measure this variable as follows: "My chances of being affected by global climate change in my lifetime are high," "If I don't participate in prevention activities for climate change, I may face some problems in the future," and "I think that global climate change is likely to be worse in the future" ($a = .822$).

3.3.3 Response Efficacy

This variable is operationalized as subjects' belief that adaptive behavior will help prevent global climate change. This study uses three items to measure this variable as follows: "Participating in global climate change prevention is effective in preventing global climate change," "Participating in global climate change prevention will help prevent global climate change," and "Using LED lights will help prevent global climate change" ($a = .818$).

3.3.4 Self-efficacy

This variable indicates the extent of subjects' belief that they can personally prevent global climate change. To measure this variable, three items are used: "I will take steps to participate in behaviors that help prevent global climate change, even if it causes inconveniences," "I can

Figure 2. Example Stimuli Used in the Experiment

participate in behaviors that help prevent global climate change, if I really wanted to," and "I believe I am able to purchase a LED bulb to help prevent global climate change" (a = .759).

3.3.5 Purchase Intention

This variable explains subjects' intention to purchase the advertised product. In this study, the advertised product is an LED light bulb. This variable is measured by the following three items, adopted from Bickart and Ruth [25]: very unlikely/very likely, definitely would not/definitely would, and improbable/probable (a = .812).

3.4 Statistical Tests

This study developed a path model to test all proposed hypotheses and research question and tested the fitness of the data to the model using the *lavaan* package in R with 1000-times bootstrapping. Also, the researchers used hierarchical multiple regressions the mediation effect of fear on the relationships between gain-/loss-framed messages and threat/coping appraisals. The indirect effects from the messages to purchase intention were tested by using the *lavaan* package as well.

4. Results

The proposed path model shows the relationships among all variables described in the hypotheses and research question. The model depicts that the message framing influences fear arousal which turn to affect severity, vulnerability, response efficacy, and self-efficacy; and then the four appraisal factors change purchase intention; also, the message framing predicts purchase intention. A path analysis using the seven manifest variables resulted that the model has an acceptable level of fitness with the data: X^2/df = 1.329, p = .249, CFI = .998, RMSEA = .036, SRMR = .328, and NFI = .993. Parameter estimates of each path on the model are detailed in Figure 1.

The first hypothesis explains the effect of gain-/loss-framed messages on the degree of fear arousal. The path analysis resulted that the loss frame compared to increases the degree of fear arousal, β = -1.415, p < .001, M_{loss} = 4.40, SD_{loss} = 1.576, M_{gain} = 2.98, SD_{gain} = 1.675. Thus, H1 was supported.

The second hypothesis indicates the positive impact of gain/loss frames on purchase intention. According to the path analysis, gain frames significantly increased purchase intention, β = .439, p < .001, M_{loss} = 4.63, SD_{loss} = 1.31, M_{gain} = 4.87, SD_{gain} = 1.49. Thus, H2 was supported.

The third hypothesis is about the relationships between fear and coping and threat appraisals. The path analysis revealed that fear significantly increases severity (β = .170, p < .001), vulnerability (β = .108, p < .001), response efficacy (β = .192, p < .001), and self-efficacy (β = .176, p < .001).

The first research question asks about the relationships between gain/loss frames and coping and threat appraisals. The researchers tested the relationships to see if fear mediates the relationships between gain/loss frames and coping and threat appraisals. Four simple linier regressions with a covariate (fear) indicated that loss/gain frames did not influence severity, vulnerability, response efficacy, and self-efficacy. Considering the four-step mediation tests by Baron and Kenny [26], the first step, the relationships between loss/gain frames and coping and threat appraisals in this study, was not significant. Thus, the data showed that fear does not mediate the relationships between loss/gain frames and coping and threat appraisals.

The fourth hypothesis explains the effects of the coping and threat appraisals on purchase intention. The path analysis revealed the significant influences of vulnerability (β = -.251, p < .05) and self-efficacy (β = .682, p < .001) on purchase intention (PI). However, the direction of the impact of vulnerability on purchase intention was opposite of the expected as well as severity and response efficacy did not significantly affect purchase intention. Thus, H4d was supported, but H4a, b, and c were not supported.

In addition, the researchers analyzed all possible cases of individual indirect effects of message framing on purchase intention and all were significant: framing → fear → severity → PI (β = -1.044, p < .001, 95% CI: -1.515, -.559), framing → fear → vulnerability → PI (β = -1.483, p < .001, 95% CI: -1.945, -.934), framing → fear → response efficacy → PI (β = -1.169, p < .001, 95% CI: -1.665, -.679), and framing → fear → self-efficacy → PI (β = -.558, p < .05, 95% CI: -1.018, -.078). Total indirect effect (β = -4.254, p < .001, 95% CI: -5.986, -2.565) and total effect (β = -3.815, p < .001, 95% CI: -5.591, -2.131) were significant.

5. Discussion and Conclusions

This study examined the effect of gain/loss message framing through fear arousal and threat on environmental behavior toward green advertising. The findings indicated that fear significantly affected cognitive appraisals. More specifically, fear appeals in green advertising positively affected severity, vulnerability, response efficacy, and self-efficacy toward environmental behavior. Participants who received the gain-framed message had a higher intention to purchase the green product.

Unsurprisingly, the loss frame increased the degree of fear. It is a natural audience response to feel fear when

he or she exposed to a message emphasizing negative consequences that may affect his or her life. This finding supported the first step of emotions-as-frame model which describe a message evokes an emotion. Also, this result is consistent with Nabi [12]. Communication practitioners should keep in mind that the messages they created (e.g., social media messages, newsletters, advertising, press release, statements on their websites) can create an emotion regardless they intended to evoke a emotion or thought or to lead an action. The emotion created by the message can affect the perception related to the organization. This study and previous studies focused on one emotion, fear. Thus, to generalize the emotions-as-frame model should be tested by using various emotions. Pollay [27] could be a great study to figure out various emotions.

As we predicted, the gain-framed message, compared to the loss-framed message, led strong intention to purchase the advertised product. This result is the same as the arguments of the previous studies [14,15]. This result can make communication practitioners disappointed because a loss-framed message appealing fear was one of the popular approaches in green advertising. Thus, if the goal of the advertising is to increase sales, a brand manager or account planner should pursue to use a gain frame evoking positive emotions in the ad. However, if the purpose of the green ad is to increase awareness of the serious environmental problems, fear-appealing messages can be effective to change audiences' awareness and knowledge because fear-appealing message is effective to attract audiences' attention. In addition, the use of gain-/loss-framed messages can be applied by the status of audiences. According to the hierarchy effect model [28], an individual's changes go through from cognitive to affective, and finally to conative aspects. Thus, fear-appealing messages might be effective for people who does not recognize the seriousness of the environmental problems or detailed information about the problems; and hope-appealing messages could be effective for people who have not be attached to emotion toward environmental issues because positive emotions may lead to positive behavioral outcomes. These hypotheses should be tested by the future studies.

The results of this study support the EPPM model [17]. Based on the EPPM model, people in the high fear/threat will perceive great severity and vulnerability than individuals in the low fear/threat. Also, people with high self-efficacy will be willing to accept the recommended behaviors to prevent threats. For example, if people have high threat and efficacy, they believe that they can manage the threat by following green behavior. However, if individuals have a higher threat with lower self-efficacy, they avoid the recommended behavior. This research found that

severity, vulnerability, and response efficacy did not affect the green product purchase intention. However, there is a positive association between self-efficacy and purchase intention. In other words, even if participations had higher severity, susceptibility, and response efficacy, if they had lower self-efficacy, they avoided participating in desired behaviors. On the other hand, participants with higher self-efficacy, who had higher severity, susceptibility, and response efficacy, are willing to follow the recommended behavior.

All in all, this study provides that fear can serve as a catalyst to process cognitive appraisals. Fear appeals motivate people to avoid negative effects toward the environmental issue. Also, a gain-framed message using a fear appeal positively affected the purchase intention. Therefore, this research suggests that advertisers should consider a gain-framed message using fear appeal for the green products.

Authors' Contributions

Sumin Shin: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing (Original Draft); Sanghee Park: Conceptualization, Writing (Original Draft); Eyun-Jung Ki: Writing (Review/Edit).

Conflict of Interest

The authors have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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Appendix A. Gain-/Loss-Framed Messages Used in the Advertising Stimuli

Gain-framed messages

To Make Our Environment More Green, Change Your Bulbs to LEDs!

Do you know how much energy the traditional incandescent bulbs in your home use up? Tremendous amount of energy and money have been wasted through the high-temperature heat of the incandescent bulb. 90% of consumed energy is given off as heat and only 10% is used as light.

Now, change your home lights to LEDs!

- LED lights save energy up to 80%.
- LED lights last up to 25 times longer.
- LED lights last for at least 25,000 hours.
- LED lights are much brighter than same-sized Incandescent bulbs.

Save Our Earth, Better Your Life
Earth Better Bulb Company
www.earthbetter.com

Loss-framed messages

A Dark Ruined City Is Our Inevitable Future Unless You Change Your Bulbs to LEDs…

Incandescent bulbs are choking you and your family. Incandescent bulbs accelerate climate change by using up a lot of energy generated from fossil fuel. Guess what? Climate change causes higher temperature, increased risk of drought, fire, and floods, stronger storms, rising seas, and risks to wildlife. Climate change is ruining your life now.

For you and your family, change your home lights to LEDs!

- LED lights save energy up to 80%.
- LED lights last up to 25 times longer.
- LED lights last for at least 25,000 hours.
- LED lights are much brighter than same-sized Incandescent bulbs.

Save Our Earth, Better Your Life
Earth Better Bulb Company
www.earthbetter.com