



## *Using Fear in Messages to Influence Behavioral Change and Attitudes*

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### **Abstract:**

Many decision-makers and politicians believe that invoking fear in messages can effectively change the attitudes and behaviors of the targeted individuals. However, social psychological research reveals that the use of fear can be less effective in persuading others and may sometimes lead to counterproductive results. This exploration of social heritage aims to synthesize research on the effectiveness of fear activation in message processing to change individual attitudes and behaviors. The theoretical models underlying the potential connection between fear and persuasion are presented along with illustrations where fear activation has been tested, particularly in health prevention messages. Based on recent work in persuasion psychology, alternative models for fear activation are proposed, taking into account the acquired knowledge of message recipients specific characteristics and the persuasive effectiveness of other forms of messaging.

**Keywords:** *Impact, Fear, Recipient, Persuasion.*

## I. INTRODUCTION

The global health situation in recent months, linked to the COVID-19 pandemic, has led to a media frenzy that instills fear among citizens. Not a day goes by without bad news, staggering numbers, and a looming threat over the population. We are swimming in a particularly alarming media world, where political speeches echo the same directives. Consequently, discussions revolve around a state of war, disasters, and tsunamis... all related to health. Unfortunately, those seeking refuge from this negative information associated with the pandemic will only receive more bad news related to biodiversity loss, climate change, and impending future disasters.

If it's not possible to challenge the coverage of current events by media outlets that uphold the principles of press freedom and everyone's right to information, research in psychology has long been concerned with the impact of media messages and content that elicit fear in those exposed to them. Within the framework of prevention campaigns, many officials believe that activating fear is the most effective means to persuade someone to adopt new behaviors or change behaviors that harm themselves and others. However, if the use of messages or the employment of situations or facts aiming to activate fear is a common practice, a fundamental question arises: the issue of the real effectiveness of this approach.

Since a long time, there was a prevailing belief in a direct and strong relationship between attitudes and behavior. However, in the 1970s, those convictions crumbled due to the works published by Alan Wicker (WICKER, 1971: 18-30), which led to the conclusion that attitudes are not strongly or weakly linked to behavior. If attitudes have no impact on behavior, what is the point of conducting research and studies on changing and modifying attitudes? And what is the benefit of employing the concept of attitudes? Through this article, we will attempt to answer these questions.

### 1- The Impact of Simple Activation in Fear

Apart from messages that provoke anxiety and may activate various levels of fear in individuals, which constitute the subject of much research, social psychology has also studied the impact of simple activation of a state of fear in individuals. In reality, fear is a unique emotional state in humans, with its primary function being the individual's survival and adaptation to their environment. Fear serves as a precursor to escape, allowing the individual to free themselves from a situation that may endanger their physical well-being and the safety of their community. Research in social psychology, conducted in natural settings, confirms that the impact and activation of fear prompt us to be more altruistic.

1. DariuszDolinski and Richard Nawrat (DOLINSKI et NAWRAT, 1998: 27-50) were the first to study the impact of a trivial event possessing the ability to trigger fear or apprehension, even if only for a very short period and without any threat to the individual's safety. Such an event can influence our ability to react and behave in the seconds or few minutes following this activation. In an initial experiment conducted on the street, the researchers used a sound emitted from a whistle similar to a police whistle when pedestrians crossed the street outside designated crosswalks. There was no actual police officer, and the person who blew the whistle remained hidden from the passing individual. The latter, most of the time, would stop, look around anxiously, and then, when not seeing anything, continue on their way. After about twenty seconds, a young woman approached them and asked them to answer a 10-minute survey, including one question, among others, allowing the measurement of the pedestrian's level of anxiety.

2. In another scenario, using the same method, pedestrians were approached outside crosswalks but without any whistle being blown. Finally, a third experimental condition was tested, involving pedestrians who strictly adhered to crosswalks. The results show that 55% of pedestrians exposed to whistles agreed to participate, compared to 46% of those not exposed to whistling. Pedestrians who followed traffic rules agreed at a rate of 41%. Regarding the measured anxiety levels, it is observed that the expressed levels were the same. This confirms that individuals who were whistled at had indeed felt calm and comfortable after the initial fear stage.

3. For this reason, the researchers named their experimental protocol "Fear and then Comfort." Consequently, it's not anxiety that explains the willingness of the research participants to answer the survey and thus appear more sociable and altruistic toward someone (in this case, the interviewer). Instead, it is the state of "feeling comfortable" after a stage of anxiety.

4. This implies that this negative emotional state has dissipated to impact behavior, contradicting the idea of the necessity for the continued presence of the anxiety-inducing state for the persuasive power of this negative emotional state to work. In reality, it is essential to experience a state of comfort (tranquility) after the stage of feeling fear for an individual's behavior to change.

5. This theory emphasizing the necessity of a stage where the fear or anxiety dissipates has been experimentally confirmed by Dolinski and Nawrat in another study involving car drivers who parked their cars in unauthorized areas. In this research, the experimenters placed a sheet resembling a parking violation ticket on the windshield or door, secured with a piece of tape, not the usual method and location for placing a violation notice. In reality, this "fake violation" served as an advertisement for a new remedy for baldness or a call to donate blood. The driver was left to read the sheet, and then the experimenter approached, introducing themselves as a student conducting research, asking the driver if they would agree to answer a survey on urban traffic management, which would take about fifteen minutes.

6. The results reveal that when the card was placed on the front windshield of the car, potentially perceived as a violation ticket, 62% of the tested individuals agreed to answer the survey, compared to 37% when the card was attached to the door, an unconventional location for violation notices. Finally, 36% of participants agreed when there was no violation card present. Therefore, when the card is placed on the front windshield wiper (considered a fear-inducing violation notice), the impact and activation of fear in subsequent social behavior work. The individual might initially perceive it as a violation and then relax upon realizing it's just an advertisement. The subsequent state of calmness leads to a positive acceptance of the researcher's request.

7. It's worth noting that the state of comfort after the state of fear is indeed what influences a person's behavior, as demonstrated in another study. In this study, the card under the front windshield wiper was either a simple advertisement for medication or a message from the police notifying the car owner of a parking violation and instructing them to contact the police station. When the advertisement was about medication, 62% of individuals answered the survey, compared to 32% when there was no fake violation card. However, when it involved a police notice, only 8% agreed to answer the survey. Here, the mere presence of the violation ticket caused a decrease in acceptance, confirming that the approach requires generating a state of fear followed by a state of comfort to be successful. Thus, it is essential to create a state of fear or

anxiety in the participant, but for the impact on their behavior, this feeling of fear must subside; otherwise, there will be no change in behavior.

8. Several studies conducted in natural settings have confirmed the impact of fear followed by comfort and attest that these emotional states must sequentially follow each other to positively influence changes in social behavior (DOLINSKA et DOLINSKI, 2014: 29-34). Naturally, it's not about situations where one attempts to sincerely convince someone of a message to change their behavior. Instead, it distinctly shows that a state of fear, anxiety, or confusion resulting from it cannot change behavior if the individual does not notice that this negative state diminishes or disappears significantly. Consequently, skepticism may arise when reading experimental research by Dolinski and Nawrat, conducted again in natural settings, about the effectiveness of fear when consistently reactivated in an environment constantly bombarded with unsettling information or fear-inducing stimuli. The reactivation of these emotional states can disrupt the processing of events occurring in the environment. The focus should be on internal states (fear and anxiety) rather than external elements (concern for others and attention).

## **2. The Impact of Fear in Persuasion:**

When seeking to change certain health-damaging behaviors (quitting smoking, adopting a healthy diet, getting vaccinated, exercising, etc.), the use of messages or images that may evoke fear or anxiety is often the path taken by communicators and decision-makers. This is evident, for example, in messages or images displayed on cigarette packs. However, even in these cases, we may not fully appreciate the boomerang effect that can occur with such negative emotional states. Individuals feel intense discomfort due to the nature of the anxiety-inducing message, and in order to rid themselves of this unpleasant internal state, they may deny its importance and credibility. This, contrary to the expected effect, diminishes its persuasive power.

The research conducted by Irving E. Janis and Seymour Feshbach (JANIS and FESHBACH, 1953: 78-92) is certainly one of the most famous and cited studies in the scientific literature that examines the impact of fear on persuasion. In their study, the researchers investigated changes in attitude and behavior after receiving a preventive message about dental health. Participants received a message intended to induce intense fear, featuring various images of facial, jaw, and dental diseases due to poor dental care. In another experimental condition, the fear they aimed to evoke was more moderate, using pleasant images of oral diseases. In a third condition, a message inducing mild fear was used, providing information about benign dental conditions. Finally, with another group of individuals, no message was given. After this stage, advice on how to brush teeth and maintain good oral hygiene was provided to all participants.

One week later, participants were given a questionnaire measuring their adherence to the previously provided recommendations and advice. The results showed that when a high level of fear was activated, only 8% of the participants adhered to the previously given information, compared to 22% when the fear level was moderate, and 36% when the fear level was weak. Contrary to the beliefs of some communicators and decision-makers, using information that stimulates a high level of fear seems to have a counterproductive effect: the more the information provided induces high levels of fear and negative emotions, the weaker the compliance with recommendations. There is a genuine paradox: the more we intend to frighten a person, the less respect they show for what is advised. In fact, due to the severe threat or fear associated with the message content, individuals can develop resistance to the used argument, as revealed by the research. Irving E. Janis and Robert F. Terwilliger (JANIS et TERWILLIGER, 1962: 403-410)

presented smokers with messages that could induce intense fear in them due to the health risks of tobacco (tobacco kills) or a less threatening message (tobacco reduces breathing) .

Afterwards, individuals were asked to discuss the topic, and their commitment to the recommendation to quit smoking was measured. It was observed that 79% of individuals exposed to a threat argument, assumed to induce fear, were more critical and skeptical regarding the arguments presented to them, while only 12% in the group exposed to a less threatening argument exhibited such behavior. It seems as if the smoker's lack of skepticism about tobacco giving them a foul odor or reducing their breath when climbing stairs (low-threat messages) is similar to denying that tobacco causes cancer, serious cardiovascular diseases, or even premature death (high-threat message).

This fear-inducing mechanism led individuals to be less compliant with the recommendation, where only 36% of the group receiving a high threat felt it was appropriate to quit smoking, compared to 68% in the low-threat group. While fear can enhance effectiveness, over time, individuals exposed to arguments develop a form of defense against them, becoming less convinced. The issue with such strategies lies in creating cognitive dissonance. Since tobacco is hazardous, a smoker should reduce the perceived risks of tobacco consumption to diminish the contradiction between tobacco's dangers and their smoking behavior. Rejecting arguments, criticizing them, and believing they don't apply to the smoker are strategies to alleviate this cognitive dissonance.

If it turns out, as we see in these studies, that the fear-inducing message is counterproductive contrary to expectations, we can say, in the long run, that using fear as a means of persuasion may be more effective. Again, this is not the direction presented to us by the research. Paul M. Kohn (KOHN et al. 1982: 457-464) exposed students to films about the risks associated with alcohol-impaired driving. Depending on the case, these films activated high, medium, or low levels of fear with strong imagery. Meanwhile, another group of officers watched a film on a completely neutral topic unrelated to traffic safety. Afterward, the students' attitudes toward driving under the influence of alcohol were measured immediately after watching the films and after 6 months. In line with observations in previous experiments, in the case of fear, we'll notice that attitudes toward driving under the influence of alcohol were less critical compared to the control group, which was not the intended goal. Fortunately, after 6 months, those attitudes did not persist, but unfortunately, the opposite effect was not observed either.

In the four groups, attitudes toward this behavior remained consistent, leaning towards proving, in the short term, that fear-based and threatening messages lead to unexpected contrary effects and are, in the long run, ineffective. In other words, over the long term, no observable impact on changing the behavior of individuals exposed to messages with high levels of anxiety or fear will be noticed. In the short term, it appears that using fear-inducing information yields opposite results by shifting individuals' attitudes and behaviors in the opposite direction of what was expected. These latter effects are not encouraging because, in a context like the global crisis of COVID-19 witnessed in 2020, individuals were continuously immersed in a flow of information reactivating a high level of fear without interruption over weeks and months.

Each time, this results in high levels of aversion, as the message recipient seeks to minimize it by not adhering to the appropriateness and accuracy of the provided information and health recommendations. However, to achieve an impact on individuals' attitudes and behaviors, these high levels of fear should not persist over time (SHEN, 2016: 573-580).

### 3. The Importance of the Message Recipient:

If we can say, after reading these studies, that frightening people with a message or images in a preventive campaign seems ineffective or may lead to contrary effects to those expected, we can conclude that this approach should be banned in the field of prevention. In fact, this approach should be different. Everything depends on the goal and the way the individual assimilates the directed information.

For some researchers, this could result from the way we stimulate and employ fear. Irving E. Janis and Leon Mann (JANIS & MANN, 1965: 84-90) asked young female smokers to play an imaginary role, where they were informed by a doctor that they had lung cancer. There was a group of smokers eavesdropping in this imaginary scenario but not actively participating. After 15 days, a measurement was taken regarding the estimated tobacco consumption among these individuals. It was observed that active participation in the role-playing game led to a decrease in cigarette consumption compared to the situation where their role was only negative. However, this negative listening role strangely resembles the situations we encounter in our daily lives with messages or images. Using this active role-playing methodology, Irving E. Janis discovered a lasting effect over time, as another study showed that the impact of reducing tobacco consumption persisted after a year and a half.

This tends to indicate that it is not the fear itself that contradicts prevention, but (above all) the way in which the fear-inducing situation is applied to individuals. Results from studies like this suggest that the passivity of individuals merely receiving information is not sufficient, and preventive measures should lead to finding other forms of preventative actions, especially in health contexts. For instance, involving key actors in these various approaches, such as teachers, educators, and family doctors, allows making the message recipient more active, which can have a powerful impact on enhancing the effectiveness of prevention.

In addition to involving individuals in the process of information integration through a more proactive analytical approach, research has shown that individuals, based on their personal connection with the behavior the message aims to change or establish, will not have the same response to the message. Insko, Arkoff, and Insko (INSKO, ARKOFF et INSKO, 1965: 256-266) subjected a group of students, known to regularly smoke, quit, or have never inclined toward smoking, to smoking prevention messages accompanied by images that either elicited or did not elicit a high or low level of fear in them.

Then, their judgment on the risks associated with regular tobacco consumption (risk of heart attack) and the likelihood of becoming a regular smoker in the future is measured. The results show that fear arousal was effective among non-smokers, while an opposite effect was observed among smokers. In other words, if we want to prevent the adoption of smoking behavior, using messages and images that evoke fear would be a good approach, but for those who are accustomed to this behavior, this methodology may be ineffective or even yield contrary results. Smokers justify their behavior and shield themselves from fear by claiming that it is exaggerated, asserting that it doesn't apply to them because they don't smoke much, engage in physical activity, and thus minimize the negative effects of tobacco. They often mention knowing someone who has been smoking for 50 years and is still in good health. In short, they rationalize to protect themselves from fear.

For non-smokers, the messages and images simply reinforce what they have long thought about tobacco, explaining why they don't smoke: it's not good for health, it makes people addicted, etc. With this group, the messages affirm their concerns, if not intensify them, leading to even more negative attitudes towards tobacco.

This study conducted within the framework of tobacco consumption prevention reached similar results to recent research on behaviors associated with other risks, such as alcohol consumption. Girandola and Michelik (GIRANDOLA & MICHELIK, 2008: 69-79) demonstrated that occasional alcohol consumers (by chance) appeared less inclined towards alcohol consumption after exposure to highly threatening messages about the risks of alcohol. It seems that regular alcohol consumers resist this type of threat. Once again, we witness a real contradiction regarding the effectiveness of campaigns using fear to change attitudes and behaviors. The preferred target in health prevention campaigns, especially concerning addictive behaviors, seems to be individuals already adopting these behaviors, not those who do not adopt or adopt them less frequently. In other words, the message fails to achieve its goal.

#### **4. Models of Fear-Arousing Persuasion Theory:**

Numerous studies have been conducted on the subject of fear and its impact on modifying individual attitudes and behaviors regarding issues that harm both the individual and others. Researchers have extracted from these studies a set of theoretical models that can be employed to explain the relationship between the content of the message and its impact on the individual's perception, attitude, and behavior. Four of these models can be presented as follows:

**4.1.** The theoretical model underpinning the initial research is called "The Reduction of Motivational Appeals" (JANIS, 1967: 166-224). According to this model, the effectiveness of the message will be a function of the level of recruited fear. It should not be too weak to fail to motivate individuals to abandon their behavioral change, nor too strong to paralyze their fear and lead them to engage in defensive counter-activity. This model was quickly abandoned in favor of more cognitive models that focused solely on the level of fear. The idea was that the impact of the message content is not a result of the elements presented but rather the evaluation individuals make of it.

**4.2.** The "Protection Motivation" model developed by Rogers (ROGERS, 1975: 93-114) is the first model to clearly distinguish between two elements in fear-appeal messages: threat and recommendations. Individuals' evaluation of these two components determines whether they will be motivated to protect themselves against the danger. In more detail, individuals exposed to such messages may experience fear based on the perceived severity of the threat and their perceived vulnerability. The level of fear resulting from this assessment may act as the primary motivator for protection, accompanied or suppressed, depending on the situation, by other evaluations.

These complementary evaluations, on the one hand, relate to the benefits associated with continuing problematic behavior (what should the individual refrain from to protect themselves?), and on the other hand, to the recommendations in terms of their perceived effectiveness (do the recommendations allow complete protection against the threat?), self-efficacy in their implementation (does the individual feel capable of implementing them?), and finally, the cost of implementation (are the recommendations lengthy, difficult, and costly to implement?).

Therefore, this model proposed by Rogers suggests that a very serious threat, in which an individual feels intense vulnerability (fragility), would motivate them to self-protect. However, if the benefits of adopting the behavior are high, or if the recommendations are not entirely effective, difficult to implement, or costly, individuals may not commit to the message content. In a study aiming to test this model, both Rippetoe and Rogers (RIPPETOE & ROGERS, 1987: 596-604) found that participants exposed to a highly threatening message regarding breast cancer prevention (addressing dimensions of perceived susceptibility and severity as particularly high) showed levels of intention to perform self-examination (the recommended primary behavior) if described as effective: allowing early tumor detection and being accessible to everyone.

As other measures were implemented, it was revealed that in conditions where there is low effectiveness of recommendations and/or a decrease in self-efficacy, participants significantly engaged less in proposals related to rational problem management, such as seeking "more knowledge about the relationship between breast self-examination and survival chances." Instead, they tended to agree more with suggestions referring to religious faith: "I believe it's better to pray and leave the problem in God's hands" and fate: "If your destiny is death due to breast cancer, there isn't much you can do"; or even avoiding the subject: "I try not to think about the possibility of getting breast cancer."

**4.3.** The third model is called the "Expansive Model." The participants' commitment in this type of proposals was specifically described in the "Expansive Model of Parallel Processes" proposed by Witte (1992: 329-349). It was developed based on the previous model (the second, Rogers' model), retaining components of "threat and recommendations." It suggests two paths for adjustment: one targeting risk, leading to the production of appropriate behaviors (compliance with recommendations and adoption of proposed preventive behaviors). The other goal is intimidation, which, conversely, leads to rejecting recommendations and adopting inappropriate behaviors or beliefs (denial, source reputation distortion, risk minimization, irresponsibility, and continued behavior).

Individuals' orientation towards one of the two adjustment paths is linked to the relationship between threat appraisal and recommendation appraisal. If this relationship favors recommendations, individuals will be motivated to protect themselves from danger. Conversely, if the relationship favors threat appraisal, individuals will be motivated to shield themselves from fear. Participants in the Rippetoe and Rogers experiment (1987: 596-604) believed they couldn't effectively combat the threat, so they struggled against the fear triggered by the message. Witte and Allen's model (2000: 591-615) has achieved the greatest success in scientific literature due to its structural and integrative aspects with other models, forming the subject of numerous empirical verification processes to date.

**4.4.** Recently, Das, Wit, and Stroebe (2003: 560-664) proposed a new model that, unlike previous models, integrates theoretical developments in persuasive communication, particularly individuals' cognitive processing of persuasive messages. According to Eagly and Chaiken (1993), persuasive messages (not necessarily relying on fear) can trigger either shallow (exploratory or peripheral) or deep (central or systematic) cognitive processing, depending on individuals' perceived relevance to the message. Individuals highly involved with the message possess moderate time and cognitive abilities, while those less involved allocate minimal cognitive resources. They focus on source credibility, empathy, attractiveness, and proximity, evaluate presented arguments, and adopt a positive or unfavorable stance based on these elements. This stance is fragile over time, unable to predict specific behaviors, but cognitive processing is rapid and resource-efficient.

Contrary to that, individuals highly involved with the message will focus their attention on its more intricate elements: the presented arguments. Based on the content and significance of these arguments, they will either mentally accept or criticize them. This in-depth processing of the message will require additional cognitive resources, but the stance adopted, whether favorable or unfavorable, will be robust and stable over time, capable of predicting the behavior(s) to be followed. Messages based on fear appeal have been developed considering their impact on the recipients. The "Gradual Model of Fear-Inducing Communication Processing" qualifies this assumption by specifying conditions for engagement and extends previous models by examining two consecutive processing stages. Firstly, threat appraisal will be assessed, more precisely evaluating its intensity and perceived vulnerabilities.

This evaluation will determine the depth of threat processing but also its objectivity and the processing of recommendations or lack thereof. A person perceiving the threat as weak and not excessively intense will only care about surface elements of the message, neglecting to process the recommendations and maintaining their behavior. Conversely, a threat assessed at a moderate or high level due to perceived high intensity, noticeable vulnerability, or a combination of both will be the subject of deep processing. In a situation where the threat is considered moderate, as the individual feels somewhat vulnerable or believes the threat is moderate, processing will be deep and objective. The individual seeks to ensure their ability to continue their behavior, at least for the current time, without exposing themselves to significant risks. However, as before, recommendations will not be a specific focus of processing, and no change in the person's behavior will be observed.

In the scenario where an individual feels vulnerable facing a highly threatening threat, the real added value of this model emerges. In such a case, threat and recommendations will be processed deeply but in a biased manner, allowing the individual to defend themselves from the fear they perceive. The individual will carefully scrutinize the presented elements regarding the threat to diminish its intensity, distort the source's reputation, or take exceptional measures. However, driven by self-protection, their attention will then shift to the recommendations, evaluating their effectiveness and feasibility. Ultimately, they will commit to and implement appropriate behaviors if they find them effective and easy to execute, rejecting them in the opposite case. They will then continue managing fear by engaging in behaviors leading to counterproductive outcomes and adhering to unrelated beliefs.

This model, considered the most comprehensive in social literature to date, is unique in regarding the individual's defensive response to the message not as a sign of intervention failure but rather as a mechanism allowing for later, more extensive processing of recommendations and commitment to them when necessary. In a study conducted by Blonde and Girandola (2016: 67-10) supporting this model, participants were invited to watch a preventive leadership advertisement under the influence of alcohol. Depending on the condition, the advertisement creating either a low or high level of fear presented effective and relevant recommendations, along with elements suitable for surface processing, positively or negatively framing the message. After the exposure, participants were asked to jot down every idea that came to their minds during the viewing and then categorize them as supportive, unsupportive, or neutral regarding the message content.

Finally, participants responded to a survey allowing them to evaluate their attitude towards drunk driving and their defensive reaction to the message content through a comparative optimism scale (the perception of oneself being more or less susceptible to fear appeals compared to others). According to the model, results reveal that individuals experiencing higher levels of fear are those who use fewer appropriate elements for surface-level message processing. Those with more positive thoughts about the message believe they are less likely to cause such an incident and express a more favorable attitude toward the message. Additional analyses indicate that the impact of fear on message compliance is mediated by a defensive response. Another study by Hall, Mendel, Noar, and Brewer (2018: 165-172), based on anti-smoking messages on cigarette packs, reached similar conclusions. Compared to a weak threat message, a strongly fear-inducing message encourages both smoking avoidance and adherence to recommendations if they are effective and feasible for the individual.

The impact of disease prevention messages using fear as a persuasive tool is not as straightforward as initially conceived, perhaps still misunderstood by some designers of such messages. The message should indeed evoke a high level of fear (bearing in mind that this itself will be subject to evaluation) to engage the individual in message processing and motivate them to protect themselves. Subsequently, it should propose highly effective and appropriate recommendations (keeping in mind that these, too, will be subject to evaluation) so that the individual not only engages with the fear they feel but also continues to control the risk.

### **5. comprehensive effectiveness and modified variables:**

Over the course of more than sixty years of research on the use of fear in persuasion, numerous data have been collected, and over 10 meta-analyses (comprehensive summaries) have been conducted. Starting from the earliest analysis by Sutton (1982: 303-337) to the most recent, conducted by Tannenbaum et al. (2015: 1178-1204), these analyses systematically represent a weak but statistically significant positive effect of persuasive messages inducing high levels of fear compared to those achieving low levels. No global rebound effect is observed. More specifically, a moderate effect is noted between the level of induced fear and the perceived fear level. A weak effect is observed between the level of induced fear and directional change on one hand, and behavioral change on the other. Despite these results appearing favorable to the use of fear, they do not allow us to draw conclusions about the effectiveness of fear-based interventions compared to interventions based on other foundations.

Furthermore, the scientific tradition favoring the publication of results confirming the tested hypothesis and the limited opportunities to see the overall impact are artificially heightened across all these studies. However, this type of research allows for the evaluation (in addition to the general impact of the procedure) of the moderate effect of other variables that may interact with it. Tannenbaum's meta-analysis, like many previous analyses, focused on the message itself, the targeted behavior, or the characteristics of the recipients.

Regarding the message, the results align with previous meta-analyses, emphasizing studies specifically dealing with three levels of fear: low, moderate, and high. It appears that the presence of a ceiling, beyond which increasing fear through means like disgust-inducing images and/or auditory cues (music or ambient noise) causing anxiety, does not yield a greater impact.

The perceived fear level is primarily linked to describing the threat intensity and individuals' vulnerability to it. Independently or in combination, addressing these variables significantly enhances the effectiveness of messages. More precisely, signaling individuals' vulnerability to the threat affects their intention to protect themselves and their preventive behavior, while a strong threat signal influences their direction.

Signaling both vulnerability and threat intensity has a significant impact on the three relevant variables. Concerning recommendations, results show that the message remains effective even in the absence of these variables, without causing any detrimental effects on the measured variables. However, the intervention's effectiveness notably increases when recommendations are presented. Meta-analyses, such as those conducted by Witte and Allen (2000: 591-615), DeHoog et al. (2007: 258-285), and Peters, Ruiters, and Kok (2013: S8-S31), have scrutinized this component more precisely. They further support these findings by demonstrating that the presence of recommendations and the indication of individuals' capability to implement them result in a greater impact, especially when perceived as effective and generating a strong sense of self-efficacy. The opposite effect could occur if these conditions are not met.

The study also examined the behavior patterns promoted in the messages. Researchers believed that a single behavior, such as vaccination, would be easier to adopt compared to a behavior requiring repetition, like regular physical exercise. The results support this hypothesis but reveal that the use of fear is effective in both types of behavior. Additionally, other research focused on the impact interventions could have on screening behavior compared to disease prevention behavior. Screening behavior, as it inherently induces anxiety, may lead to more defensive reactions than preventive behavior. Despite being noted or discussed in some studies, the analyses conducted within the framework of Tannenbaum's meta-analysis (TANNENBAUM & al., 2015: 1178-1204) do not show a significant difference in this variable.

Other variables, such as whether death is mentioned in the message and targeting preventive behaviors that can either increase or decrease self-esteem (e.g., engaging in physical activity versus avoiding sun exposure), do not show any significant impact. Measurements taken after exposure or during periods less or more than 15 days reveal no substantial effect. Regarding the mention of death in the message, a study by Shehryar and Hunt (2005: 275-287) on alcohol-impaired driving indicated a negative interaction between individuals' alcohol consumption and the mention or omission of death. This was a result of risky behavior, where individuals who perceive alcohol consumption as an integral part of their lives reject the message more when the mentioned risk is death compared to a simple violation.

### **Results and discussion :**

Finally, regarding the characteristics of message recipients, Tannenbaum's meta-analysis focused on the impact of participants' gender, their collective or individualistic cultural orientation, and even their stage of life (advanced or not) on their inclination toward behavior change. The results only reveal an effect in gender, indicating that women are more responsive to fear-based interventions compared to men. On their part, Boster and Mangeau (1984: 330-3754) noted in their meta-analysis a moderate and positive association between age and sensitivity to fear. Witte and Allen (2000: 591-615), who failed to find such a connection in their meta-analysis, suggested that personality differences related to anxiety sensitivity seem to have a minimal effect

on processing fear-appeal messages. When an effect does occur, it tends to be of the primary type rather than being a reactive one.

Certainly, here are two integrated explanations regarding the limitations of this research pattern, aimed at confirming the lack of a significant impact. On one hand, the diversity of individual characteristics is vast, making the number of specifically conducted experimental studies on each one insufficient to generally integrate them into this type of research, or, if necessary, unable to prove their impact. On the other hand, it's not ruled out that the impact of personal characteristics might be captured, conflating with the effect of individuals' self-efficacy levels. Some experimental studies, isolated from the interacting effects of fear level and certain receiver traits, such as anxiety and depression, as discussed by Girandola (2000: 333-376), or as previously observed, the level of commitment to risk-laden behavior, indicate that individuals displaying high levels of these dimensions tend to control their fears exclusively (not the danger), much like individuals with low levels of self-efficacy.

### **Conclusion:**

the use of fear appeals in campaigns for preventing smoking, alcohol consumption, or promoting health has been a heated topic of discussion in the publications of the Journal of Psychological Health in 2018. The origin of this discourse can be traced to an article authored by Kok, Peters, Kessels, Ten Hoor, and Ruiter (KOK, PETERS, KESSELS, ten HOOR & RUITER, 2017: 111-125), which highlighted the limitations of this approach and the lack of rigor from political decision-makers and campaign designers in interpreting scientific literature. The article called for the adoption of alternative approaches.

According to these researchers, the results of research on invoking fear are primarily based on statements of behavioral intentions, if not on behaviors transmitted self-perceptively, with very little observed in actual behaviors in the field. If a classic gap is noted among these three models of measures, it appears more significant in the field of health. Additionally, the positive results of research on invoking fear, observed in meta-analyses (comprehensive review), are partially derived from field research, where the control of confounding variables is reduced, increasing the likelihood of false-positive variables. Considering that only randomized laboratory experiments deal with different levels of fear and effectiveness, researchers noted a harmful impact of using fear when effectiveness (resulting from the message content or participants involved) is low.

And thus, concerning the message itself, researchers criticize the fact that the effectiveness of recommendations and individuals' self-efficacy in implementing them, crucial in the theoretical models developed, cannot be adequately distinguished from the rest of the message content. This leaves, in reality, a heuristic reliance on the principle that "fear alone is sufficient." Finally, the effectiveness of fear-based messages can only be confirmed by comparing them to non-intervention or interventions that generate a low level of fear.

**Referrals and references:**

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