

How Do Scam Affect and Scam Valence Influence Individual's Intention to Respond Scam Message?

Kerong Huang

Faculty of Education, The University of Hong Kong, Hong Kong, China

Abstract. Currently, there is an increase in mental health problems due to fraud. Research has examined whether deception alters the low-emotion and high-emotion response differently, how scam valence (positive or negative) affects this effect, and what happens to the two combined in changing the motivation to respond to fraud. The role of perceived benefits/risks in the path from affect to a desire for engagement with scam alerts was examined. Determine whether a person's belief in luck affects their reaction to scam notifications at the same time. A cohort of 280 older adults, aged between 18 and 75, was selected for a two-factor ANOVA to examine the effect of emotion and valence on their motivation to report scam alerts. Based on the mediation model, one or both of people's emotional responses to scams with different valences are predicted by perceptions of both benefits and risks. Correlation and multiple regression tests were performed to determine whether a person's belief in luck related to their response to a fraudulent message. Based on the results, emotion and valence were also found to interactively influence people's propensity to respond. Perceptions of benefits have also been found to moderate the effect of emotion on people's responses to positive scam alerts in this study. Belief in luck did not show predictive ability for subjects' responses to fraudulent notifications under any valence condition. The results of this study will help us find out why some people are vulnerable to fraud and thus improve the prevention of fraud in the future.

Keywords: Fraud, Scam, Scam Valence, Scam Affect, Intention to Respond, Belief in Luck.

1. Introduction

Fraud and Scams are serious problems in recent years. BDO reported a 104% rise in fraud cases in the UK over the past year in 2023, totaling £2.3 billion [1]. With the development of technology, people's demands for legitimate channels of communication in cyberspace have also been rising. Therefore, the spread of scams and other malicious activities around the world is also increasing. As people in society, we are constantly exposed to large amounts of data in our daily lives, including fake communications disguised as official alerts or incentives. There has been a loss of funds and damage to the people as a result. It will be disastrous for those people and their families. In some cases, the emotional damage is too severe; thus, people are seriously mentally ill and unable to function normally [2]. Therefore, we need to know what makes people want to respond to scam messages in the first place.

1.1 Factors Influence Individual's Intention to Respond Scam Message

Inclination to react to fraudulent alerts refers to an individual's susceptibility to deception or the likelihood of falling for deceptive schemes and misleading moves. All of the above are reasons why people are more likely to be deceived or misled by scammers. Jones and others believe that the three reasons for a person's susceptibility to scams are: the attractiveness of the scam message, the type of cognitive processing that people use when making decisions about it, and individual differences among people [3].

1.1.1 Emotional Influence

The decision to reply to a scam message is not due to luck or a lack of awareness. Emotionally, people are more likely to be influenced by external factors. Emotion is a subjective state of feeling that includes valence (positive and negative) and arousal (low-arousal and high-arousal).

(1) Valence

Deceptive communications of various valences often motivate people to click on fraudulent notifications more readily. Most happy scams promise people happiness and wealth, such as the lottery or employment scams. Such correspondence arouses good feelings, such as aspiration and longing, thus prompting behaviour [4]. Therefore, people are more likely to respond to optimistic fraudulent alerts after experiencing pleasant emotions. Based on the fear-arousal theory, a negative message can make a person feel bad, such as anger, disgust or depression, and thus lead them to take preventive or defensive actions to reduce their perception of risk and vulnerability [5]. Given that there are negative scams, terror-inducing measures such as alerts of financial loss or personal data disclosure may have increased the probability that the subject would be swayed by such malicious communications due to emotional arousal and a sense of impending harm.

(2) Affect

The person's level of emotion at that time will also affect how they respond to the scam. Scammers often present emotionally manipulative reasons, such as the wish for excitement, curiosity, fear or sympathy, to make people act rashly and suffer losses. For example, there will be a message titled 'Congratulations!'. It says that you were selected as a winner of a prize draw you did not take part in, and the subject line promises you a sum of \$10,000. Add some bright colours and emotions to make people feel more excited and curious. In a high-arousal state, people's thinking is more likely to follow heuristics and less likely to use higher-order cognitive processes for difficult choices [6]. A high affect level of emotion is focused on the reward or loss cues in the scam message. It reduces the cognitive demand for processing by the scam email and thus lowers the quantity of such emails that exhibit deception indicators; as a result, the motivation to respond to scam messages declines.

1.1.2 The Perception of Benefits/Risks

Lerner and Keltner demonstrated that both mild and intense feelings might result in an irrational anticipation of outcomes. Regarding mild emotional levels, individuals are more inclined to evaluate the merits and drawbacks of a fresh communication logically [7]. High-arousal emotions, such as intense pleasure or fear, increased people's perception of both the benefits and risks of something, thus causing them to act impulsively or be excessively cautious about risk [8]. Thus, at all times, whether people feel happy or sad, they will have different perceptions of the benefits and risks and are likely to make different choices. Previously, some studies have also shown that emotions can reduce the extent of voluntary consideration in decision-making and thus lower the rate of scam detection [9, 10]. It is also possible that, because emotions affect people's perception of risk and reward, they may be more likely to be victims of fraud. A high reward and low risk are more likely to motivate people to behave in a certain way [2].

People have different perceptions of risk and benefit for scam messages with different valences. A positive mood, such as excitement or hope for a reward or opportunity in a scam message, can make people believe that the benefit is worth the risk. Therefore, they may be too focused on the possible benefits and ignore or minimise the risks. When people believe that the benefits are relatively large and the risks are small or easy to control, they are more likely to agree to something, such as providing personal information or carrying out actions based on a message.

On the other hand, a negative valence scam message that induces fear or anxiety about consequences and losses for individuals is likely to be perceived as a higher risk. They may think it is a serious threat to their health and life, feel more at risk, and therefore pay less attention to any potential benefits. Therefore, people are more cautious, skeptical or less willing to respond to these scam messages.

1.1.3 The Belief in Luck

Williams and others have found that different people and different social groups are more likely to be scammed [11]. Some people are more susceptible to scams because of individual differences, and the reasons for this are not yet known. The conviction of positive fortune was considered a special

case of individual difference in this study and could affect how a person hoped to respond to a fraudulent communication.

Many scholars have studied the idea of luck as an irrational belief that people believe they can control the results of random events. The belief in a fortunate world can help people face life's ups and downs more positively and look forward to the future with hope. Chiu and Storm believe that this faith in luck is often an avoidance of considering how to live [12]. In other words, people who are highly confident in their own luck may be more likely to believe optimistic deceptive information. This belief in prosperity serves as a multiplier to increase the perceived benefits of the false interactions. Therefore, the target will be better prepared to respond to this signal out of a wish for a good result.

1.1.4 The Persuasiveness of the Scam Message

Rhetorical devices are employed in the fraudulent communication to motivate people to participate. The sender's perceived reliability, the attractiveness of the content in the text, and other reasons such as time pressure or limited availability of the message will all affect how convincing a deception appears to the recipient. For example, a message that mentions a good reward or is in urgent need will attract more people's attention and is more likely to be replied to. By using the above persuasive methods, scammers can alter the recipients' perceptions and desires to be more vulnerable to fraud. An urgent character can be added to the statement to make it more compelling and prompt the reader to take action without delay or miss the expected gains or be exposed to risks. Alerts highlighting the urgent danger in a high-risk Area will likely motivate more people to change their behaviour quickly. Therefore, the fraudulent alerts in this study were more authoritative governmental communications.

1.2 Present Study

A total of three aims exist. First, we want to know whether different kinds of fraud (low-emotion vs. high-emotion) and various attitudes people have towards scams (positive vs. negative) affect people's willingness to take part in scam communications in the context of different types of frequently exploited data (lottery, banking schemes). Additionally, this paper will investigate whether scam-related anxiety, perceived advantages and risks, and people's responses to scam alerts are correlated. Finally, we will determine if the idea of luck influences people's wish to be cheated by fraud.

The hypotheses of the present study were as follows:

H1: If the harm caused by fraud increases, so too will the demand for a response in both positive and negative contexts.

H2: The will to respond to both good and bad scam messages differed considerably among people with low and high emotional arousal.

H3: The Effect and Valence of scams on people's intention to respond to such messages are related to each other. Valence is expected to be more effective in promoting the intention to respond for high-arousal situations than for low-arousal situations.

H4: Perceived benefits and risks can change how people respond to scam messages by reducing their willingness to respond. Perceived benefits increase with the emotional intensity of the fraudulent alert. The inclination to respond to deceptive content is stronger for those that are more gratifying. At the same time, with the increasing number of scam messages, people's risk awareness is also decreasing. The wish to reply to a scam message will be higher if people feel less risk.

H5: The belief in luck may be linked to a person's wish to reply to the scam message. Those who thought they were lucky were more likely to answer the favourable questions. Those who were already unhappy with life believed such negative scam messages more readily. Participants who do not believe they were either fortunate or unfortunate may not be associated with either valence of the scam message.

2. Method

2.1 Participants

A total of 294 people were taken as the subjects of this study. Specifically, 99 people were recruited online through the SONA credit system at King's College London (aged 17-32), and 195 others were recruited online via the external Prolific platform (aged 10-75). Data from 11 subjects were excluded because of incomplete submission, and an additional two subjects were ineligible for inclusion as they did not consent to the use of their data in the final analysis. According to the regulations of the REMAS system, minors under the age of 16 were not allowed to take part in the study. Therefore, 1 subject was excluded. The final cohort included 280 people: 194 women, 81 men, 2 who did not wish to disclose, 1 non-binary individual, 1 biologically female and 1 genderfluid person. The age of these volunteers was between 18 and 75 years old, and the mean was 34 (SD = 16). Table 1 shows all of the demographic data.

Table 1. Demographic Information of the Participants (N = 280)

Variable	N (Percentage)
Gender	
Female	194 (69.3%)
Male	81 (28.9%)
Prefer not to say	2 (0.7%)
Non-binary	1 (0.4%)
Other	2 (0.7%)
Employment	
Working full-time	80 (28.6%)
Working part-time	60 (21.4%)
Unemployed and looking for work	15 (5.4%)
A homemaker or stay-at-home parent	9 (3.2%)
Student	94 (33.6%)
Retired	14 (5.0%)
Prefer not to say	8 (2.9%)
Educational Level	
No academic qualification	2 (0.7%)
0-4 GCSE, 0-levels or equivalents	11 (3.9%)
5+ GCSE, 0-levels or equivalents	17 (6.1%)
Apprenticeship	4 (1.4%)
2+ A level or equivalents	111 (39.6%)
Undergraduate or postgraduate degree, or other professional qualification	130 (46.4%)
Prefer not to say	5 (1.8%)
Income Level	
Under £25,000	136 (48.6%)
£25,000 - £44,999	60 (21.4%)
£45,000 - £64,999	23 (8.2%)
£65,000+	11 (3.9%)
Prefer not to say	49 (17.5%)

Note. ¹ One individual declined to report this demographic.

2.2 Design

A two-by-two mixed-methods design was used in this study to explore the influence of a combination of factors on people's willingness to respond to fraudulent messages: affective state (low vs. high) and sentiment (positive vs. negative). Emotional affect served as the between-subjects factor, and the two groups of participants were a low-emotion group (exposed to mild messages) and a high-emotion group (engaged with expressive content). Valence served as the within-subjects factor, and

all subjects experienced both a positive (e.g., lottery winnings) and a negative (e.g., bank account alert) condition. Other factors that may increase an individual's susceptibility to fraud have also been quantified: emotional intelligence, a belief in serendipity, monetary necessity, risk-taking propensity and prior experiences with fraud.

2.3 Materials

To address the multiple levels of emotional valence for the fraudulent notification subjects, we have prepared two kinds of communications. To increase the persuasive effect, we designed the following two formal letters for the research subjects. Optimistic message contexts that automatically enroll in the incentive pool and win the lottery were used to spread the good news. A negative message was provided based on a hypothetical situation of receiving a bank notification for an unauthorised withdrawal. We developed two different messages for people at different levels of scam awareness in our study. Subjects in the low-emotion group read a traditional lottery announcement and a bank's notice. On the other hand, the individuals in the high-emotion group also faced the same circumstances, but some minor modifications were made to the text to heighten the emotional impact of those situations. For example, a particular edition included the word "alert" (a negative word) or "victory" (a positive word) to give the context more tension, as shown in Figure 1. As the subjects experienced these situations through the experimental platforms, they may have considered the communication to be purely hypothetical. Therefore, in addition to each narrative in the high-emotion group, we also included an extra question about how the participants might feel if they received a prize or lost money, and how they would spend such money to boost their emotions and increase the sense of self in the imagined environment.

Low emotion group (positive) Notification: It is our pleasure to announce you as the winner of our annual Spring Prize Giveaway. As a past or current customers of one of our partners (e.g. Publishers Clearing House, Marks & Spencers, Tesco, and Costco), your name was automatically entered into the contest and you were randomly selected as the second prize-winner for a grand sum of Fifty Thousand Pounds (£50,000). To claim your winnings, you are required to contact your claims agent 08006 268 822 for verification. When contacting your claims officer you are required to provide your personal PRIZE NUMBER WPCH-JAOSOI-200 1-1522. We urge you to claim your winnings as soon as possible. We will not be responsible for any unclaimed prizes. All unclaimed prizes will revert to the jackpot. In order to avoid cast of misappropriating and mishandling of prize money, discretion and confidentiality are of utmost importance. Until you have been verified by your agent, be aware that this winning remains the property of the Publishers Clearing House. Hence we recommend you keep your winnings confidential until the disbursement of your prize. Andrew Smith (C.E.O.) <i>AS</i>	Low emotion group (negative) NOTICE Attention Valued Customer, You are receiving this message as a valued member of a UK Banking Institution. BankCare is the automated message system developed by and used by UK banks to notify customers when a large purchase is made. MESSAGE: Your bank has noticed that your debit card was recently used on \$(date://OtherDate/d%2Fm%2FY/-2 day)\$\$(date://CurrentTime/ST) for a purchase for £5,000 GBP. If this is not you, please urgently call fraud prevention on 03303100711 or Intl +443303100711. Do not reply by SMS
High emotion group (positive) WINNER! CONGRATULATIONS! It is our pleasure to announce you as the winner of our annual Spring Prize Giveaway. As a past or current customers of one of our partners (e.g. Publishers Clearing House, Marks & Spencers, Tesco, and Costco), your name was automatically entered into the contest and you were randomly selected as the second prize-winner for a grand sum of Fifty Thousand Pounds (£50,000). Just imagine what it will feel like when you have that winning prize money in your hands? What will you spend it on? A once-in-a-lifetime holiday, a new car - the choice is up to you. To claim your winnings, you are required to contact your claims agent 08006 268 822 for verification. When contacting your claims officer you are required to provide your personal PRIZE NUMBER WPCH-JAOSOI-200 1-1522. We urge you to claim your winnings as soon as possible. We will not be responsible for any unclaimed prizes. All unclaimed prizes will revert to the jackpot. In order to avoid cast of misappropriating and mishandling of prize money, discretion and confidentiality are of utmost importance. Until you have been verified by your agent, be aware that this winning remains the property of the Publishers Clearing House. Hence we recommend you keep your winnings confidential until the disbursement of your prize. Andrew Smith (C.E.O.) <i>AS</i>	High emotion group (negative) ATTENTION! WARNING!  Attention Valued Customer, You are receiving this message as a valued member of a UK Banking Institution. BankCare is the automated message system developed by and used by UK banks to notify customers when a large purchase is made. MESSAGE: Your bank has noticed that your debit card was recently used on \$(date://OtherDate/d%2Fm%2FY/-2 day)\$\$(date://CurrentTime/ST) for a purchase for £5,000 GBP. It is important for you to get in touch as soon as possible if you didn't make this purchase. Your account could be at risk of further fraudulent withdrawals! Just imagine how it would feel to see more unknown withdrawals from your account. To see your bank balance drop by hundreds of £'s If this is not you, please urgently call fraud prevention on 03303100711 or Intl +443303100711. Do not reply by SMS Don't delay, Get in touch, today!

Figure 1. Material of Hypothetical Scam Message Scenario

2.4 Measure

The first end-point indicator is the will to reply to the scam message. The two other outcomes are people's thoughts about the scam message and their sense of benefit/risk. A few scales are shown in the survey. These scales were:

2.4.1 The Intention to Respond to the Scam Message [2]

The degree to which the participant was willing to respond to the fraudulent text was rated on a seven-point Likert scale, and a higher score indicated that the person was more likely to reply to such deceptive communications.

2.4.2 Thoughts About the Scam Message

The above items are related to the participants' feelings and thoughts after reading the scam message.

2.4.3 Perception of Benefits/Risks

This inquiry aimed to find out what strengths or weaknesses in responding to the fraudulent alarm were noticed by the respondents.

2.4.4 Emotional Intelligence Scale [13]

To measure a person's level of emotional intelligence, a number of statements are presented and then, for each statement, one indicates how well that situation has been described.

2.4.5 Belief in Luck Scale [14]

The above structure is the index of luck perception. The three subscales under the belief in luck scale were all positively correlated: the personal belief in luck scale showed that subjects viewed themselves as naturally lucky people; the general belief in luck scale indicated that subjects were neither blessed nor cursed; and the distrust scale showed that subjects felt they were unlucky. The personal belief in luck scale was calculated as the sum of items 8, 9, 10 and 11 from the belief in luck scale; the general belief in luck scale was calculated as the sum of items 17, 19, 21 and 22, and the distrust scale was calculated as the sum of items 7, 12, and the reversed items 15 and 16.

2.4.6 Financial Need

2.4.7 Risk Taking/Averse

Based on the six levels of the Likert scale, the above problem was rated according to how strongly one desired risk.

2.4.8 Victim of Scam

Therefore, the respondents were asked to recall any times they had been the victim of a fraud.

2.4.9 Demographics

The above instruments collected data on the subjects' sex, occupation, education and income.

All scales had different numbers of items; some instruments used a Likert scale to evaluate each response, and the specific contents of these measures are presented in Table 2. Some scales were optional questions that asked about the subject's previous fraudulent behaviour and personal information. The first result of this study was a person's willingness to respond after experiencing deceitful communication.

Table 2. Information Related to the Different Scales Used, Including, the Wording of Opening Questions, Likert Scale Labels, Number of Items

Measure	Opening Question	Likert Scale	Items
Intention to Respond	“After reading this notification, how likely are you to contact the activation/anti-fraud prevention number listed at the bottom of this notification?”	1 = extremely unlikely 7= extremely likely	1
Thoughts About the Notification	“Thinking about your initial response to the lottery/bank notification message, please rate your agreement with the following statements.”	1 = not at all 10 = definitely	14
Perception of Benefits	“Overall, how beneficial would it be to respond to this notification message?”	1 = no benefit at all 10 = highest benefit possible	1
Perception of Risks	“Overall, how risky would it be to respond to this notification message?”	1 = no risk at all 10 = highest risk possible	1
Emotional Intelligence Scale	“Describe yourself as you generally are now.”	1 = very inaccurate 5 = very accurate as a description on you	19
Belief on Luck Scale	“Please answer to what extent you agree with each of the follow statements.”	1 = strongly disagree 6 = strongly agree	22
Financial Need	“At the end of the month of my pay check I am likely to still have plenty of money in my account?”	1 = very likely 7 = very unlikely	1
Risk Taking/Averse	“How do you see yourself? Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?”	1 = very willing to take risks 6 = not at all willing to take risks	1

2.5 Procedure

Permission for ethics was obtained through the Research Ethics Management Application System (REMAS) at King's College London before the beginning of the semester. Anonymously distributed online questionnaires were collected through the Qualtrics Online Survey Platform for this study. Users' own devices can be used to take the survey. The first materials are data sheets, a list of authorisation forms and the ages of the subjects. Fill in the above contents and then divide the subjects into one of the two emotional groups (low-arousal group or high-arousal group). First, the two hypothetical communication situations are introduced: a favourable (lottery) announcement and an unfavourable (bank) announcement. The two lottery announcements in the low-arousal group were one real one and one from the bank. Conversely, in the high-arousal group, the same lottery and bank notice were used, but minor modifications were made to the text to increase the emotional intensity of the context. Based on the above observations, all subjects selected the same set of pre-determined assessment tools in the same order, as shown in Table 2, and provided personal information (sex, occupation, academic status, salary). Finally, the subjects were informed of the purpose and reasons for the study, and a second question was asked whether they would still agree to have their data used in the final assessment. Subjects received 2 points through the SONA platform or were paid £3 by the Prolific reimbursement system for completing the experiment.

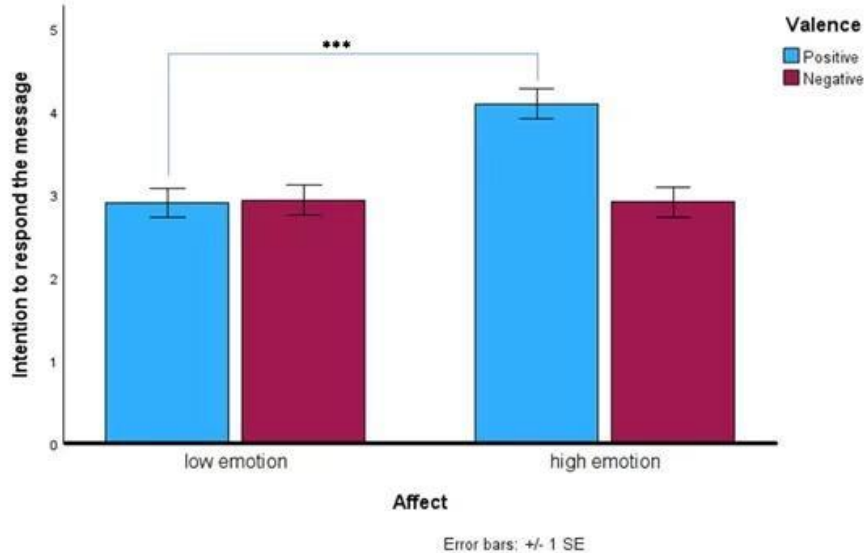
2.6 Data Analysis

Based on the previous studies, a two-way ANOVA was employed here to investigate whether factors affecting scams (low vs. high emotions) and scam valence (positive vs. negative) influence people's willingness to engage with fraudulent alerts. A comparison t-test was then performed to determine whether there were significant differences in the low-emotion and high-emotion groups for both positive-valence and negative-valence cohorts. Mediation analysis was employed to determine whether perceptions of risk-benefit served as mediators in the path from scam exposure to people's

intentions of replying to scams under both positive and negative valences. Model v3.5 of Process 4 was used for this mediation analysis, and 5,000 accelerated and bias-corrected bootstrapping iterations were carried out [15]. Correlation and multiple regression were employed to determine whether a person's belief in luck was associated with a desire to respond to fraudulent communications. All the statistics were conducted in SPSS Statistics 29.

3. Result

The results of the two-way ANOVA show that there is a significant main effect of scam affect on response intention, $F(1,278) = 7.940, p = .005$, and a partial eta-squared (η^2) value of .028. In addition, a significant main effect of scam valence was found, $F(1,278) = 14.686, p < .001$, and $\eta^2 = .050$. Scam affect and scam valence showed a relatively large correlation with each other, $F(1,278) = 16.56, p < .001$, and $\eta^2 = .056$, as shown in Figure 2. It can be seen that people with more emotions were more likely to respond to the fraud. When they were in a good mood, more people were willing to fall for the scam. There was no significant change in the number of positive and negative fraudulent reports at the low-impact level.



Note. The higher score means the participants more likely to respond the scam message.

*** $p < .001$

Figure 2. The Interaction Effect of Valence (Positive vs. Negative) and Affect (Low Emotion vs. High Emotion) on Response Intention to Scam Message

To ascertain whether the wish to spread information varied among the two groups of low-affect ($N = 141$) and high-affect ($N = 139$) individuals, a post-hoc t-test was carried out. The inclination to react positively to the promotional (lottery) content in the high-affect group ($M = 4.09, SD = 2.26$) was significantly higher than in the low-affect group ($M = 2.89, SD = 1.97$), $t(278) = -4.72, p < .001$. On the other hand, there was no significant difference in the intention to respond to the negative (bank) alert between the high-affect group ($M = 2.91, SD = 2.20$) and the low-affect group ($M = 2.93, SD = 2.13$), $t(278) = .087, p = .465$. Based on the above analysis, it can be concluded that a person's current emotional state will likely affect their desire to spread positive or negative word-of-mouth.

3.1 The Relationship Among Affect, the Perception of Risks/Benefits, and the Intention to Respond to the Positive Message

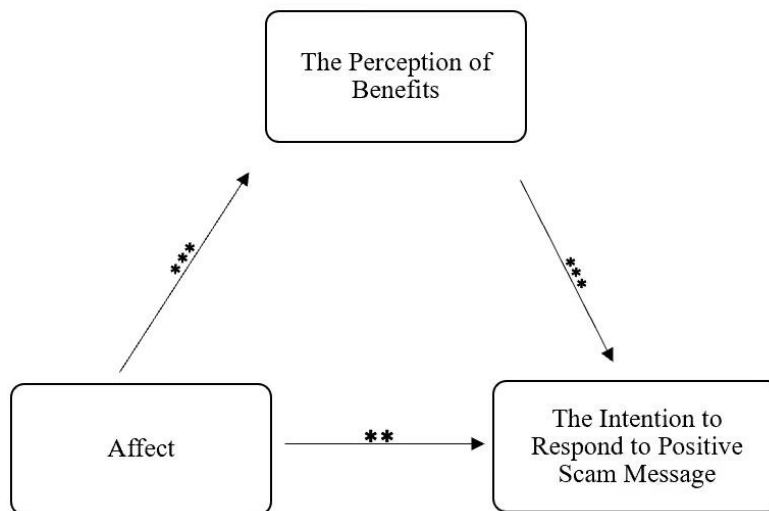
Pearson's correlation coefficient will be employed to determine whether the scam impact, perceived risk versus benefit, and the tendency to respond favourably to the communication are related. A slight positive correlation was found between the scam effect and the desire to respond positively to an alert; $r = .272, p < .001$. Scam influence was also slightly positively associated

with the view of advantages, $r = .231$, $p < .001$. A high perceived advantage of negative information was associated with an elevated intention to share it $r = .742$, $p < .001$. However, scam affect was not significantly correlated with the perception of risk, and $r = -.075$, $p = .105$. The perception of risk was moderately negatively correlated with the intention to respond positively to the message $r = -.568$, $p < .001$.

3.1.1 The Mediation Analysis of the Perception of Benefits in Affect and the Intention to Respond to the Positive Message

A single-variable linear regression was used to see whether 'scammer characteristics' were related to 'a willingness to retaliate'. The regression results show that the deceptive effect on the likelihood of a favourable response to communication is significantly positive, with $R^2 = .074$, $F(1, 278) = 22.246$, $p < .001$. It was found that 'deception' positively related to the desire to respond to the positive content, and $B = 1.193$, $p < .001$. The predicted regression equation was: the tendency to react to the favourable message = $1.701 + 1.193 * (\text{affect level})$, which indicates that the deceptive effect was enhanced and subjects were more likely to respond to favourable scam communications.

According to the mediation framework, Affect is positively correlated with the evaluation of advantages $B(1.387)$, and this is statistically significant ($p < 0.001$). With the increase in severity of the harm caused by the scam, people felt that responding to the good deed was more fitting. In addition, the perception of benefits was positively correlated with the intention to spread good news, and $B = .425$, $p < .001$. After accounting for perceived advantages, positive emotions positively predicted the intention to engage in favorable communication; $B = .520$, $SE = .170$, $t(277) = 3.058$, $p = .002$. This mediated effect of positive sentiment via the evaluation of utility on the inclination to react favourably to the content was also relatively large, with $B = .589$, $SE = .153$, $95\%CI = [.294; .892]$. Therefore, the assessment of utility served as a mediator in the connection between feelings caused by the fraud and one's wish to respond positively to such information. As people are increasingly aware of the advantages, they will be more willing to respond positively to a message, as shown in Figure 3.



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

Figure 3. The Mediation of the Perception of Benefits between Affect and the Intention to Respond Positive Scam Message

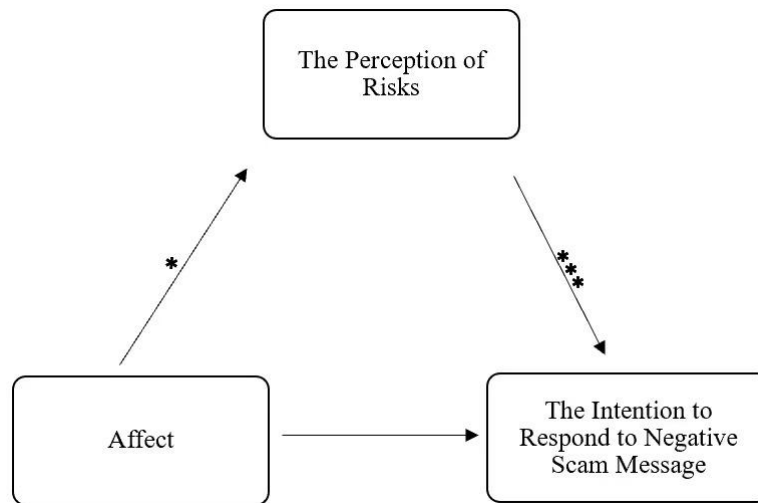
3.2 The Relationship Among Affect, the Perception of Risks/Benefits, and the Intention to Respond to the Negative Message

Pearson correlation analysis was used to examine whether there were any correlations among the scam effect, perception of risk/benefit, and intention to respond positively. There was a relatively strong negative correlation between scam effect and the intention to respond positively to a message, $r = .272$, $p < .001$. Scam affect was also negatively correlated with the perceived benefits at a level

of $r = .231$, $p < .001$. In addition, the perceived benefits of the group were positively correlated with a higher intention to spread negative messages, as shown by $r = .742$, $p < .001$. However, scam affect was not significantly associated with the perception of risk, and $r = -.075$, $p = .105$. The perception of risk showed a weak negative correlation with the desire to respond positively to the news, $r = -.568$, $p < .001$.

3.2.1 The Mediation Analysis of the Perception of Benefits in Affect and the Intention to Respond to the Negative Message

The first linear regression test showed that the general model was not significant; it had an $R^2 = .000$, $F(1, 278) = .008$, $p = .930$. Nevertheless, mediation analysis showed that emotion significantly moderated the relationship between risk exposure and risk perception $B = .487$, $p = .046$. As scams have increased, people are now less willing to respond to negative comments. In addition, the perceived risk determined whether a person wanted to interact with the negative alarm; $B = -.273$, $p < .001$. As the perceived risk decreased, the subjects were more likely to respond to adverse scam alerts. This indicates that the indirect-only mediation path between scam affect and personal intent concerning negative alerts when perceived risk acts as a mediator is as follows: Figure 4.



Note. *** $p < .001$ * $p < .05$

Figure 4. The Mediation of the Perception of Benefits between Affect and the Intention to Respond Positive Scam Message

3.3 Belief in Luck and the Intention to Respond to Scam Message

Pearson's correlation analysis was used to determine whether there were any relationships among the three parts of people's perceptions of fortune and their willingness to respond positively or negatively to an alarm. Primary Pearson correlation analysis showed that individual faith in chance and skepticism were slightly positively correlated with a desire to respond to optimistic notifications; however, no significant relationship was found between overall belief in fortune and the propensity to act upon either upbeat or downbeat fraud alerts, as shown in Table 3.

Table 3. Pearson Correlation Among the Variables

Variables	1	2	3	4	5
Intention to Respond to Positive Scam Message	--				
Intention to Respond to Negative Scam Message	.305***	--			
Personal Belief in Luck	.151**	.138**	--		
General Belief in Luck	.052	.064	.295***	--	
Distrust	.132*	.130*	.640***	.337***	--

Note. *** $p < .001$ ** $p < .010$ * $p < .050$

The three sub-dimensions of the luck belief framework served as the independent variables in a multiple regression model to explore the inclination to respond to fraudulent notifications. The individual scores of the personal luck belief scale, the general luck belief scale and the skepticism scale were combined to serve as predictors in the regression equation, and either a positive or negative response willingness to communication acted as the dependent variable. Based on the above results, the total of the three sub-dimensions concerning participants' luck beliefs did not significantly affect their willingness to interact positively with the messages; $R^2 = .025$, $F(3, 276) = 2.339$, $p = .074$. Personal belief in luck was not statistically significant as a predictor; $B = .050$, $t(279) = 1.447$, $p = .149$. Generalized luck belief did not show a significant effect; $B = .000$, $t(279) = -.017$, $p = .986$. Another study found that no single factor in personal fortune perception was significantly correlated with it; $B = .040$, $t(279) = .060$, $p = .448$. The three sub-dimensions of participants' luck perception together did not significantly predict the desire to react to negative alerts; $R^2 = .022$, $F(3, 276) = 2.090$, $p = .102$. Personal perceptions of fortune were not significantly associated with any of the above factors; $B = .039$, $t(279) = 1.163$, $p = .246$. In short, an individual's belief in luck was not significantly associated with employment; $B = .006$, $t(279) = .234$, $p = .816$. The private sense of fortune was not a statistical predictor; $B = .044$, $t(279) = .849$, $p = .396$. Based on the above results, it has not been determined whether a person's belief in luck affects their motivation to respond to a deceptive text message.

4. Discussion

Several problems in the study of the factors that motivate people to respond to scam messages have been solved. The Purpose of this paper is to find out whether different types of scams affect people's responses to varying emotions (low vs. high) and scams with positive versus negative connotations differently. The results show that both 'affect' and 'valence' are statistically significant predictors of the intention to respond to scam messages, and they operate independently. Therefore, it can be seen that a person's emotional state will also affect their decision to be dishonest or risky. Therefore, based on the above results, scammers will use different types of messages to affect people differently. In addition, a relatively large interaction was found between scam affect and valence in relation to the intention of interacting with fraudulent notifications. Although subjects were more likely to respond to deceptive communications in high-emotion situations, this effect was relatively stronger for favourable scam content. If it meets the conditions in the "checklist", then the editor will agree to publish your paper. In other words, this interaction shows that the strength of emotions can increase the impact of message valence on the intention to respond to scam alerts; a high level of affect may be more effective in promoting the effect of positive sentiment. Therefore, based on the above data, it cannot be concluded that higher levels of emotion generally increase people's responses to both positive and negative scam messages. However, the intention to reply to a negative scam message was not significantly different for the low-affect and high-affect groups. In line with the previous study, some researchers have also shown that people are more likely to respond positively to scam messages than negatively [16]. People are more likely to be interested in scam messages with a positive valence, and therefore wish to respond to such messages more readily.

Based on the results of several comparison t-tests, the intention to reply to a positive scam message was not the same for the low-emotion group and the high-emotion group. The results were only partially in line with our hypothesis of a significant difference in the desire to respond to scam alerts under a two-valence-level low- and high-emotion condition. At the same time, there was no statistical difference in the desire to participate in a negative scam alert motivated by emotion. It reduces the perceived harm of a scam on an individual's life; therefore, the damage from a good scam will be relatively small compared with a bad one. In short, the above research indicates that both the intensity and valence of emotions need to be considered when studying responses to fraudulent communications. The effect of deceitful schemes on the will to respond to such messages varies

according to the valence of the scam, and an elevated affective state is associated with an increased tendency to participate, especially in the case of positively framed deceptive content.

First, studies have been conducted to identify all the components, and then mediation tests have been performed to determine whether the perceived benefits and risks of scams mediate the effect of scams on an individual's willingness to respond to a scam message. Based on the above data, it can be inferred that the sense of reward increased people's willingness to comply. When the sense of threat rose, people were more likely to respond to positive scam messages and thus intended to do so. It meets the condition stated above. The results of the mediation analysis for negative scam messages were not the same. Based on the above results, affect, hazard perception, and the will to respond to notifications are closely linked. There is no significant direct effect of sentiment on the willingness to deal with a malicious phishing alert, and thus, only affectivity does not directly determine the decision to respond. Nevertheless, a special phenomenon was observed in terms of impact on risk assessment; therefore, emotion alters individuals' perception of danger in the context of a hazardous fraudulent alert. Therefore, people's emotions may cause them to perceive risk differently. In addition, the results show that higher perceived risk is positively related to a person's intention to respond to a negative scam message. It suggests that after perceiving a risk, one is motivated to address a negative scam message out of concern for that risk. Therefore, although emotions do not immediately affect the will to respond to a fraudulent warning, they indirectly alter this will by changing the perception of danger, thus modifying the choice to engage with such a notification. Our study shows that the emotional state of a scam affects whether a person responds to a positive scam message; that is, high emotions increase the perception of benefits and reduce the perception of risk, thus prompting a response.

This study explored whether perceptions of fortune could predict a person's motivation to respond to fraudulent communications by using an all-encompassing scale of belief in luck divided into three parts: individual belief in fortune, universal belief in fortune, and skepticism. The first Pearson correlation test was unreliable. The Individual Belief in Fortune and Skepticism subscale was positively correlated with the wish to respond to a phishing notification, but neither constructively nor destructively. Thus, the above results meet the hypothesis. Therefore, it can be inferred that people who believe they are more or less fortunate may be more likely to believe positive scam messages due to overconfidence or scepticism.

On the other hand, people did not believe in the principle of chance and therefore had no different responses to optimistic and pessimistic fraudulent alerts. It is possible that an apathetic attitude towards fate will not change one's desire to engage in dishonest behaviour, and such behaviour may stem from a state of indifference or doubt. Determine whether the individual components of faith in chance can predict a person's desire to comply with a fraudulent notification, using multivariate linear regression analysis. Surprisingly, none of the three elements of this group were related to a person's willingness to respond to a good-faith fraudulent message. There was also no significant direct effect of the motivation on the decision to report the bad-doing. It suggests that, contrary to the main correlation, faith in chance metrics may not motivate people to repeatedly respond to fraudulent communications; that is to say, whether subjects were convinced they were lucky (personal belief in the element of chance), felt neither blessed nor cursed (general belief in the element of chance), or believed they were unlucky (suspicion element), would not have this effect. Therefore, it was proposed that other unconsidered factors may be more responsible for altering the response patterns of the participants to fraudulent communications. Subsequently, other studies have examined all kinds of superstition and mystical thinking, as well as their impact on decision-making under conditions of uncertainty in fraud.

There are some deficiencies in the present study. First of all, the way to measure the main dependent variable is not clear. How ready would you be to take action after receiving a fraudulent text message? (1 = Not at all ready, 7 = Very ready) Earlier research on phishing has used a click-through rate to gauge how willing people are to be deceived [16]. Researchers could set up a fake hyperlink in the scam communication and, by observing the engagement data of the fake link,

determine whether the participants intended to click it. Second, the circumstances in which the participants took part in this online survey may have varied. Scherer (2005) believes that emotions are caused by appraisals of life and are consequently influenced by these appraisals. Therefore, the power and emotion of the scams will also vary according to the specific circumstances in which people are exposed to them. The Design of the study also has some defects. Under the negative-valence condition, £5,000 had to be paid by debit card. However, according to the Office of National Statistics' 2022 data, in 2022, 61 per cent of adults aged 25-34 and 48 per cent of those aged 35-44 had savings of less than £5,000. In addition, about three-quarters of our sample were under the age of 44; therefore, many did not have significant savings of over £5,000 [17]. It is likely that the subjects would automatically believe any such negative scam was fraudulent and, as a result, be less likely to respond to that message.

Research on the Causes of Willingness to Respond to Scam Messages. This paper will investigate how emotions and valence relate to a person's will to respond to a scam message. Help to learn more about the psychological reasons for differing moods when people want to reply to scam messages, and specifically identifies the roles of perceived risk and benefit. Belief in luck provides an interesting angle for considering why people are motivated to respond to scam messages, but based on our research, it can be seen that this is only one of the reasons. These results will be used to inform the public and reduce fraud. In the future, research can expand the scope of emotions to examine whether certain emotions, such as excitement, fear or sadness, affect a person's intention to reply to a scam message. Help to increase the public's awareness and preventative behaviour in the face of scams. Explore all factors that affect the propensity of information detectors to respond differently to fraudulent communications in various emotional environments, and then propose specific deterrent measures for the responsible parties and individuals to reduce the occurrence of such scams.

Acknowledgements

Natural Science Foundation.

References

- [1] BDO. (2026). FraudTrack 2026. <https://www.bdo.co.uk/en-gb/insights/advisory/forensic-services/fraudtrack>
- [2] Wood, S., Liu, P.-J., Hanoch, Y., Xi, P. M., & Klapatch, L. (2018). Call to claim your prize: Perceived benefits and risk drive intention to comply in a mass marketing scam. *Journal of Experimental Psychology: Applied*, 24(2), 196-206. <https://doi.org/10.1037/xap0000164>
- [3] Jones, H. S., Towse, J. N., Race, N., & Harrison, T. (2019). Email fraud: The search for psychological predictors of susceptibility. *PLOS ONE*, 14(1), e0209684. <https://doi.org/10.1371/journal.pone.0209684>
- [4] Slovic, P., & Peters, E. (2006). Risk perception and affect. *Current Directions in Psychological Science*, 15(6), 322-325. <https://doi.org/10.1111/j.1467-8721.2006.00461.x>
- [5] Nabi, R. L., & Myrick, J. G. (2019). Uplifting fear appeals: Considering the role of hope in fear-based persuasive messages. *Health Communication*, 34(4), 463-474. <https://doi.org/10.1080/10410236.2018.1424830>
- [6] Ariely, D., Gneezy, U., Loewenstein, G., & Mazar, N. (2009). Large stakes and big mistakes. *The Review of Economic Studies*, 76, 451-469. <https://doi.org/10.1111/j.1467-937X.2009.00534.x>
- [7] Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition & Emotion*, 14(4), 473-493. <https://doi.org/10.1080/026999300402763>
- [8] Slovic, P., Peters, E., Finucane, M. L., & Macgregor, D. G. (2005). Affect, risk, and decision making. *Health Psychology*, 24(4), S35-S40. <https://doi.org/10.1037/0278-6133.24.4.S35>
- [9] Gärling, T., Kirchler, E., Lewis, A., & van Raaij, F. (2009). Psychology, financial decision making, and financial crises. *Psychological Science in the Public Interest*, 10(1), 1-47. <https://doi.org/10.1111/j.1539-6053.2009.01033.x>

- [10] Kusev, P., Purser, H., Heilman, R., Cooke, A. J., Van Schaik, P., Baranova, V., Martin, R., & Ayton, P. (2017). Understanding risky behavior: The influence of cognitive, emotional and hormonal factors on decision-making under risk. *Frontiers in Psychology*, 8, 102. <https://doi.org/10.3389/fpsyg.2017.00102>
- [11] Williams, E. J., Beardmore, A., & Joinson, A. N. (2017). Individual differences in susceptibility to online influence: A theoretical review. *Computers in Human Behavior*, 72, 412-421. <https://doi.org/10.1016/j.chb.2017.02.005>
- [12] Chiu, J., & Storm, L. (2009). Personality, perceived luck and gambling attitudes as predictors of gambling involvement. *Journal of Gambling Studies*, 26(2), 205-227. <https://doi.org/10.1007/s10899-009-9146-z>
- [13] Preston, S., Anderson, A., Robertson, D. J., Shephard, M. P., & Huhe, N. (2021). Detecting fake news on Facebook: The role of emotional intelligence. *PLOS ONE*, 16(3), e0248693. <https://doi.org/10.1371/journal.pone.0248693>
- [14] Darke, P. R., & Freedman, J. L. (1997). The belief in good luck scale. *Journal of Research in Personality*, 31(4), 486-511. <https://doi.org/10.1006/jrpe.1997.2191>
- [15] Hayes, A. F., & Preacher, K. J. (2014). Statistical mediation analysis with a multicategorical independent variable. *British Journal of Mathematical and Statistical Psychology*, 67(3), 451-470. <https://doi.org/10.1111/bmsp.12028>
- [16] Wright, R. T., Jensen, M. L., Thatcher, J. B., Dinger, M., & Marett, K. (2014). Research note—Influence techniques in phishing attacks: An examination of vulnerability and resistance. *Information Systems Research*, 25(2), 385-400. <https://doi.org/10.1287/isre.2014.0516>
- [17] Office for National Statistics. (2022, June 17). Saving for retirement in Great Britain: April 2018 to March 2020. <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/pensionwealthingreatbritain/april2018tomarch2020>