Can communication messages affect promotion of international air travel in preparation for the post COVID-19 pandemic era?

Abstract

The purpose of this research was to identify the effects of message framing relevant to the COVID-19 pandemic in enhancing behavioral intentions to engage in international air travel. A survey of 1,300 respondents was conducted using the Posttest Control Group experimental design method. The "loss" message regarding cash-redeemable coupons was most effective in raising intentions to take an international flight and obtaining a favorable assessment of the presented message contents. Covariates including income level, travel purpose, premium card ownership, perceived risk, importance of airline brand, and sanitation were significant in determining the intention to take an international flight. The results of this study can help to establish promotional strategies to foster international travel once the pandemic recedes.

Keywords: COVID-19, international air travel, message frames, risk perceptions, travel intentions

The COVID-19 epidemic has suppressed tourism demand because of social distancing regulations and restricted movement. The unprecedented nature of the pandemic has devastated the conventional supply–demand structure of international tourism including transportation, online travel agencies, resorts, attractions, and shopping (Serrano and Kazda, 2020). One of the most severe impacts was in the passenger airline sector because of drastically reduced flights, which pushed most airlines to the brink of bankruptcy or financial risk. Enforced restrictions on movement of tourists across countries and regions led to the disruption of economic activities in destinations (Mariolis, Rodousakis, and Soklis, 2020).

Although the pandemic swept the globe in 2020, there is a silver lining in the development of vaccines and the launch of inoculations to stop further infection. Thus, the tourism industry expects some mitigation of social distancing measures in 2021, and famous destinations may resume attracting tourists soon after the pandemic is controlled.

Previous studies exploring how the framing of messages can alter customer attitudes and consequent behavior can be divided into several research streams. The first stream involves testing the effectiveness of messages according to their themes (e.g., Eustice, McCole, and Rutty, 2019; Fleischer, Tchetchik, and Toledo, 2015; Garaus, Wagner, and Back, 2017; Kim and Crompton, 2001; McCarville, 1991; Saunders, Weiler, Scherrer, and Zeppel, 2019; Schwer and Daneshvary, 1997; Steckenreuter and Wolf, 2013). The second is analyzing differences in the effects of “gain” and “loss” message framing (e.g., Grazzini, Rodrigo, Aiello, and Viglia, 2018; O'Keefe and Jensen, 2007; Rothman, Bartels, Wlaschin, and Salovey, 2006). Third is comparing the effects of emotional versus rational message framing (e.g., Wang, Kim, and Agrusa, 2018; Zhang, Sun, Liu, and Knight, 2014). The fourth stream compares the effectiveness of message-displaying methods (e.g., Jeong and Crompton, 2017; Kim, 2017; Kim, Jhang, Kim, and Chen,

2020; Nusair, Yoon, Naipaul, and Parsa, 2010; Spiegelhalter et al., 2011; Yu and Kim, 2005).

This research was designed to apply message framing effects to the current COVID-19 situation. First, assuming that the COVID-19 threat influences airline passengers' affective and cognitive reactions, the efficacy of communication messages was tested in overcoming the challenges arising from the perceived threats of the pandemic and encouraging international air travel as the world enters an expected pandemic recovery phase in the near future. The first objective was to assess the effectiveness of presented messages on willingness to take international flights upon the pandemic's demise and not to be sensitive to negative news related to the pandemic in deciding on foreign travel. The second was to analyze the evaluations of the provided message information. The third objective was to identify the role of covariates that moderated the relationship between the message versions and dependent variables.

Literature Review

Effects of communication message themes on customers' reactions

Communications can substantially change or improve customer perceptions of corporations (Garaus et al., 2017; Pashupati, Arpan, and Nikolaev, 2002. The efficacy of communications has been an important research topic) particularly in crisis times (e.g., Cowden and Sellnow, 2002; Kapuściński and Richards, 2016; Kim, 2013; Ritchie, 2004; Wan, 2008). , Cowden and Sellnow (2002), in their empirical study of the Northwest Airlines pilots' strike in 1998, analyzed the effectiveness of the airline's communications. They found that communications served as the primary channel for responding to the crisis and sustaining the company's brand, and were effective in favorably restoring customer opinions of Northwest Airlines. Wan (2008) conducted an experiment to examine the effectiveness of communications on travel decisions in the context

of a health-related crisis (the infectious disease named NORAS). This study identified that resonance was an underlying psychological factor in explaining the impacts of different messages (e.g., promotion and medical messages) in nudging attitudes and travel intentions. Kim (2013) proposed a conceptual framework that explained how consumers evaluate corporate advertising in a crisis. She postulated that credibility and attitudes toward company messages can be influenced by the impact of pre-crisis corporate advertising, consumer resistance to negative news, individual differences, and external factors.

In the formulation of communications, a corporation can express and emphasize different themes (e.g., political, social, or economic ideas) to enhance customer attitudes and support for the company (Pashupati et al., 2002; Schumann, Hathcote, and West 1991). Schumann et al. (1991) described two types of corporate messages: financial and special opportunity messages. They found that financial messages had a relatively specific purpose and targeted potential investors, whereas special opportunity messages responded to negative events or crises (e.g., malicious rumors, financial risks, labor union boycotts). During a crisis, special opportunity messages are often deployed to overcome the crisis and improve the public's attitudes toward a corporation. Empirical studies have found that different themes in such messages produce dissimilar psychological reactions to risk perception (Kapuściński and Richards, 2016) and carbon offsetting behavior (Chi, Denton, and Gursoy, 2021; Zhang, Ritchie, Mair, and Driml, 2019). Chi et al (2021) tested the efficacy of eight different combinations of framed messages relating to carbon-offsetting behaviors. Among them, a gain-framed objective message showed the highest level of effectiveness in stimulating carbon-offsetting behaviors, while loss-framed subjective messages helped to elevate purchase intentions and willingness to pay.

While struggling in the unprecedented crisis generated by the COVID-19 pandemic, airlines have proactively developed and promoted messages with different themes (e.g., corporate social responsibility, safety enhancement, monetary benefits, and financial difficulty). However, which message theme is most effective in ameliorating customer attitudes and behavioral intentions is unknown. Thus, this research tested and compared the effectiveness of different themes in airline messages to potential customers.

Role of gain and loss message framings in determining customers' reactions

Message framing is considered one of the most common ways to manipulate customer attitudes and behavior in the literature on communications and advertising (Maheswaran and Meyers-Levy, 1990). In particular, prospect theory is widely applied to explain the asymmetric effects of gain- or loss-framed messages (Tversky and Kahneman, 1981). Messages can be framed to emphasize the positive outcomes of undertaking a behavior (i.e., gain frame) or the negative outcomes of not undertaking a behavior (i.e., loss frame). Gain-framed messages focus on the desirable consequences elicited by the benefits gained, and loss-framed messages highlight the undesirable consequences elicited by the benefits lost (Block and Keller, 1995; Lee and Aaker, 2004; Maheswaran and Meyers-Levy, 1990).

Framing can shift the persuasiveness of messages as it influences whether the audience perceives information as gains or losses relative to their psychological reference points (Tversky and Kahneman, 1981). Previous research comparing the effectiveness of gain- versus loss-framed messages has yielded mixed results. Some researchers have suggested greater persuasiveness for loss frames (Meyerowitz and Chaiken, 1987; Tversky and Kahneman, 1981), whereas others have documented greater persuasiveness for gain frames (Chi et al., 2021;

Maheswaran and Meyers-Levy, 1990; O'Keefe and Jensen, 2007). Such mixed findings stimulated research examining the conditions under which one frame works better than the other. The persuasiveness of frames may be contingent on the characteristics of the audience. For example, loss-framed messages tend to be more effective in encouraging avoidance-oriented individuals to engage in a health behavior (Sherman, Updegraff, and Mann, 2008). Gain frames tend to be more effective in convincing the audience to perform a low-risk health behavior (e.g., sunscreen use), while loss frames tend to be more persuasive in persuading individuals to engage in a health behavior perceived as relatively riskier (e.g., Pap tests; Banks et al., 1995; Rothman et al., 2006; Schneider et al., 2001). As evidenced by the aforementioned research, message framing has been primarily studied in relation to health behaviors. Recently, this line of research has been extended to the marketing domain.

Researchers have largely adopted green or socially responsible behavior when investigating message framing in the hospitality and tourism. For example, hotel guests' linen reuse (Blose, Mack, and Pitts, 2015; Lee and Oh, 2014), recycling behavior (Grazzini et al., 2018) and participation in responsible tourism (Yoon et al., 2019) are influenced by message framing. However, how hospitality and tourism consumers respond to messages promoting diverse services or products remains relatively unclear. Thus, this research tested how consumers respond to gain- versus loss-framed advertisements emphasizing different benefits offered by airlines.

Moderating role of covariates between communication messages and customers' reactions

Previous studies have found that the effect of message theme and/or framing is not always homogeneous, and the effect can be moderated by other factors (Buda and Zhang, 2000; Kim

and Crompton, 2001; Kim et al., 2020). Researchers in consumer behavior have begun to explore moderators of message themes and framing effects. In the context of airlines' communication messages, such moderators can be categorized into demographic, travel-related, and psychological variables.

Researchers have provided empirical evidence that age, gender, and socio-economic status play a moderating role in processing a corporate communication message (Lee and Kim, 2018; Lewis, Watson, and Tay, 2007; Meyers-Levy and Sternthal, 1991). Similarly, studies have suggested travel-related variables (e.g., previous travel experience and travel pattern or preference) moderate how people perceive and process travel information (Kim and Crompton, 2001; McCarville, 1991). Psychological factors are also potential moderators in assessing the effect of the presented messages. For example, positively framed messages can be more effectively persuasive for consumers with low interest in the message than negatively framed messages (Zhang and Buda, 2013). The psychological state triggered by stimuli also modulates the framing effect. Consumers whose high- (low-) level construal is activated by a message are more readily persuaded by gain (loss) frames to purchase products (Chang, Zhang, and Xie, 2015; Chi et al., 2021) and engage in eco-friendly behavior (White, MacDonnell, and Dahl, 2011). Some studies (Kapuściński and Richards, 2016; Kim, 2013) also postulated that predetermined attitudes toward a corporation or a destination can strongly influence how individuals process negative messages about a crisis.

Conceptualization

Figure 1 shows the conceptual model used, which uses adaptation-level theory (Helson, 1964). This theory proposes that adjusting stimuli alters consumer evaluations of advertising

information. The major stimuli are focal, contextual, and residual. In this study, focal stimuli include willingness to take a flight for international travel and willingness not to be sensitive to negative news related to the pandemic in deciding on traveling internationally, and evaluations of the provided message information, as determined by airline customers. The subjects were provided with one of 13 message versions as contextual stimuli. Contextual stimuli can enable a change in backgrounds or contexts that may act as a situational cue for judgement (Bouton, Todd, and León, 2014; Kim and Crompton, 2001). Residual stimuli account for the remaining variance that influences perception of focal stimuli. Individuals often react differently to the perception of focal stimuli in the same context because they have varying residual stimuli. These exogenous variables include diverse factors relating to consumer decision making, such as sociodemographic variables, travel-related variables, the importance of factors that influence selection of an airline when traveling abroad, and perceived risk level of the pandemic. The residual stimuli are treated as covariates in covariance analysis. When they are controlled effectively, and/or their influences on perception of focal stimuli are fully considered, the influence of the message contents on the perception of focal stimuli are clearly explained.

[Figure 1]

Methods

Measurement

The most important part of this study was the development of different message versions that acted as a main effect (treatment effect). To identify and select potentially effective messages, a literature review on airline service and influencing factors in selecting an airline was carried out (e.g., Chung and Petrick, 2013; Davis and Nag, 2020; Etemad-Sajadi, Way, and Bohrer, 2016;

Hwang and Choi, 2018; Loureiro and Fialho, 2017). The factors of service quality in an airplane cabin were flight attendant kindness and the provision of high quality meals, magazines, films, and other amenities. Important determinants in choosing an airline included provision of additional mileage and seat upgrades, brand name, price, and contribution to society.

Subsequently, in-depth interviews investigating the current impact of the COVID-19 pandemic were conducted with ten airline staff. They proposed the inclusion of current situational factors such as concern about sanitation issues and the difficult financial situations of airline companies due to diminished international travel demand. In addition, the results of interviews with ten airline customers who had traveled in the past few months showed that customers want substantial benefits such as ticket price discounts, coupons, extra mileage, upgraded cabin services, and strict sanitization.

Reflecting on the results of the literature review and interviews led to the development of a questionnaire containing 13 message versions. A pilot test was then conducted using an MTurk-led online panel survey. One hundred participants in each case (i.e., 1,300 participants in total) were asked to provide responses to the 13 message versions. For manipulation checks, mean scores, percentages, outliers, and distribution patterns for all items were computed. The mean ratings for the 12 experimental message versions on two items of behavioral intentions and five evaluation variables for the presented message information ranged from 4.89 to 5.53 on a 7-point Likert-type scale. After revising minor inaccuracies in wording, 13 message versions were listed on the questionnaire for the main survey. Table 1 describes the operationalization of the 13 message versions.

Aside from the control message, there were six message themes, and each theme was described using either gain or loss framing. Message version 1 was the control message. Message

versions 2 and 3 illustrated the difficult business environment as a result of the pandemic (Forsyth, Guiomard, and Niemeier, 2020; Serrano and Kazda, 2020). Financial difficulties can stimulate sympathy and encourage customers to undertake international travel (Kim and Crompton, 2001; Koopmans and Lieshout, 2016). Message versions 4 and 5 addressed extra mileage provisions, which can directly motivate passengers to choose an airline (Davis and Nag, 2020; Kim and Park, 2017). In combination with message versions 6 and 7, which showcased coupon provision, helping customers seeking price discounts, these six messages were considered airline selection attributes (Chung and Petrick, 2013; Kim and Park, 2017). Message versions 8 and 9 aimed to enhance company image by fulfilling corporate social responsibility (Daub and Ergenzinger, 2005; Hwang and Choi, 2018; Luo and Bhattacharya, 2006). Along with message versions 10 and 11, providing customers with substantial benefits from upgraded services, these factors related to loyalty to the airline (Han, 2013; Kim and Park, 2017; Narangajavana, Garrigos-Simon, García, and Forgas-Coll, 2014). For example, the quality of meals and amenities among airline cabin service attributes were found to be important in nourishing customer satisfaction with and trust in the company (Chung and Petrick, 2013; Etemad-Sajadi et al., 2016; Han, 2013, Han and Hwang, 2017; Han and Hyun, 2015; Kim and Park, 2017; Loureiro and Fialho, 2017). Finally, message versions 12 and 13 reflected first-hand concerns about the pandemic.

Two items that indicated behavioral intentions were developed to reflect potential customer intentions to take international flights and not to be sensitive to negative news related to the pandemic in deciding. Items to evaluate the provided message information were designed to assess the effectiveness of the presented information (Choi, Choi, Oh, and Kim, 2020; Wang et

al., 2018; Zhang et al., 2014). Respondents were allowed to answer on a 7-point Likert-type scale ranging from “strongly disagree” (1) to “strongly agree” (7).

[Table 1]

Main survey

The main survey was performed using an online survey company called MTurk. Questionnaires containing the 13 message versions were developed and randomly distributed to online panelists. Two screening questions were offered: age and experience of international travel using an airline within the past three years. The reason for asking potential respondents’ age was to establish stratification of the respondents according to age groups from 20s to 60s or older because features of international travel can differ with age (Otoo and Kim, 2020). To facilitate attention checks, two questions to ask age including categorical answering in the early part and typing birth year in the last part were given and compared. In addition, respondents who completed the questionnaire within two minutes were deleted. Since each message required 100 respondents, a total of 1,300 questionnaires were administered.

Data analysis

One-way ANOVA and post-hoc ANOVA were used to identify the mean differences in the responses to dependent variables (two behavioral intention variables and five evaluation variables for the presented message information) between the 13 message versions. Then, analysis of covariance (ANCOVA) was adopted to compare the mean differences in the dependent variables across the 13 message versions, while controlling for the effects of 13 covariates which included age, gender, income level, education level, travel purpose, airline

membership, premium card ownership, importance of air ticket price, importance of airline brand, importance of safety, importance of sanitation, importance of service, and perceived risk of COVID-19 infection. ANCOVA is superior to one-way ANOVA because it controls the influence of covariates on each dependent variable (Campbell and Stanley, 1963). If significance in a covariate was found at least at the 0.05 level, graphical figures were developed to visually explore the pattern of interactions among each of the 13 message versions, covariates, and each dependent variable.

Results

Profiles of the respondents

Respondents were males (60%) and females (40%). Their ages were distributed as 30s (32.5%), 20s (26.8%), 40s (23.9%), 50s (11.2%), and 60s (5.5%). With regard to education level, the highest percentage was found for college graduates (59.2%), followed by graduate school or above (24.2%), high school or less (9.2%), and college students (7.4%). With regard to annual household income levels, they were listed as USD50,000 to 69,999 (25.1%); USD30,000 to 49,999 (24.9%); USD90,000 or more (17.5%); USD29,999 or less (16.5%); and USD70,000 to 89,999 (16.0%). Places of residence were California (15.2%), New York (10.5%), Texas (10%), Florida (6%), and other states. The number of international travel events since 1 January 2015 were once (18.0%), twice (13.7%), and three times or more (68.3%). With regard to the usual purpose of international travel, the respondents reported pleasure (61.7%) and business travel (38.3%). In relation to the number of airline memberships, participants reported none (29.9%), one (25.9%), two (20.3%), and three or more (23.9%); for airline premium card ownership they reported none (46.5%), one (28.0%), two (12.8%), and three or more (13.6%).

Results of one-way ANOVA to assess the effectiveness of messages

Table 2 shows the results of one-way ANOVA tests to explore the effectiveness of the messages. All mean scores on 12 experimental messages scores showed a high level of agreement, indicating a range of 3.83 to 5.22. Hence, they were satisfactory with securing internal and external validity because this study examined significance of selected items using different times and respondents through in-depth interviews, a pilot study, and main survey. In all seven ANOVA models, the effectiveness of the control message was lower than that of the 12 experimental messages. For intention to take a flight for international travel, message versions 4, 7, and 10 were the most effective. Those who were exposed to message versions 10, 12, and 13 showed an intention not to be sensitive to negative news related to the pandemic in deciding upon international travel. Respondents who were exposed to message versions 4, 5, and 7 had the highest mean scores for the attractiveness of the message information provided. Message version 7 was the most influential in enhancing the effectiveness of the presented information, while message versions 4, 5, and 7 were the most convincing in attracting respondents to engage in international flights. Respondents who read message versions 7, 12, and 13 indicated the highest trustworthiness of the offered information, while message version 7 was the most informative in persuading participants to undertake international flights. Table 2 and Figure 2 report the results.

[Table 2 and Figure 2]

Results of ANCOVA

First, the assumptions of ANCOVA were ascertained by scrutinizing the following potential problems: unequal sample sizes; missing data on the dependent variable in any of the treatment

groups; and outliers in the data for the dependent variables and/or the covariates. All of the other statistical results confirmed that the assumptions made in conducting ANCOVA had not been violated. Table 3 lists the covariates used. Tables 4 to 10 report the results of ANCOVA undertaken to investigate the relationships between dependent variables (two behavioral intention variables and five variables indicating evaluation of the offered messages) and the 13 message versions, while holding the 13 covariates constant. The main effect in all seven ANCOVA models was significant at least at the 0.05 level, indicating that the 13 message versions had significant effects on all seven dependent variables.

In the ANCOVA model to identify the effects of the message versions and covariates on intention to take a flight, income level, travel purpose, ownership of a premium card, importance of airline brand, importance of sanitation, and perceived risk of COVID-19 infection were significant at the 0.05 level. Table 4 illustrates the results. In Table 5, the effects of message versions and covariates on intention not to be sensitive to negative news related to the COVID-19 in deciding on international travel, gender, airline membership, importance of sanitation, and perceived risk level of COVID-19 infection were significant at the 0.05 or 0.001 levels. Tables 5 to 10 present detailed results of the ANCOVA tests for the other five dependent variables (evaluation of provided message information).

[Tables 3 to 10]

Results of two-way ANOVA to identify the effects of covariates on behavioral intentions and evaluations of offered message information

Where a covariate was significant in the ANCOVA model, two-way ANOVA tests were undertaken to identify the relationships between the covariate and message versions in

explaining one of the behavioral intention variables or the variables evaluating the messages. With the outcomes displayed as figures, it is easy to discern the differences in patterns among the levels of each covariate. These covariates significantly influenced respondents' intentions to take a flight. As shown in Figure 3, those who were business travelers, premium card owners, and who placed importance on airline brand and sanitation showed greater intention to take a flight than the other groups. However, complicated patterns were discovered with relation to income level and perceived risk of the pandemic. For example, respondents with low incomes showed a higher level of intention to take a flight in response to message version 4 than those with high incomes. Those who perceived a high pandemic risk showed the lowest mean scores in intention to take a flight on all 13 messages, whereas those who perceived a medium level of risk had a higher level of intention to take a flight in response to message versions 2, 3, 5, and 6 than the other two cohorts.

[Figure 3]

As Figure 4 indicates, covariates such as gender, airline membership ownership, importance of sanitation, and perceived risk showed significance at least at the 0.05 level. Male respondents showed a higher level of intention not to be sensitive to negative news related to the COVID-19 in deciding on international travel than females in most message versions. Airline membership owners showed higher mean scores on the intention not to be sensitive to the negative news than non-membership owners. Those who did not emphasize the importance of sanitation had higher mean scores on the intention to fly in response to message versions 7, 9, 10, 11, and 13 than the group who did emphasize sanitation. Those who were unafraid of the pandemic showed the

highest intention not to be sensitive to negative news related to the COVID-19 in deciding on international travel in response to message versions 1, 2, 4, 7, 10, 11, 12, and 13.

Figure 5 shows the role of covariates in explaining the attractiveness of the provided information. Educational level, purpose of travel, premium card ownership, importance of airline brand, and perceived risk were significant at least at the 0.05 level. Interestingly, those who had graduated from high school or less had the highest mean score in evaluating the attractiveness of the provided message information, whereas college students provided a low evaluation score for message version 10. Those who were business travelers, had premium cards, and considered airline brand important had higher mean scores for evaluating the attractiveness of the presented message information than the other groups. Respondents who had a neutral perception of the risk of the pandemic had the highest mean values, with the exception of message versions 10 and 12. Those who reported least risk of the pandemic showed the lowest mean score on message version 9.

Figure 6 presents the analysis of the effects of covariates on the effectiveness of the provided messages. Those who were business travelers, premium card owners, and regarded airline brands as important had higher mean scores for the effectiveness of the provided message information than their counterparts. With regard to the perceived risk of COVID-19 infection, those who had a neutral perception had the highest mean values for most message versions. Interestingly, those who felt unafraid of the pandemic had the lowest mean score for message version 9, but the highest mean score for message version 12.

Figure 7 shows the effects of covariates on the convincibility of the provided message information. Similar to the findings of previous analyses, business travelers and premium card owners had higher mean scores on convincibility than pleasure travelers and non-owners of

premium cards. However, patterns according to age and education level showed complicated interactions. Seniors (aged 60 or older) had the highest mean scores for messages 1 and 2, while they had the lowest mean values for message versions other than 4 and 11. The youngest group (aged 20 to 29) had the highest mean scores for message versions 6 and 12. Those who had graduated from high school or less displayed the highest mean score for message version 10, whereas college students had the highest mean score for message version 5. Respondents with the highest educational background had their highest mean score on message version 10, whereas college students showed relatively low mean scores on other message versions except for 5 and 12. Those who had a neutral perception of pandemic risk had the highest mean scores for message versions other than 6 and 11. Those who were unafraid of the pandemic showed the lowest mean values on message versions 5, 8, and 9.

With regard to the trustworthiness of the message information, educational level, purpose of travel, premium card ownership, and perceived risk were significant at least at the 0.01 level. Business travelers and premium card owners had higher mean scores than pleasure travelers and those who owned no premium cards. In terms of a pattern demonstrating the relationship between the trustworthiness of the message and the 13 message versions according to educational level, those with a high school education or less showed the lowest mean scores on message versions 3 and 8, and the highest mean values on message versions 6 and 10. With regard to the effect of perceived pandemic risk on the trustworthiness of the presented messages, those who were unafraid had the highest mean scores for message versions 10, 11, and 12, and the lowest mean values for message version 9. Figure 8 presents the results.

In Figure 9, purpose of travel, premium card ownership, importance of airline brand, and perceived risk are shown to be significant covariates in evaluating the informativeness of the

presented messages at least at the 0.05 level. Business travelers, premium card owners, and those who considered airline brand important had higher mean scores on all message versions than their counterparts. Interestingly, those who were unafraid of the global epidemic showed the lowest mean score on message version 9.

[Figures 4 to 9 Here]

Discussion and implications

Discussion

The significant findings of this study are as follows. First, the control message scored far lower than all other 12 experimental message versions. The finding is consistent with most previous studies, which found that the provision of messages is an effective way to alter customer psychological assessments (e.g., Fleischer et al., 2015; Kim and Crompton, 2001; McCarville, 1991; Schwer and Daneshvary, 1997; Steckenreuter and Wolf, 2013). Therefore, airlines must capitalize on message strategies to disseminate their policies or discuss potentially dangerous situations with potential customers by understanding their level of adaptation to the presented message framings.

Second, a "loss" message relating to the provision of a coupon (USD100) was the most effective or one of the most effective in changing intentions to take an international flight and obtaining cogent reactions to the message information. This finding indicates that consumers do not like to lose the chance to redeem a coupon for cash when buying a ticket if they do not take a flight. Theoretically, the results can be explained using prospect theory: the pain from losing a certain amount is larger than the pleasure sought from gains (Tversky and Kahneman, 1992). That is, the results stem from an asymmetric perception of risk aversion between potential loss and gain options (Chen, Groote, Petrick, Lu, and Nijkamp, 2020). Interestingly, "loss" framing to

obtain a monetary benefit by taking a flight enhanced the strength of the stimulus more than a "gain" message in increasing behavioral intention to take a flight.

Third, a "gain" message guaranteeing additional mileage provisions was more effective than a "loss" message that described missing a chance to receive extra mileage by not purchasing an air ticket. The finding is different from the cash back redemption case where the "loss" message was more influential than the "gain" message in heightening intentions and favorably assessing the message information. It indicates a difference between an extra mileage provision and a cash back coupon provision. Consumers are likely to prefer gaining extra airline mileage, but they do not feel very sad about not receiving additional free mileage by buying an air ticket. However, losing a chance to enjoy a cash back redemption is likely to cause a feeling of unfairness and relative deprivation.

Fourth, a "gain" message related to upgrading cabin service was most effective in increasing the intention to take an international flight and not spreading negative news related to international travel. Substantial efforts relating to the improvement of cabin services and amenities fostered the intention to take an international flight. The results are consistent with those of many studies that have found the enhancement of cabin amenities helps the perception of price fairness and creates future intentions (Chung and Petrick, 2013; Davis and Nag, 2020; Han, 2013; Kim and Park, 2017; Loureiro and Fialho, 2017; Narangajavana et al., 2014). Therefore, an airline company should use this "gain" promotional message containing upgraded cabin services.

Fifth, message information about rigorous sanitation services, regardless of "gain" or "loss" framing, contributed to raised intentions not to be sensitive to negative news related to COVID-19 in deciding on international travel and acceptance of the trustworthiness of the message

information. The results are not surprising because safety messages are crucial in determining decisions to travel (Fleischer et al., 2015; Kim, Wang, Jhu, and Gao, 2016; Saunders et al., 2019; Squalli, 2009), and pandemic-related security matters are relevant to all passengers moving between countries (Mariolis et al., 2020; Serrano and Kazda, 2020).

Sixth, difficult business environment messages interestingly showed the lowest efficacy among the experimental message versions in promoting intentions to take an international flight or in favorably evaluating the message information. Without implanting "gain" or "loss" wordings, the message describing the difficult business environment was the least impactful. Passengers apparently lacked sympathy for airline company financial hardships resulting from the pandemic. This result corresponds to those of previous studies: customers are less supportive of messages containing financial risk statements because previous dissatisfaction existed with offered services or price (Etemad-Sajadi et al., 2016; Koopmans and Lieshout, 2016; Narangajavana et al., 2014). Therefore, an airline company must develop a tangible plan to support customers directly rather than attempting an empathy-evoking message.

Seventh, both "gain-" and "loss-" framed messages pertinent to CSR were assessed as least effective after the difficult business environment message. Although an airline company's image of social contribution was assumed to help induce behavioral intentions and favorable attitudes toward the message content, passengers tended to prefer financial returns rather than halo effects accrued from corporate image enhancement. These results differ from those of previous studies, which emphasized the positive influence of airline company contributions to society on perceptions of good image and trust (Daub and Ergenzinger, 2005; Hwang and Choi, 2018; Luo and Bhattacharya, 2006) and further price fairness (Koschate-Fischer, Huber, and Hoyer, 2016;

Matute-Vallejo, Bravo, and Pina, 2011). Therefore, airline management must plan to offer direct benefits rather than their company self-promotional messages.

Eighth, compared with pleasure travelers, business travelers showed higher intentions to take flights and evaluation of the message information. Similarly, premium card owners showed a higher level of intention and evaluation than non-owners. The pattern indicates that given that business travel is required, and premium card owners are usually frequent travelers, they have a strong pent-up motivation to travel internationally. Therefore, airline companies should target them soon after the pandemic dissipates.

Ninth, the perceived risk of COVID-19 infection was a significant covariate in explaining all seven dependent variables. Those who were afraid of the pandemic tended to have a lower level of intention to travel and lower evaluations of the presented message information, although small discrepancies existed among the graphic patterns. However, groups who were unafraid of the pandemic or who took a neutral stance showed mixed patterns. For example, those who were unafraid of the pandemic showed a higher level of intention to take an international flight and not to be sensitive to negative news related to the COVID-19 in deciding upon international travel after they were exposed to message versions 10, 11, and 12, than those who were neutrally sensitive to the pandemic. Messages that illustrate the provision of upgraded cabin services and good sanitation services will help to promote international travel to those who are undaunted by the pandemic.

Tenth, those who perceived the risk of the pandemic at a neutral level gave more positive evaluations of most presented message versions than groups who were either unafraid or afraid of the pandemic, although there were message versions for which those unafraid of the pandemic showed a higher level of favorability than the neutral group. This result is interesting because

those with a neutral stance showed favorable assessments of these message contents. The findings indicate that message versions 2, 3, 4, 5 were particularly effective in motivating those less sensitive to the risk of disease to undertake international flights.

Academic and practical implications

This study makes an important academic contribution. Attribute theory proposes that consumer decisions are attributable to both internal and external factors. Although this study was carried out under special conditions; that is, a disastrous pandemic, the analysis of respondent reactions to the message contents showed consistency in terms of patterns of relationships. The findings support utility and prospective theories in that participant preferences for the given message options led to rational decision making to reduce the risk attributed to wrong choices and maximize latent utility (Chen et al., 2020; Karl, 2018). From the perspective of adaption level theory (Helson, 1964), this study has helped to ascertain the comparative magnitude of the stimuli in different messages and between "gain" and "loss" messages.

Few studies have attempted to explore the role of the content of information messages in airline customer cognitive assessments. In addition, there has been little investigation of the efficacy of messages involving diverse "gain" and "loss" messages. Since this study ascertained the functions of various covariates, it provides a good understanding of their roles as moderating variables between message types and customer psychological interpretations. Therefore, this research represents a useful initial attempt to compare the effectiveness of 13 information messages in determining customer reactions during a pandemic situation.

The findings showed that messages offering direct monetary benefits were more effective in increasing behavioral intentions and favorable beliefs in message content than abstract messages

indicating less direct benefits for customers. Similarly, customers were not particularly influenced by messages addressing airline company difficulties or by company image-enhancing cues. Therefore, airline companies must provide messages offering direct incentives such as coupon redemption, lucky draws, vouchers, and package prices, which may enhance perceptions of price fairness and attract international travel demand as the pandemic risk declines.

Previous studies identified discrepancies in the effectiveness of "gain" and "loss" framing according to the message presented (Chi et al., 2021; Grazzini et al., 2018; Meyerowitz and Chaiken, 1987; O'Keefe and Jensen, 2007; Rothman et al., 2006) or given business settings (e.g., Blose et al., 2015; Lee and Oh, 2014; Yoon et al., 2019). These respondents reported that perceiving a loss from not receiving a cash-redeemable coupon was greater than perceiving pleasure obtained from receiving the coupon. Thus, if a company uses a message type emphasizing the loss of an opportunity to seek monetary profit, customers are likely to accept the message content because the level of regret for not taking up the opportunity outweighs the happiness gained from taking advantage of the opportunity.

As this study has established the effects of diverse covariates, airline companies may need to initiate different strategies to foster airline demand by segmenting customers according their sociodemographic and travel-related profiles and psychological factors. Although identifying customer psychological stance is difficult, classifying big data containing previous customer records is easy. An airline can use different message types according to customer sociodemographic and travel-related profiles. For example, those with a lower income showed a high level of acceptance of message 4 (the "gain" extra mileage message) in raising intentions to take an international flight than those having a higher income. Therefore, extra mileage tactic-containing messages, such as addition of extra mileage, mileage redemptions for seat or meal

upgrades, and hotel/rental car bookings, may be helpful for lower income-earning passengers such as students, early-career workers, and rural residents.

Those who had membership cards and a business purpose showed a higher level of intention to take a flight and favorable perceptions of the offered message versions. Those who were unafraid of the pandemic displayed favorable responses to message versions manifesting corporate social responsibility, upgraded service, and sanitation services, although message versions specifying monetary benefits were generally more highly rated than those relevant to non-monetary benefits. Therefore, message variations can be cost-effectively used to evoke latent travel intentions in frequent flyers with membership cards.

As the news shock model proves, tourists react more sensitively to negative news than positive news, which influences the volatility of tourism demand (Coshall and Charlesworth, 2011; Kim and Wong, 2005). Potential tourists have no desire to take a flight after hearing apocalyptic pandemic news about empty airports, lockdowns, restricted movement due to social distancing, bankruptcy among carriers and travel businesses, and disease transmission in aircraft cabins. Therefore, selecting appropriate communication messages contributes to airline yield management because they can capitalize on framing tactics to reduce the adverse images of airlines without incurring a large amount of promotional expenditure.

Conclusions and suggestions for future study

This study established the relatively idiosyncratic effect of communication message contents in stimulating tourism demand affected by a viral pandemic. This study also confirmed the roles of covariates in measuring the effectiveness of the provided message versions. The results indicated that airlines could use appropriate message content to correct the negative images of

airlines and facilitate communication with potential customers who have suppressed a pent-up international travel demand in the post-COVID-19 period.

This study has some limitations. First, perceptions of the presented messages may vary according to the severity of the pandemic risk and the level of social distancing measures regulating international travel. Therefore, future studies should investigate the efficacy of such messages from a longitudinal viewpoint because the results will fluctuate according to diverse situational factors. Second, this study used US samples as the data source. Thus, future studies should be implemented using respondents from different countries, as interpretation of messages can vary across cultural boundaries (Mueller, 1987; Jeong and Crompton, 2017; Wang et al., 2018). It is helpful to enhance the external validity which can evidence generalizability and transferability.

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Table 1. Message types and content

Message type	Content
Common content	Coronavirus disease 2019 (COVID-19) has been spreading worldwide since around October 2019. This pandemic negatively affects all human lives and tourism businesses.
Type 1 (Control message)	After carefully reading the above message, please complete the questionnaire provided.
Type 2 (Gain: Difficult business environment message)	Due to reduced tourism demand and government restrictions, airlines are currently not fully operating. Hence, many airline companies are already bankrupt or in danger of bankruptcy. Your travel can help the airline overcome its financial problems and provide you with ongoing travel services. After carefully reading the above message, please complete the questionnaire provided.
Type 3 (Loss: Difficult business environment message)	Due to reduced tourism demands and government restrictions, airlines are currently not fully operating. Hence, many airline companies are already bankrupt or in danger of bankruptcy. This may force airlines to shut down their businesses and thus be no longer able to provide you with ongoing travel services if you do not travel during this difficult time. After carefully reading the above message, please complete the questionnaire provided.
Type 4 (Gain: Extra mileage provision message)	Despite business difficulties, the airlines would like to provide an extra mileage allowance (10,000 miles) to promote international travel. You can gain additional mileage allowances by traveling. After carefully reading the above message, please complete the questionnaire provided.
Type 5 (Loss: Extra mileage provision message)	Despite business difficulties, the airlines would like to provide an extra mileage allowance (10,000 miles) to promote international travel. You will lose this chance to gain additional mileage if you do not travel. After carefully reading the above message, please complete the questionnaire provided.
Type 6 (Gain: Coupon message)	Despite business difficulties, the airlines would like to provide a coupon (equivalent to USD 100) free of charge to promote international travel. You will have the chance to receive a coupon by traveling. After carefully reading the above message, please complete the questionnaire provided.
Type 7 (Loss: Coupon message)	Despite business difficulties, the airlines would like to provide a coupon (equivalent to USD 100) free of charge to promote international travel. You will lose the chance to receive a coupon if you do not travel. After carefully reading the above message, please complete the questionnaire provided.
Type 8 (Gain: Corporate social responsibility)	Despite business difficulties, the airlines would like to provide assistance for children from poor families, participate in a charity computer scheme, and provide study aids for affected families. Your travel can help the airlines continue their corporate social responsibility projects. After carefully reading the above message, please complete the questionnaire provided.
Type 9 (Loss: Corporate social responsibility)	Despite business difficulties, the airlines would like to provide assistance for children from poor families, participate in a charity computer scheme, and provide study aids for affected families. The airline cannot continue these corporate social responsibility projects if you do not travel. After carefully reading the above message, please complete the questionnaire provided.
Type 10 (Gain: Upgraded services in a cabin)	Despite business difficulties, the airlines would like to provide upgraded services to our customers by offering increased varieties of meals, magazines, updated films, slippers, music, and wine refills. You can enjoy these upgraded services by traveling.

	After carefully reading the above message, please complete the questionnaire provided.
Type 11 (Loss: Upgraded services in a cabin)	Despite business difficulties, the airlines would like to provide upgraded services to our customers by offering increased varieties of meals, magazines, updated films, slippers, music, and wine refills. You will lose the chance to enjoy these services if you do not travel. After carefully reading the above message, please complete the questionnaire provided.
Type 12 (Gain: Sanitation services)	Despite business difficulties, the airlines would like to provide sanitation services to our customers by offering free hand sanitizers, a wide variety of clean food, frequent sanitation during flights, and sanitary toilets. You can enjoy these services by traveling. After carefully reading the above message, please complete the questionnaire provided.
Type 13 (Lose: Sanitation services)	Despite business difficulties, the airlines would like to provide sanitation services to our customers by offering hand sanitizers, a wide variety of clean food, frequent sanitation during flights, and sanitary toilets. You will lose the chance to enjoy these services if you do not travel. After carefully reading the above message, please complete the questionnaire provided.

Table 2. One-way ANOVA to assess the effectiveness of the provided messages

Behavioral intention and evaluation of the provided message information	MT1	MT2	MT3	MT4	MT5	MT6	MT7	MT8	MT9	MT10	MT11	MT12	MT13	*F*-value
I am willing to take a flight for international travel.	3.05a	3.83b	3.84b	**4.43c**	4.02b	3.90b	**4.31c**	4.14b	3.86b	**4.39c**	4.13b	4.08b	4.15b	3.05**
I am willing not to be sensitive to negative news related to the COVID-19 in deciding international travel.	4.20a	4.67ab	4.38ab	4.88bc	4.41ab	4.51ab	4.92bc	4.93bc	4.68ab	**5.22d**	4.89bc	**5.00d**	**5.02d**	**2.73***
This message information is attractive in encouraging me to undertake international air travel.	2.92a	3.87b	3.87b	**4.66d**	**4.60d**	4.33bc	**4.63d**	4.21bc	4.11bc	4.41bc	4.28bc	4.21bc	4.35bc	5.71**
This message information is effective in encouraging me to undertake international air travel.	2.93a	3.85b	3.90b	4.43bc	4.36bc	4.21bc	**4.71c**	4.08bc	4.09bc	4.19bc	4.09bc	4.33bc	4.28bc	4.64**
This message information is convincible in encouraging me to undertake international air travel.	2.78a	3.92bc	3.88bc	**4.51c**	**4.48c**	4.25bc	**4.51c**	4.06bc	4.01bc	4.22bc	4.13bc	4.28bc	4.19bc	5.21**
This message information is trustworthy in encouraging me to undertake international air travel.	3.33a	4.20bc	4.03bc	4.58bc	4.39bc	4.41bc	**4.70c**	4.30bc	4.26bc	4.53bc	4.46bc	**4.70c**	**4.67c**	4.13**
This message information is informative in encouraging me to undertake international air travel.	3.22a	4.18bc	4.04bc	4.62bc	4.35bc	4.57bc	**4.85c**	4.34bc	4.35bc	4.46bc	4.58bc	4.79c	4.63bc	5.17**

Note: ** $p < .001$, * $p < .01$.

a, b, c, and d show the sources of mean differences according to Duncan's multiple range test (a<b<c<d).

Message type I (Control message), Message type 2 (Gain: Difficult business environment message), Message type 3 (Loss: Difficult business environment message), Message type 4 (Gain: Extra mileage provision message), Message type 5 (Loss: Extra mileage provision message), Message type 6 (Gain: Coupon message), Message type 7 (Loss: Coupon message), Message type 8 (Gain: Corporate social responsibility), Message type 9 (Loss: Corporate social responsibility), Message type 10 (Gain: Upgraded services in a cabin), Message type 11 (Loss: Upgraded services in a cabin), Message type 12 (Gain: Sanitation services), Message type 13 (Loss: Sanitation services).

Table 3. Categories and mean scores of covariates

Variable	Category	Mean	Variable	Category	Mean
Age	5 levels (20s, 30s, 40s, 50s, 60s or older)	4.09	Airline membership ownership	no (0), yes (1)	0.70
Gender	Male (1), Female (2)	1.40	Premium card ownership	no (0), yes (1)	0.53
Income level	(1), (2)	1.59	Importance of five determinants in deciding an airline	not important (1), important (2)	1.55 to 1.94
Education level	4 levels (	3.82	Perceived risk level of COVID-19 infection	unafraid (1), neutral (2), afraid (3)	2.45
Travel purpose	pleasure (1), business (2)	1.32			

Variable	Category	% or Mean	Variable	Category	% or Mean
Age	20s	26.8%	Education level	High school or less	9.2%
	30s	32.8%			
	40s	23.9%		College student	7.4%
	50s	11.2%		College graduate	59.2%
	60s or older	5.5%		Graduate school or above	24.2%
Gender	Male	59.6%	Premium card ownership	0	46.5%
	Female	40.0%		1 or more	53.5%
Income level	Lower than USD50,000	66.5%	Importance of five determinants in deciding an airline	Not important (1), Important (2)	1.55 to 1.94
	USD50,000 or higher	33.5%			
Airline membership ownership	0	29.9%	Perceived risk level of COVID-19 infection	Unafraid (1), Neutral (2), Afraid (3)	2.45
	1 or more	70.1%			
Travel purpose	Pleasure	61.7%			
	Business	29.3%			

Table 4. Results of ANCOVA to identify the effects of main effect and covariates on intention to take a flight

Variables	d.f.	Mean square	*F*-value	*p*-value
Covariate (age)	1	11.09	3.37	0.067
Covariate (gender)	1	3.17	0.96	0.327
Covariate (income level)	1	23.56	7.17	0.008**
Covariate (education level)	1	0.93	0.28	0.597
Covariate (travel purpose)	1	68.06	20.71	0.000***
Covariate (airline membership)	1	9.05	2.75	0.097
Covariate (premium card)	1	63.45	19.30	0.000***
Covariate (importance of air ticket price)	1	0.28	0.09	0.771
Covariate (importance of airline brand)	1	19.63	5.97	0.015*
Covariate (importance of safety)	1	1.49	0.45	0.500
Covariate (importance of sanitation)	1	16.45	0.87	0.025*
Covariate (importance of service)	1	2.85	5.01	0.352
Covariate (perceived risk level of COVID-19 infection)	1	302.04	91.89	0.000***
Main effect (13 message types)	12	9.33	2.84	0.001**
Error	1156			
Total	1182			
Corrected total	1181			

Note: ***$p < 0.001$, ** $p<.01$, *$p < .05$.

Table 5. Results of ANCOVA to identify the effects of main effect and covariates on willingness not to be sensitive to negative news related to the COVID-19 in deciding international travel

Variables	d.f.	Mean square	*F*-value	*p*-value
Covariate (age)	1	1.54	0.51	0.477
Covariate (gender)	1	15.89	5.23	0.022*
Covariate (income level)	1	9.81	3.23	0.073
Covariate (education level)	1	9.74	3.20	0.074
Covariate (travel purpose)	1	3.82	1.26	0.263
Covariate (airline membership)	1	52.15	17.16	0.000***
Covariate (premium card)	1	6.39	2.10	0.147
Covariate (importance of air ticket price)	1	0.27	0.09	0.766
Covariate (importance of airline brand)	1	2.96	0.97	0.324
Covariate (importance of safety)	1	1.32	0.43	0.510
Covariate (importance of sanitation)	1	13.49	4.44	0.035*
Covariate (importance of service)	1	0.69	0.23	0.635
Covariate (perceived risk level of COVID-19 infection)	1	60.31	19.84	0.000***
Main effect (13 message types)	12	6.46	2.13	0.013*
Error	1156			
Total	1182			
Corrected total	1181			

Note: ***$p < 0.001$, ** $p<.01$, *$p < .05$.

Table 6. Results of ANCOVA to identify the effects of main effect and covariates on attractiveness of provided message information

Variables	d.f.	Mean square	*F*-value	*p*-value
Covariate (age)	1	1.22	0.37	0.541
Covariate (gender)	1	0.15	0.05	0.829
Covariate (income level)	1	2.19	0.67	0.414
Covariate (education level)	1	12.76	3.90	0.049*
Covariate (travel purpose)	1	80.97	24.72	0.000***
Covariate (airline membership)	1	2.21	0.68	0.411
Covariate (premium card)	1	59.04	18.03	0.000***
Covariate (importance of air ticket price)	1	7.42	2.27	0.133
Covariate (importance of airline brand)	1	13.13	4.01	0.046*
Covariate (importance of safety)	1	0.07	0.02	0.884
Covariate (importance of sanitation)	1	2.56	0.78	0.377
Covariate (importance of service)	1	0.38	0.12	0.734
Covariate (perceived risk level of COVID-19 infection)	1	43.42	13.26	0.000***
Main effect (13 message types)	12	14.04	4.29	0.000***
Error	1156			
Total	1182			
Corrected total	1181			

Note: ***$p < 0.001$, ** $p<.01$, *$p < .05$.

Table 7. Results of ANCOVA to identify the effects of main effect and covariates on effectiveness of provided message information

Variables	d.f.	Mean square	*F*-value	*p*-value
Covariate (age)	1	7.40	2.21	0.137
Covariate (gender)	1	0.66	0.20	0.656
Covariate (income level)	1	3.85	1.15	0.284
Covariate (education level)	1	5.99	1.79	0.181
Covariate (travel purpose)	1	76.10	22.77	0.000***
Covariate (airline membership)	1	6.86	2.05	0.152
Covariate (premium card)	1	63.93	19.13	0.000***
Covariate (importance of air ticket price)	1	6.85	2.05	0.152
Covariate (importance of airline brand)	1	13.68	4.09	0.043*
Covariate (importance of safety)	1	0.01	0.00	0.955
Covariate (importance of sanitation)	1	8.05	2.41	0.121
Covariate (importance of service)	1	0.90	0.27	0.604
Covariate (perceived risk level of COVID-19 infection)	1	45.76	13.70	0.000***
Main effect (13 message types)	12	13.46	4.03	0.000***
Error	1156			
Total	1182			
Corrected total	1181			

Note: ***$p < 0.001$, ** $p<.01$, *$p < .05$.

Table 8. Results of ANCOVA to identify the effects of main effect and covariates on convincibility of provided message information

Variables	d.f.	Mean square	*F*-value	*p*-value
Covariate (age)	1	18.03	5.41	0.020*
Covariate (gender)	1	2.22	0.67	0.414
Covariate (income level)	1	1.24	0.37	0.542
Covariate (education level)	1	13.39	4.02	0.045*
Covariate (travel purpose)	1	71.83	21.58	0.000***
Covariate (airline membership)	1	6.92	2.08	0.150
Covariate (premium card)	1	75.40	22.65	0.000***
Covariate (importance of air ticket price)	1	9.51	2.86	0.091
Covariate (importance of airline brand)	1	8.21	2.47	0.117
Covariate (importance of safety)	1	0.78	0.23	0.628
Covariate (importance of sanitation)	1	6.66	2.00	0.157
Covariate (importance of service)	1	0.30	0.09	0.766
Covariate (perceived risk level of COVID-19 infection)	1	59.45	17.86	0.000***
Main effect (13 message types)	12	14.92	4.48	0.000***
Error	1156			
Total	1182			
Corrected total	1181			

Note: ***$p < 0.001$, ** $p<.01$, *$p < .05$.

Table 9. Results of ANCOVA to identify the effects of main effect and covariates on trustworthiness of provided message information

Variables	d.f.	Mean square	*F*-value	*p*-value
Covariate (age)	1	0.30	0.10	0.755
Covariate (gender)	1	8.34	2.76	0.097
Covariate (income level)	1	0.19	0.06	0.805
Covariate (education level)	1	28.47	9.42	0.002**
Covariate (travel purpose)	1	58.13	19.24	0.000***
Covariate (airline membership)	1	3.17	1.05	0.306
Covariate (premium card)	1	51.55	17.06	0.000***
Covariate (importance of air ticket price)	1	2.06	0.68	0.409
Covariate (importance of airline brand)	1	0.01	0.00	0.957
Covariate (importance of safety)	1	1.43	0.47	0.492
Covariate (importance of sanitation)	1	5.85	1.94	0.164
Covariate (importance of service)	1	0.05	0.02	0.895
Covariate (perceived risk level of COVID-19 infection)	1	31.32	10.37	0.001**
Main effect (13 message types)	12	9.14	3.03	0.000***
Error	1156			
Total	1182			
Corrected total	1181			

Note: ***$p < 0.001$, ** $p<.01$, *$p < .05$.

Table 10. Results of ANCOVA to identify the effects of main effect and covariates on informativeness of provided message information

Variables	d.f.	Mean square	*F*-value	*p*-value
Covariate (age)	1	9.64	3.16	0.076
Covariate (gender)	1	1.08	0.36	0.551
Covariate (income level)	1	0.41	0.14	0.713
Covariate (education level)	1	15.75	5.16	0.023*
Covariate (travel purpose)	1	78.27	25.67	0.000***
Covariate (airline membership)	1	0.30	0.10	0.755
Covariate (premium card)	1	54.33	17.82	0.000***
Covariate (importance of air ticket price)	1	1.38	0.45	0.501
Covariate (importance of airline brand)	1	14.74	4.83	0.028*
Covariate (importance of safety)	1	0.02	0.01	0.931
Covariate (importance of sanitation)	1	10.71	3.51	0.061
Covariate (importance of service)	1	0.72	0.24	0.627
Covariate (perceived risk level of COVID-19 infection)	1	35.12	11.52	0.001**
Main effect (13 message types)	12	13.58	4.45	0.000***
Error	1156			
Total	1182			
Corrected total	1181			

Note: ***$p < 0.001$, ** $p<.01$, *$p < .05$.

Figure 1. Conceptual model of communication message processing

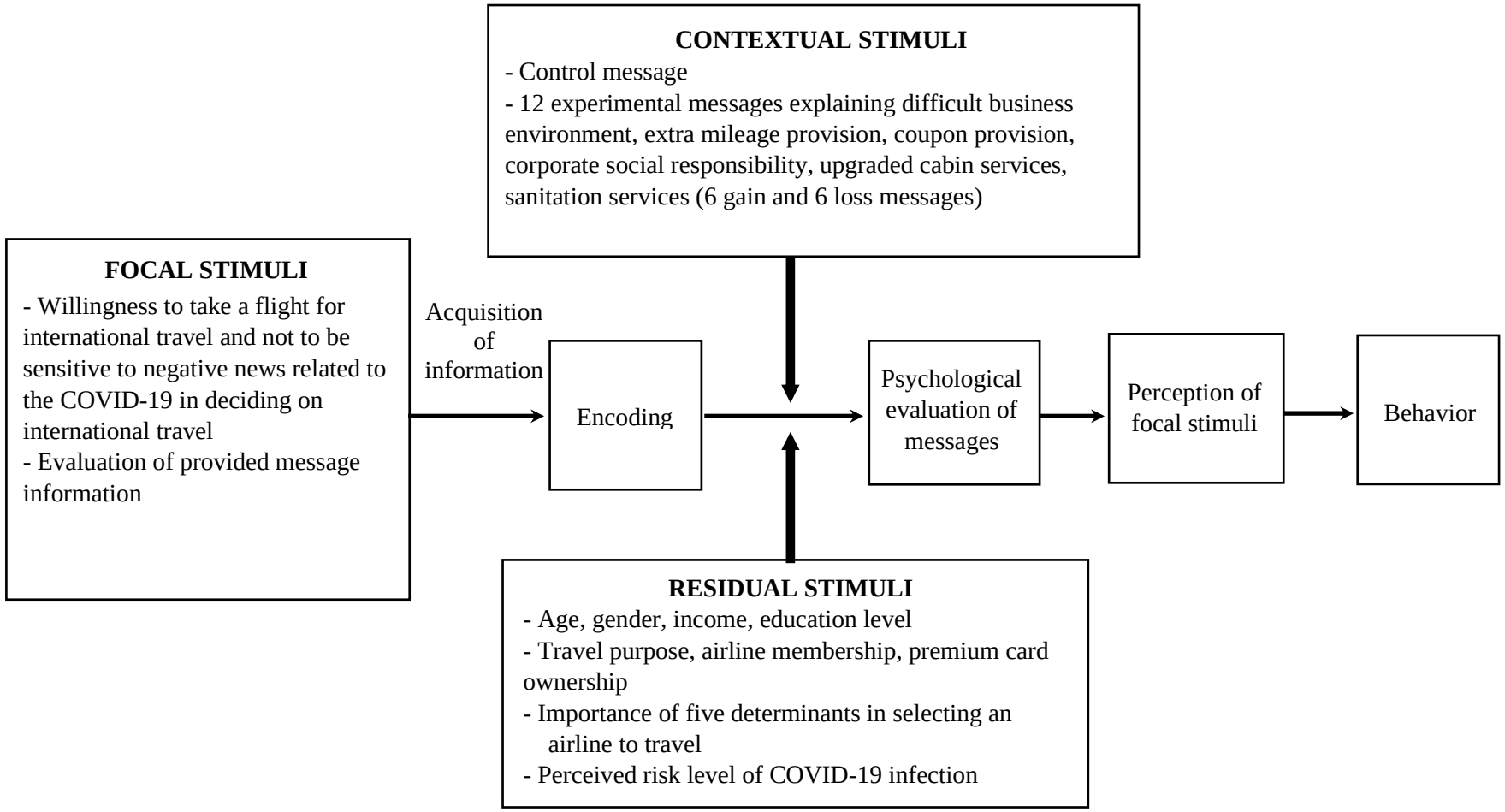
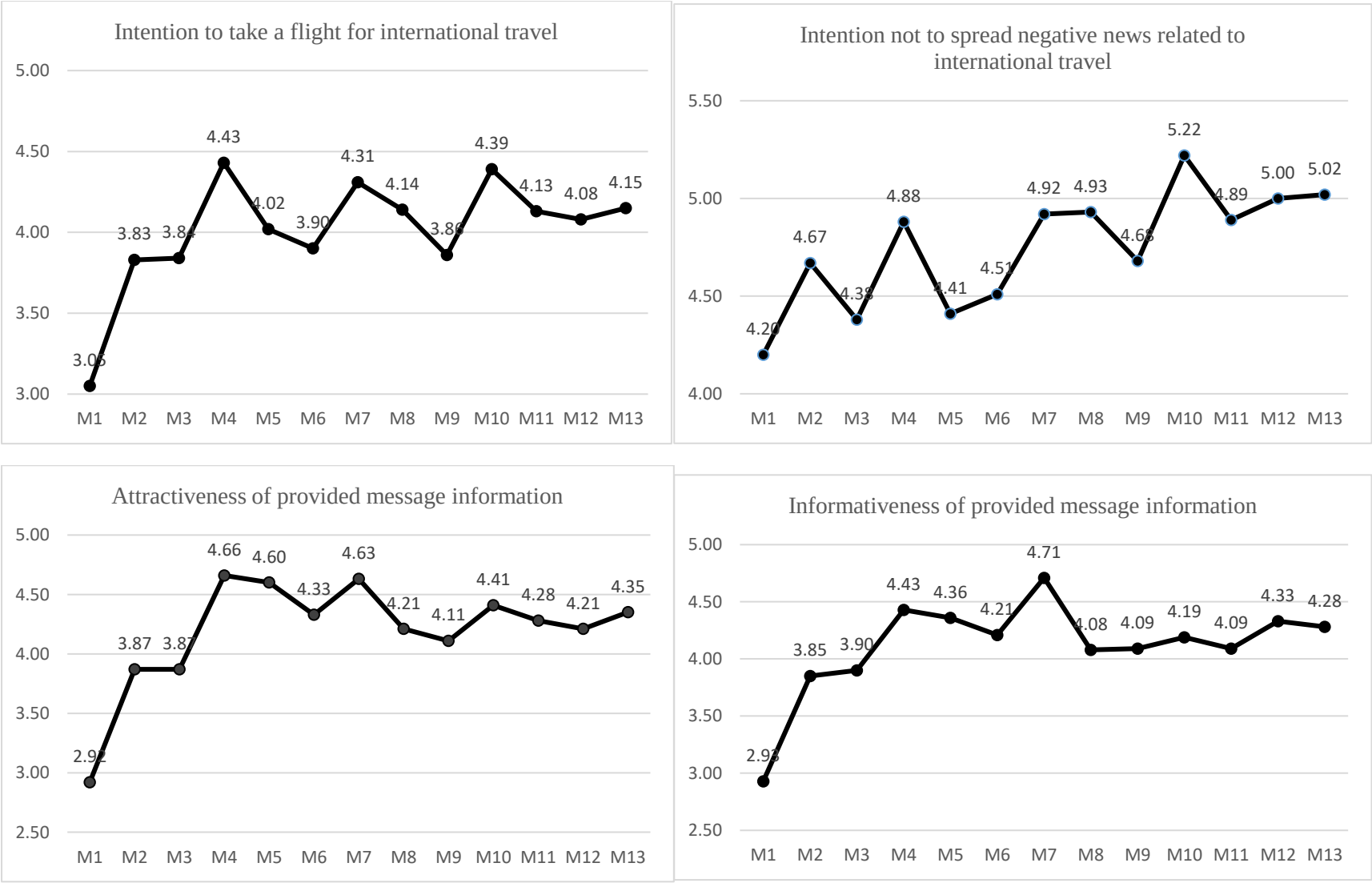
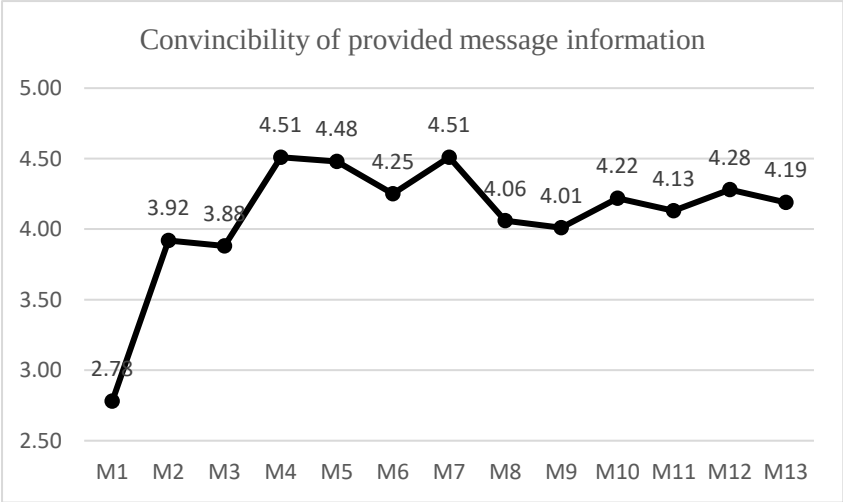
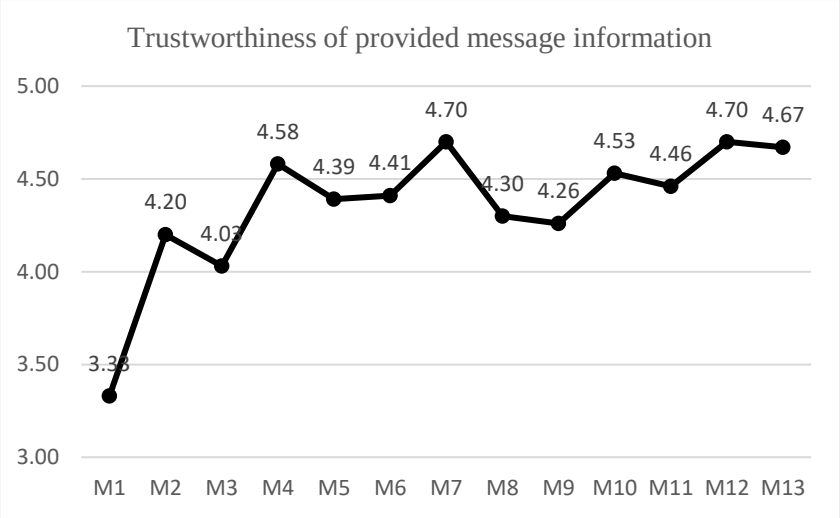


Figure 2. Behavioral intentions and evaluations of provided message information




Convincibility of provided message information
5.00
4.50
4.00
3.50
3.00
2.50
2.78
3.92
3.88
4.51
4.48
4.25
4.51
4.06
4.01
4.22
4.13
4.28
4.19
M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13


Trustworthiness of provided message information
5.00
4.50
4.00
3.50
3.00
3.38
4.20
4.07
4.58
4.39
4.41
4.70
4.30
4.26
4.53
4.46
4.70
4.67
M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13

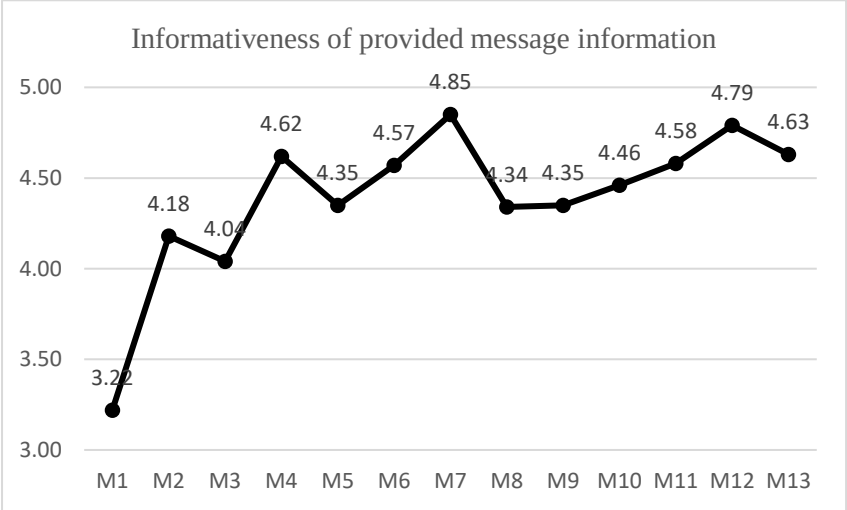
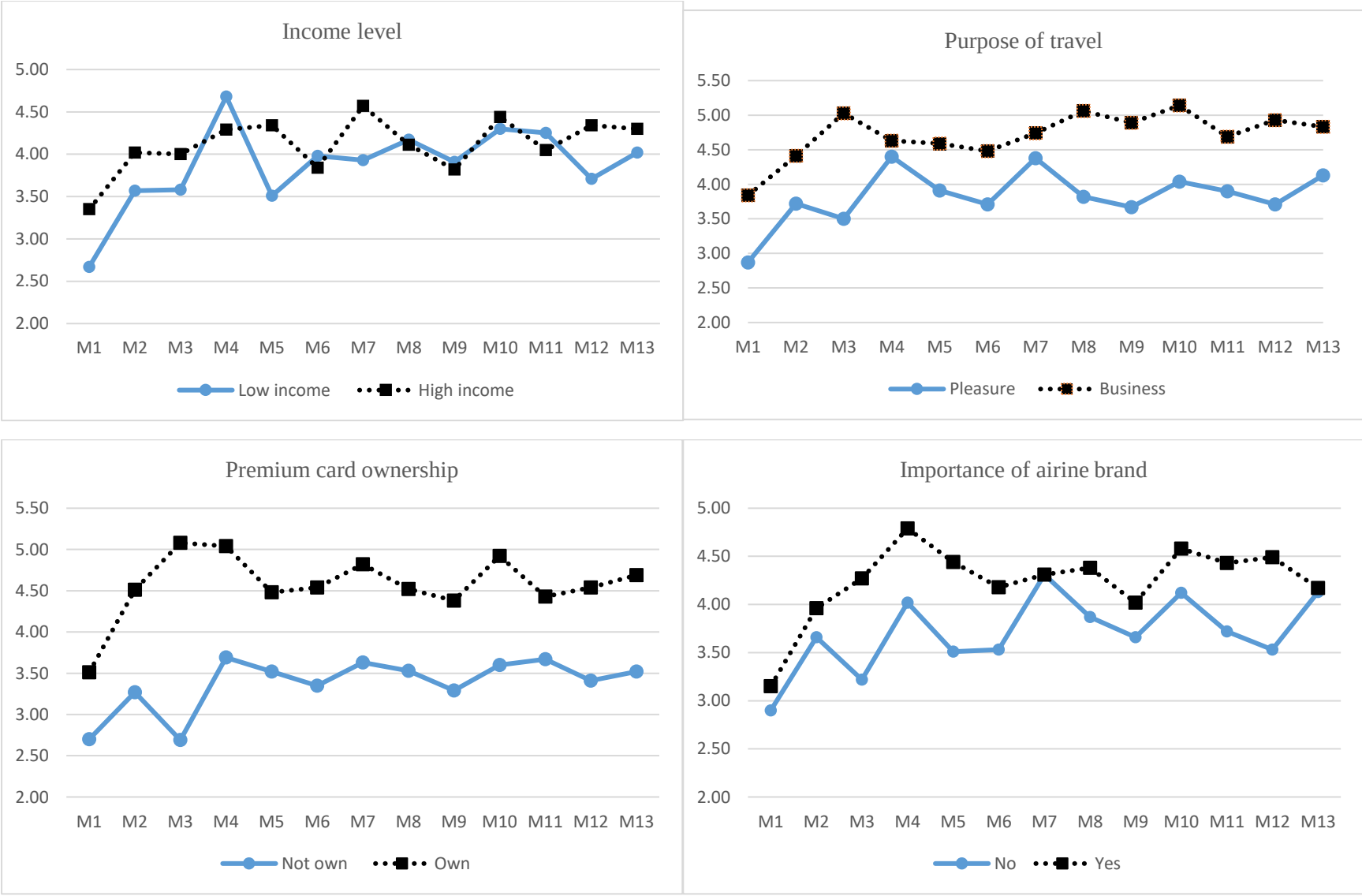
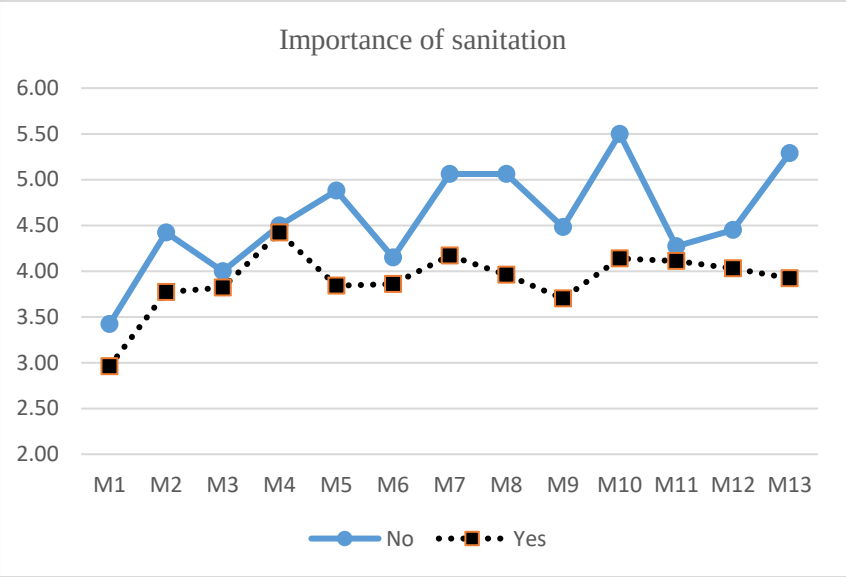

Informativeness of provided message information
5.00
4.50
4.00
3.50
3.00
3.22
4.18
4.04
4.62
4.35
4.57
4.85
4.34
4.35
4.46
4.58
4.79
4.63
M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13

Figure 3. Effects of covariates on intention to take a flight




Importance of sanitation
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13
No
Yes

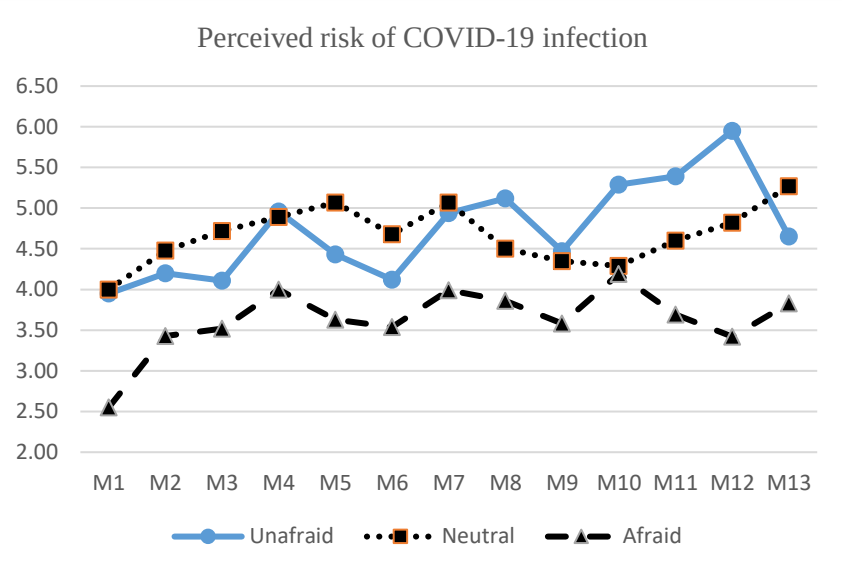

Perceived risk of COVID-19 infection
6.50
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13
Unafraid
Neutral
Afraid

Figure 4. Effects of covariates on willingness not to be sensitive to negative news related to the COVID-19 in deciding international travel

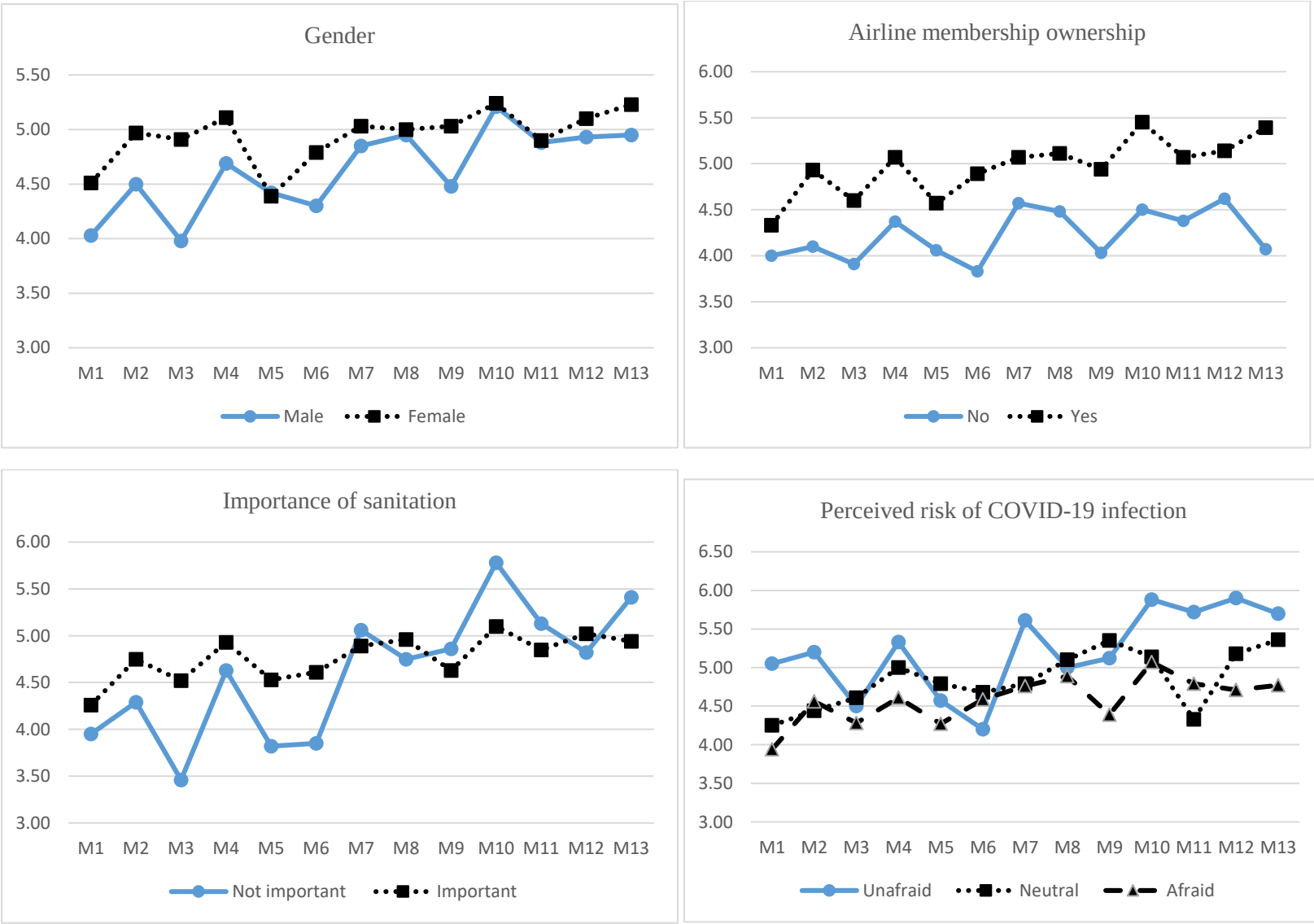
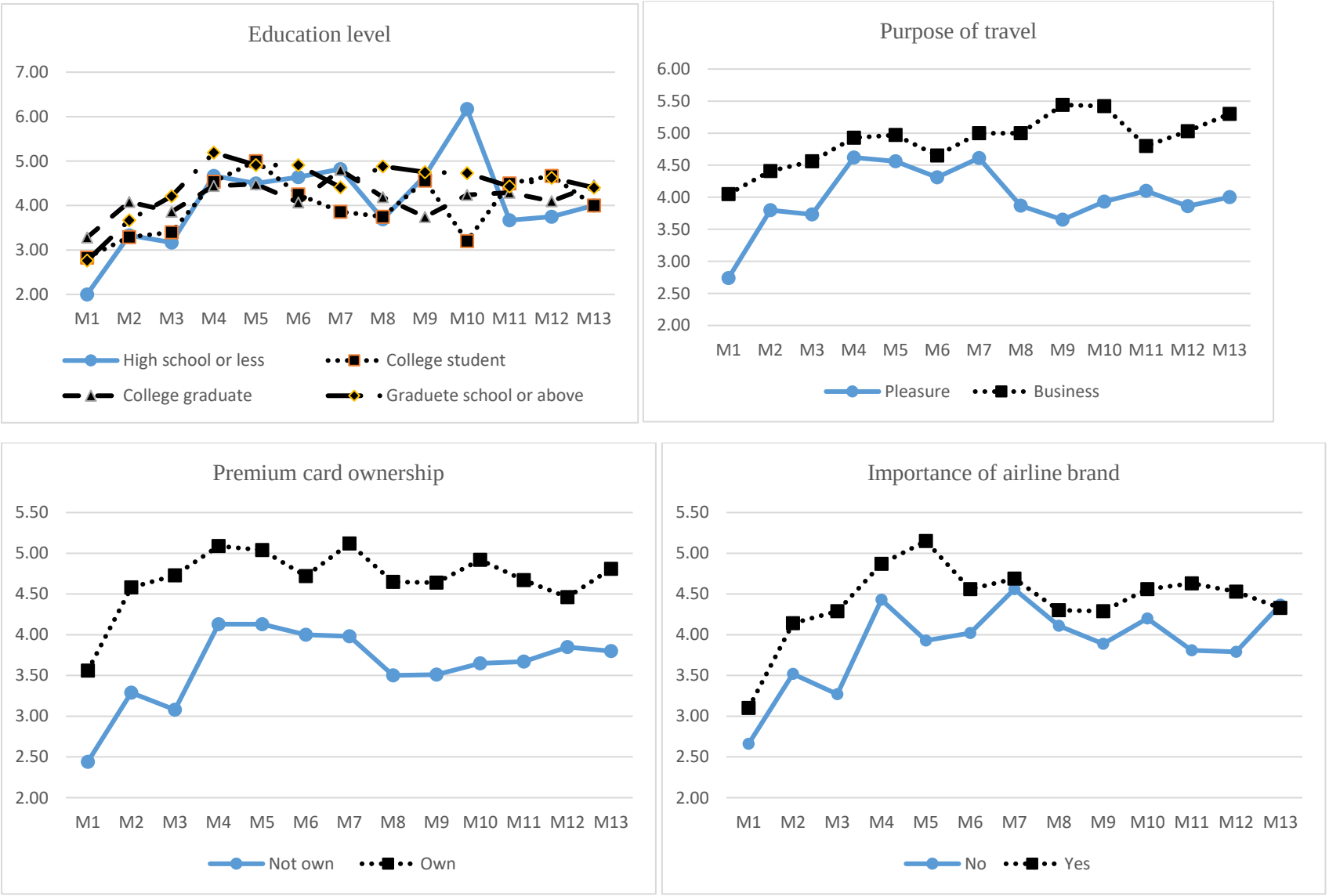


Figure 5. Effects of covariates on attractiveness of provided message information



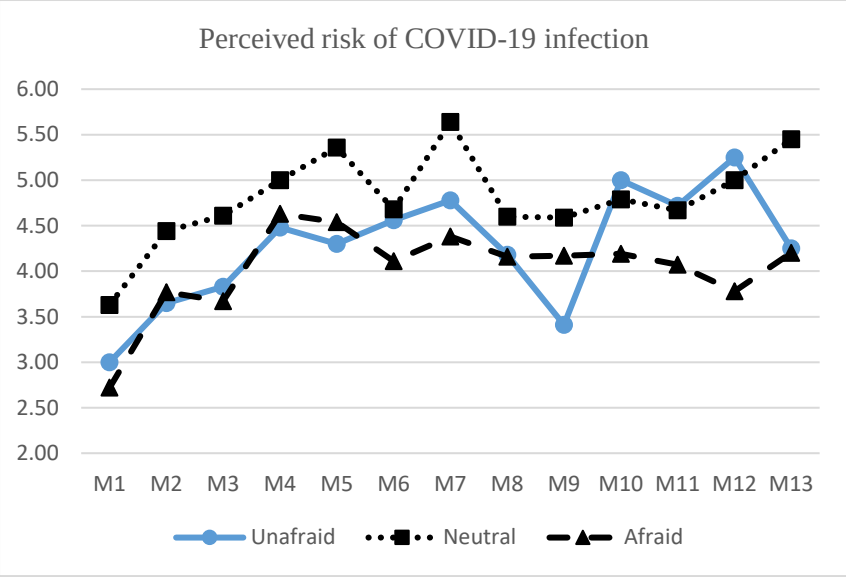

Perceived risk of COVID-19 infection
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11
M12
M13
Unafraid
Neutral
Afraid

Figure 6. Effects of covariates on effectiveness of provided message information

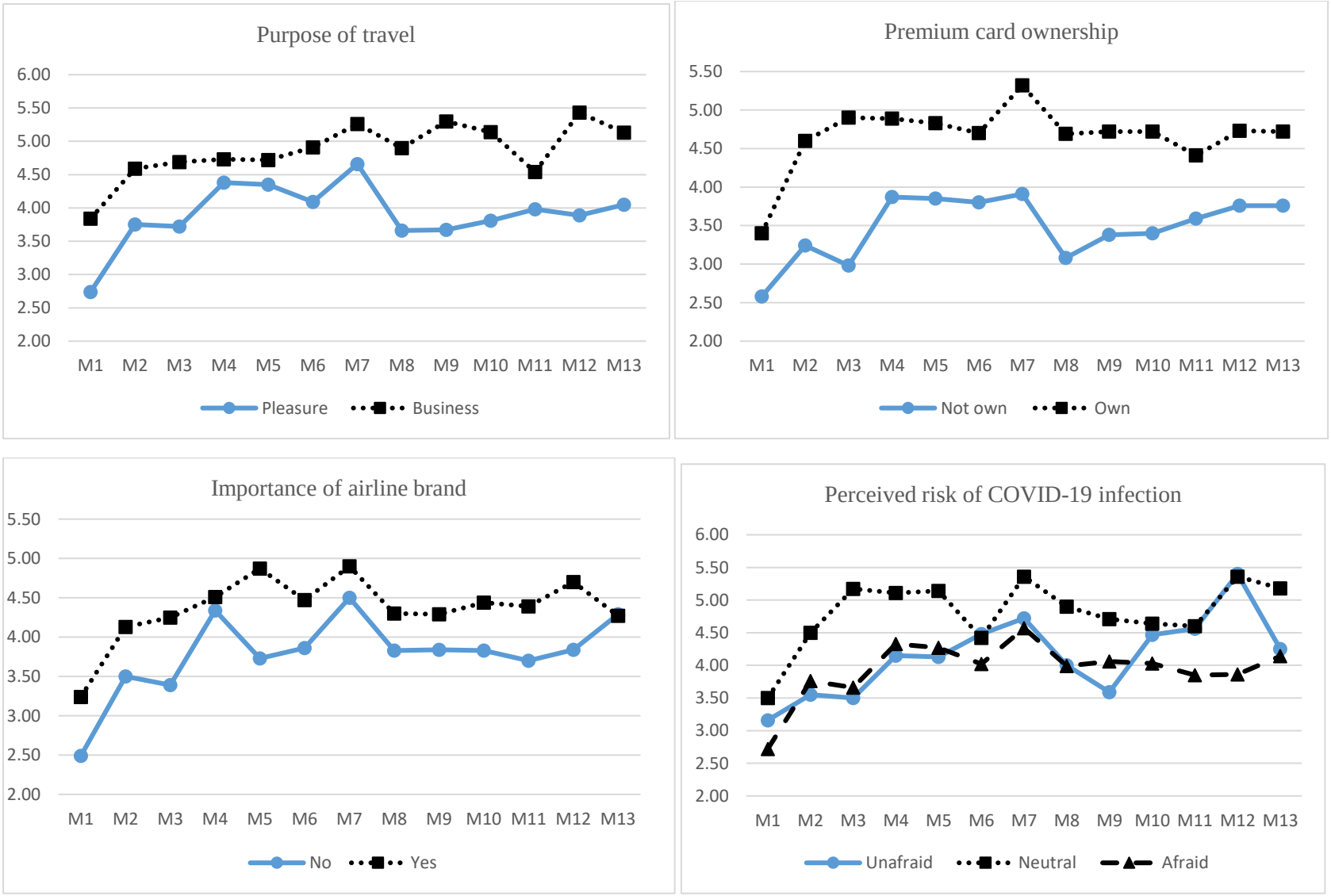
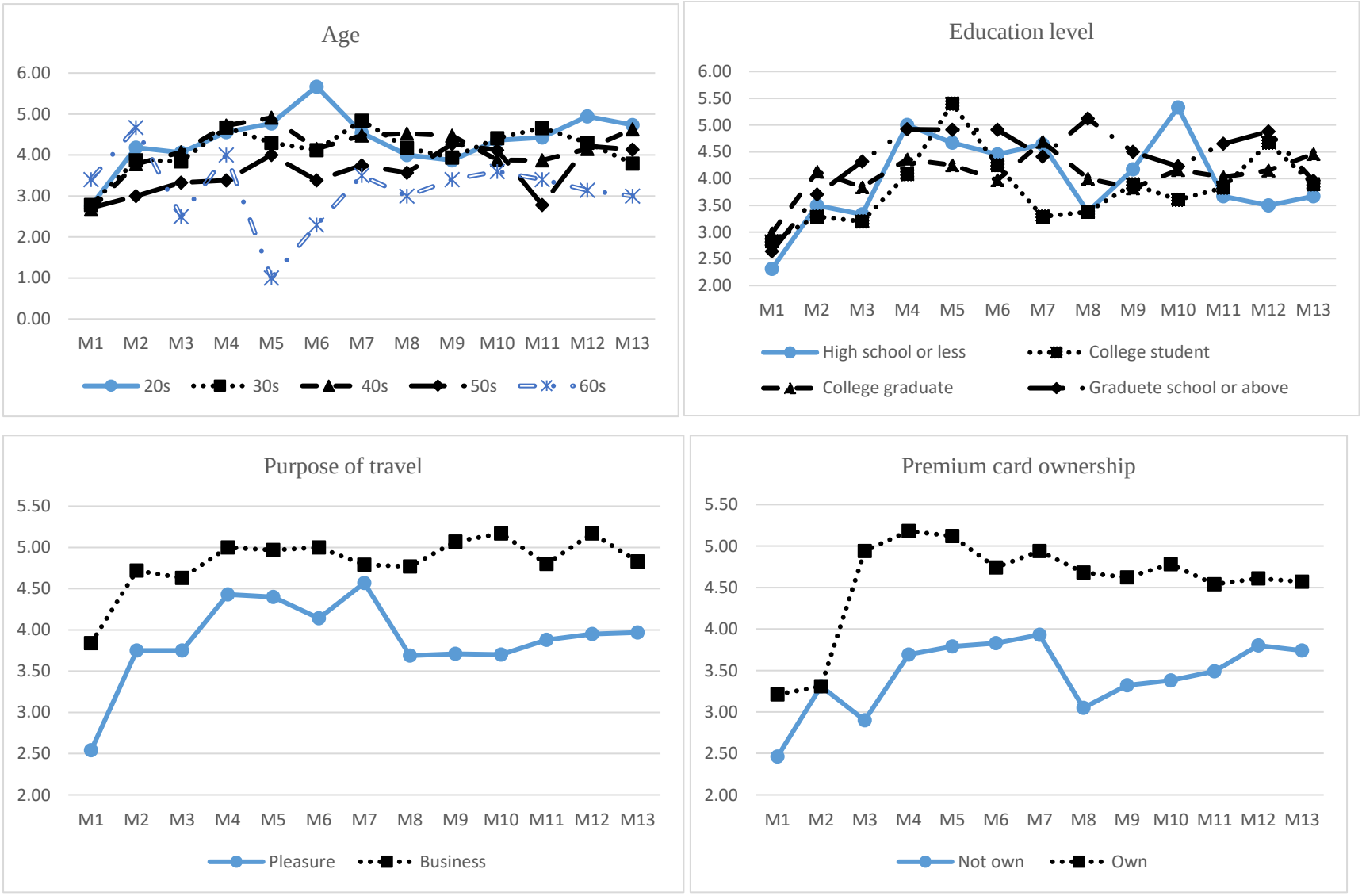


Figure 7. Effects of covariates on convincibility of provided message information



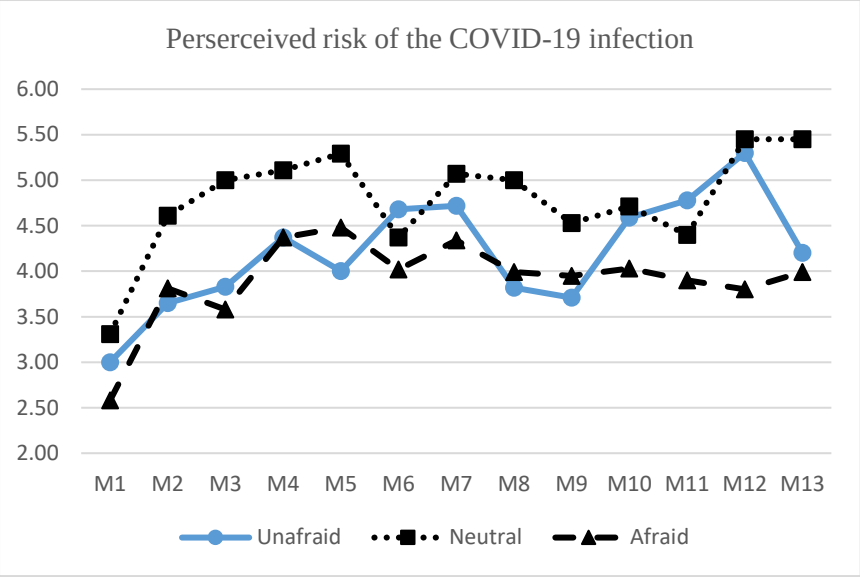
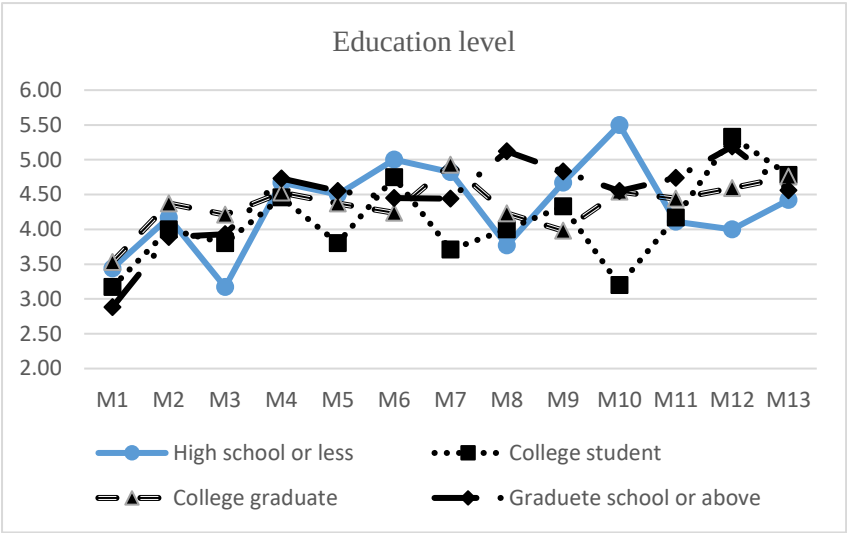
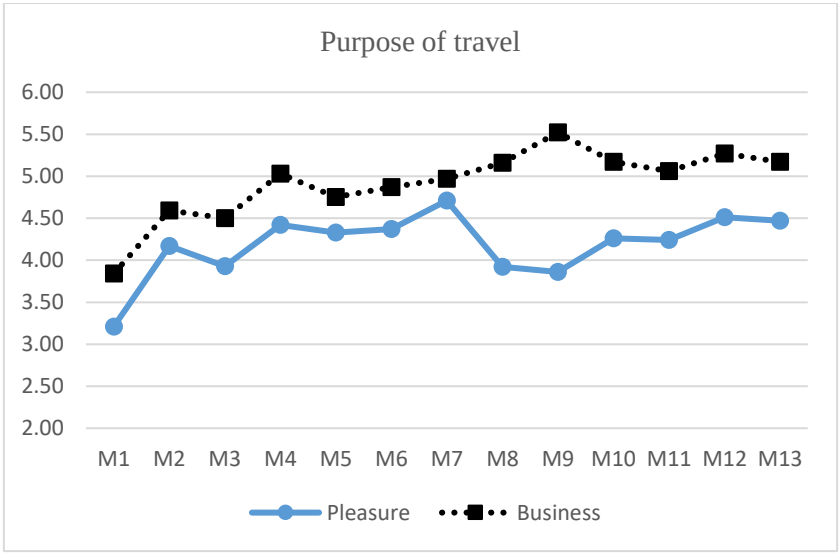
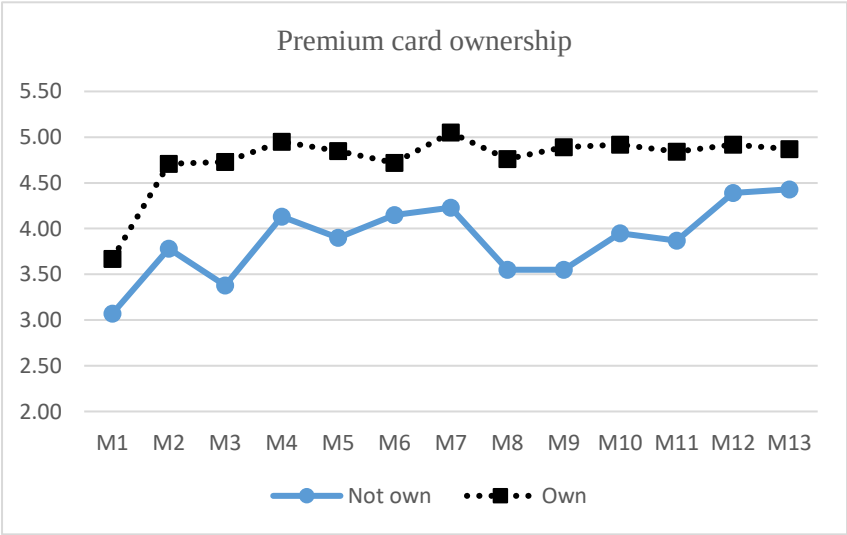

Perserceived risk of the COVID-19 infection
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11
M12
M13
Unafraid
Neutral
Afraid

Figure 8. Effects of covariates on trustworthiness of provided message information







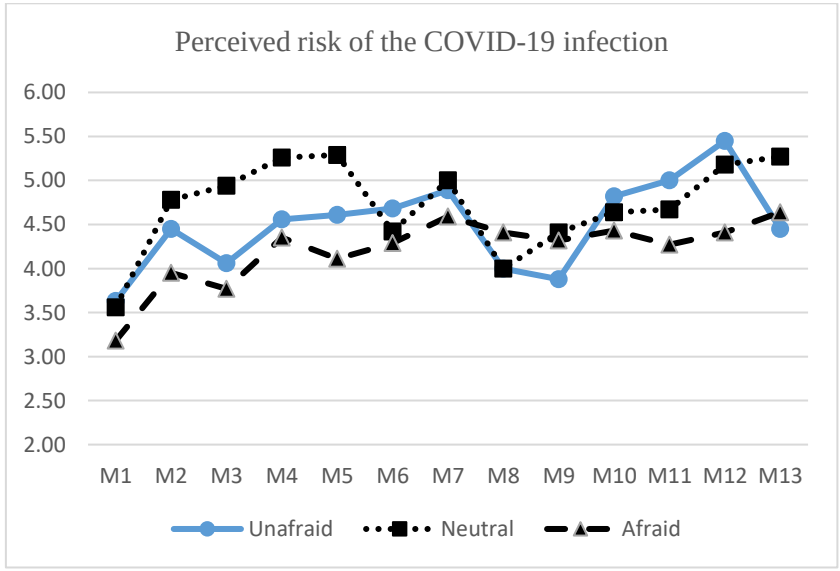


Figure 9. Effects of covariates on informativeness of provided message information