



JAPAN P&I CLUB

Vol.47 March 2020

# P&I Loss Prevention Bulletin

The Japan Ship Owners' Mutual Protection & Indemnity Association Loss Prevention and Ship Inspection Department

## A Psychological Approach to Safety Behaviour Continued...



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## § 1 Introduction

On this occasion, we have summarized our autumn Loss Prevention internal seminars which were held in Japan (13 locations in total) from September 2019. Although the titles of each seminar held in Hakodate and Kure are different from the other seminars, the same seminars will be held in spring 2020 accordingly.

Almost 90% of all maritime accidents are said to be caused by human error. Theoretically speaking, if we eradicate human errors, we should be able to cut the number of maritime accidents by 90%. However, it will not be possible to achieve this owing to the 12 human characteristics that come into play. (Please see our Loss Prevention Bulletin No.35 “Thinking Safety” issued in July, 2015 for details.)

Unlike traffic accidents, casualties at sea are seldom caused by one single human error. Rather, casualties occur following a chain of human errors. Therefore, with BRM • BTM (Bridge Resource Management • Bridge Team Management), maritime accidents are being prevented by breaking such error chains, even when a human error has already occurred.

In our spring domestic seminar 2019, our guest lecturer Mr.Nobutoshi Tsutsui (hereinafter the lecturer) delivered a presentation entitled "A Psychological Approach to Safety Behaviour". There has been a great deal of demand for future lectures to be conducted. (In autumn of the same year, at some locations where the lecturer's schedule would not permit, Capt. Okada of the Loss Prevention Department filled in for the lecturer.)

Although it is not possible to eliminate human errors, we consider that having an understanding of the underlying human psychological factors and characteristics may be an effective way to reduce human errors. As a result, we then launched our seminars in 2019 with a focus on psychology. We hope that this will facilitate the reduction of accidents at sea.

Please also refer to the Loss Prevention Bulletin No.46 “Psychological Approach to Safety Behaviour” which is the original edition.

QUIZ

Here is a Pop quiz. How do each of the pictures below appear to you? Note down what comes to mind. This is explained later in this guide.

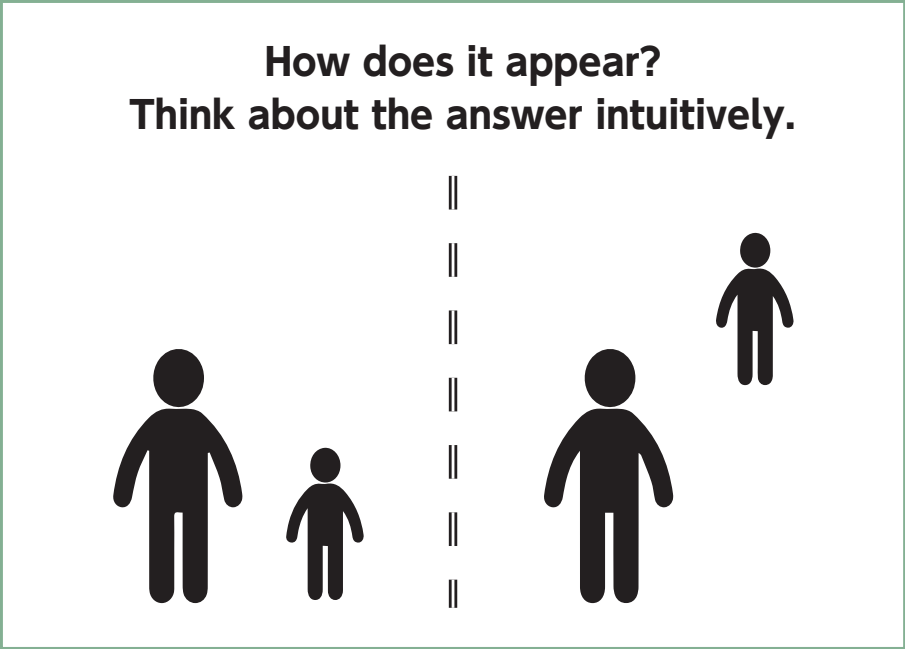
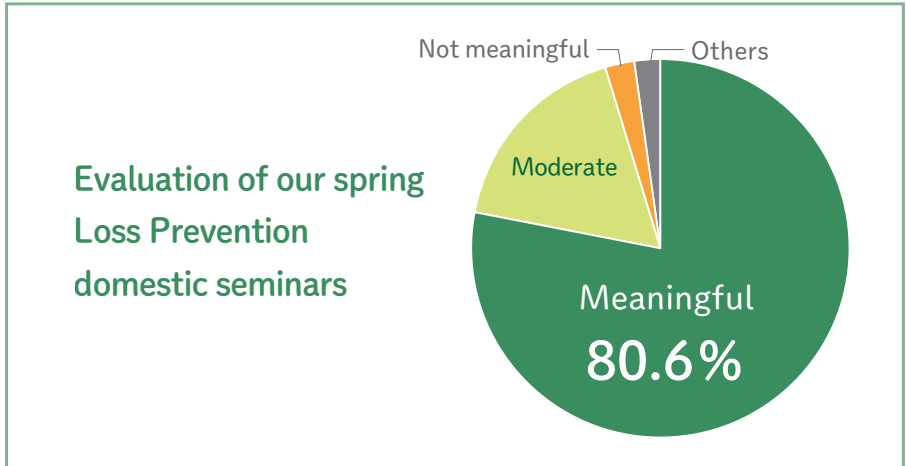


Fig. 1 How does it appear?

## § 2 How to obtain SOC (Sense of Coherence) to avoid hurting one another



Graph 2

As shown in Graph 2, according to the questionnaire results regarding our domestic spring seminar in 2019 titled “A Psychological Approach to Safety Behaviour”, 80.6% of the total audience thought it was meaningful; and we are happy to hear that it was so well received.

After the ISM Code became mandatory for ocean-going ships in the 1990s and the safety management code also became mandatory for coastal vessels in 2006, the number of casualties has dramatically declined.

Lately, however, the rate of casualties has declined gradually. It will be necessary to reduce the occurrence of human error if we are to further prevent accidents.

We believe that it should be possible to reduce the occurrence of human error, as long as we understand the patterns of psychological reactions and behaviours which may cause human errors.

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## 2-1 Why has Psychology attracted a great deal of attention from the maritime industry?

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Psychology as a new academic field started 140 years ago, and sought to clarify the principles behind human psychological behaviour using scientific methods. This study aims to grasp the universal psychological mechanisms which everybody has. In human behaviours, common patterns can be found with a certain amount of probability.

A common pattern in behaviors can be referred to as a "principle" or a "law" in the field of Psychology. For example, in regard to the question "Which ramen restaurant do you think offers the most delicious noodles, a busy and crowded ramen shop or an unoccupied one?", almost all people will answer "A busy and crowded one." This case we can observe a psychological phenomenon called the "Band Wagon Effect" due to peer pressure.

At the seminar in the Shikoku region, there was a comment from one of the participants who said, "In our region, this may well apply to an udon restaurant, but ramen restaurants are never crowded so we do not have to choose between one or the other." The lecturer understood the differences between regions and their characteristics during the seminars.



Photograph 3: Band wagon

### \* Band wagon effect (From Wikipedia)

This can be defined as an effect that can further increase the phenomenon whereby the majority of people have a tendency to select one choice over another. A "band wagon" is usually a large and ornately decorated carriage, designed to carry a musical band that plays at the front of a line. To "jump on the band wagon" means to join a growing movement in support of someone or something, favour the majority or ride the winning horse.

Regarding psychological experiments involving humans, as it will be difficult to match all conditions to everyone being tested, the following have been observed.

- Identical twins who do not live under one roof, but who grew up under ideal living conditions are the best subjects. However, the results of an experiment would not be exactly the same due to the “difference” in their living environments.
- Even for the same person, the result can be skewed over time, because the subject learns and experiences something new every day.

In other words, it is said that place of birth, religion, family structure, educational environment, living environment, etc. greatly influence such psychological experiments, and that the same result cannot always be duplicated at 100% probability. Perhaps it is because of this that the study of psychology may be considered “something suspicious” to maritime clusters.

Firstly, let’s take a closer look at those who make up maritime clusters.

It seems that those who specialized in the social sciences such as faculties of economics or business administration, who now belong to a finance department or sales and marketing division, cannot easily dispel the delusion that human beings make rational and correct choices. This issue has been studied in the fields of economic behaviour psychology and behavioural economics. Richard H. Thaler who won the Nobel Prize in Economics suggests that “conventional economics assumes that people are highly-rational—super-rational—and unemotional. They can calculate like a computer have no self-control problems.” It is obvious that such a person does not exist, and that most financial choices are always related to psychology.

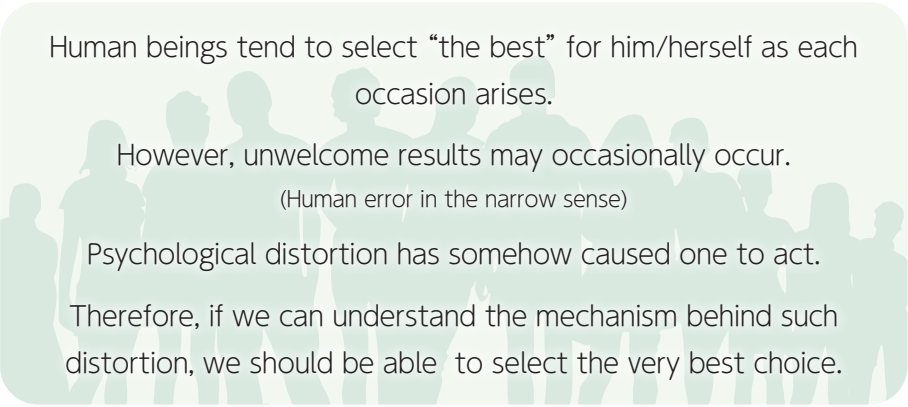
Also, those who specialized in insurance or who studied at the faculty of law now belong to the department of general affairs, legal affairs or the human resources department are sort of word magicians. They pursue meaning behind behaviour and size things up using colourful vocabulary, then they take control, manage, dispute and so on, all done in a seemingly analogue way. They are, however, in fact living in a world of digital electronics and reason whereby issues are determined by a yes-or-no binary system.

In addition, those who specialized in the field of science and engineering now belong to naval architecture such as the marine department, technical department and the seafarers' department or are engaged as engineers or crew living in a world of digital electronics and reason, citizens in the world with the belief that science comes first. They have ensured safety with a purely technical approach. Crew members, especially, those who specialise in integrated science and feel the need for teamwork and downward communication, respect a vertical society.

The above mentioned analysis shows that almost all members belonging to maritime clusters have a specific character : they do not accept something if it is not 100% certain.

Is it not because of these factors that we are in something of a stalemate when it comes to safety measures?

The lecturer considers the below to be true of human nature:



Human beings tend to select “the best” for him/herself as each occasion arises.

However, unwelcome results may occasionally occur.

(Human error in the narrow sense)

Psychological distortion has somehow caused one to act.

Therefore, if we can understand the mechanism behind such distortion, we should be able to select the very best choice.

Also, the lecturer believes that the following elements which facilitate / inhibit safety are related to one another.



- DENSITY Your area and the number of constituent factors
- SPEED Speed at which one moves and the constituent factors
- TIME Ampleness, own behavioural constraint, working hours timeframe and seasons
- BODY Diet, physiological phenomenon, health, arousal and consciousness
- ENVIRONMENTAL Light/darkness, cold/warm, disturbance, high/low, noise/silence and likes/dislikes
- CONTROL Supervision, award, punishment. Degree of containment, (strictness or self-initiative) and education level
- HOUSEHOLD AND SOCIETY Stableness, degrees of satisfaction for physiological needs and safety needs
- EXPERIENCE Frequency and degree of success/failure, as well as depth of learning
- ATTITUDE Activeness to response to something that is difficult, sense of responsibility, and level of impulsivity
- OUTCOME PREDICTION Awareness of appearance/disappearance of reinforcer/punisher gained from learning or experience

The lecturer was thinking that some kind of new device “Behaviour Selection Aid” would be useful in ensuring that safety measures significantly eliminate failures caused by human beings. This device would analyse the connections between various elements using AI. Then, for example, images showing environmental measurements etc., danger alerts, a manual of procedures, and information about psychological bias etc. along with instructions would be shown on a heads-up display in a pair of eyewear, with bone-conducting headphones for sound. And then, such a device could record videos of work being carried out while converting data in real-time to provide the wearer essential information safe practices.

Just while the lecturer was preparing papers for these seminars, he discovered the very same idea in a graphic novel where the main character was the master of a sniper.

# 2-2 How to develop SOC (Sense of Coherence) to avoid hurting one another


From Kawai, Kaoru (2019). *Tanin no ashi wo hipparu otokotachi* (Office workers who are causing trouble for other people: Provisional translation)

Since the bursting of the bubble in Japan, it seems that the following aspects are inextricably linked together as features of modern-day workplaces and society. According to the book written by Kaoru Kawai (hereinafter author), it is pointed out that intolerance towards others has been increasing every year and she feels that this era is strangely suffocating.

Positive		Negative
"Likes" Go viral	↔	Come under fire
Coaching and education	↔	Bullying and physical punishment
Collaboration and cooperation	↔	Competition and evaluation
Freedom and creativity	↔	Managed and superficial
Diversified opinions	↔	Rejection of minority's thoughts
Motivational	↔	"grumpy old man/men" who don't care who they step on

In order to get through this age, the author emphasizes the importance of enhancing "SOC" which is something that is based on people trusting themselves and their surroundings (their world). "SOC" can be said to consist of the following senses/beliefs.

## SOC



- The sense of understanding that life makes sense in the world where we are living.
- The belief that life is not so bad, even though things don't always go as planned.
- The belief that it will all work itself out in the end.
- The belief that one will never be a negative thinker.

It is said that Japanese in the past had high “SOC”. The author points out that the one contributing factor to this was “job security”. Specifically, companies played a significant role in the foundations of the Japanese welfare society such as lifetime employment and promotion by seniority. Also, the author explains that these companies commanded the world-class high watermark of “Made in Japan”. It was this sense of pride that gave people the shared spirit that “we were all participating”.

- ① Lifetime (lifelong) employment:  
lifetime security for tomorrow promised today
- ② Seniority system:  
a social norm whereby one can survive as long as effort is made diligently

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## 2-3 How “grumpy old man/men” come to be

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Recently, the number of people who tend to think that “It would be easier not to care about others and to step on them rather than strive in vain” has been becoming more prominent in organizations. In addition, it seems that the number of the people who behave in an autocratic manner have increased; some blame their junior staff, co-workers and clients too much. One such example was when a customer in a convenience store reprimanded a shop assistant for giving the incorrect change mistakenly. The assistant was taken outside and made to kneel down and bow until his forehead touched the floor in apology. What is even worse is that these scenes of domineering behaviour are recorded and disseminated over the internet.

How has this kind of tyrannous person come to be? The author points out that a large contributing factor for this can be attributed to the social circumstances of recent years.

### ① Collapse of the traditional Japanese welfare society

After the burst of the economic bubble, the following characteristics that contributed to Japan's welfare society have been collapsing.

- En masse recruiting of new graduates
- Supportive in-house training system
- The age-based remuneration system
- Benefits package
- The typical managers in Showa-era who treated their employees as if they were family

### ② Office staff that are not counted as human resources but rather an operating cost

The author made the point that a worker's dignity has become undervalued and that manpower is simply regarded as an expenditure.

- Corporate downsizing in order to protect the company
- Results-oriented value for pay reduction
- Non-regular workers with low wages who can be "managed" easier
- "Utilization" of temping services and overseas workers

For some years, it has been fashionable to use a certain word expressed in katakana. In around 2001, the lecturer experienced an impressive occurrence: The Ministry of Land, Infrastructure, Transport and Tourism used the term "Human Infrastructure" to describe seafarers. To be honest, the lecturer thought it was something cool at that time. However, in hindsight, that expression bears an uncomfortable feeling as they treat the crew members as objects or facilities.

### ③ Rewards have decreased and replaced moral tone simply to encourage competition

The notion of a stickler for compliance also reflects the suffocating era.

As a result of this, **“grumpy old man/men”** who don’t care who they step on appeared.

Who are the “grumpy old man/men”?

- Symbolic word for exercising his/her “power” only to “protect him/herself”.
- This is not limited to a certain generation or males only. “grumpy old man/men” can be found among the younger generations and women.
- Such people are forming an intolerant workplace and society which cannot accept diversity.

Also, this brought about the word **“top down management”**, those who only recognize their superiors.



Fig.4 Top down management

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## 2–4 “Grumpy old man/men” as barriers which decay the organization

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The existence/being of “grumpy old man/men” barrier takes the organization into their own hands and corrupts it. In other words, it will be essential to banish the “grumpy old man/men” barrier for an organization to operate soundly. For example, when there were a variety of big scandals committed by grand old men in 2018, the author points out that the influence of the “grumpy old man/men” barrier was existent. (Former head coach of a certain university’s American football team, Japan Amateur Boxing Federation President etc.)

① **Waning productivity**

They tend to wait for the “enemy” to make a mistake without acting positively by themselves.

They tend to develop aggressive behaviour, only towards their junior staff (the weak) when he/she makes a minor mistake.

② **Company atmosphere degenerates**

They are fascinated with power (their bosses), and they dare to cut connections with their subordinates and clients.

③ **There is a high rate of turnover**

These “grumpy old man/men” affect other employees’ motivation and the rate of turnover increases in order to escape from them.

④ **“Grumpy old man/men” vested with power**

“Big grumpy old man/men” in management do not recognize the existence of “tiny grumpy old man/men” in an organization of top down management. Because such apple polishing “tiny grumpy old man/men” are obedient to “big grumpy old man/men”, they are seen and not heard. “Big grumpy old man/men” do not understand how this weakens an organization.

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## 2-5 How to not become an “grumpy old man/men” or fall victim to “grumpy old man/men”

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The key is to strengthen self-nurturing and enhance your willpower. It is always crucial to have a firm grasp of “what you want to be” or “how to live your life”. The author describes the internal qualities of Sense of Coherence as follows:

- **Self-acceptance**

This is when you accept yourself in a positive way.

- **Independence**

This is when one can make decisions autonomously about their actions and attitude.

- **Cultivating your personality**

This is when one can believe in one's own possibility.

- **Life purpose**

This is your clear understanding about how you want to live your life.

- **Environmental control**

This is to ensure that one can survive in any environment.

- **Positive relationships with other people**

This is when one has built a warm and trustworthy relationship, especially networking with those other than the people one may work with; which is important.

## 2-6 Principle and practice of LOVE

The author introduces the principles of LOVE in order to develop a Sense of Coherence (SOC).

- |   |          |           |  |
|---|----------|-----------|--|
| ① | <b>L</b> | Listen    | : Not to hear (pretend to listen), but to lend a sympathetic ear, by imaging the other person's situation. |
| ② | <b>O</b> | Over Look | : Closely observe the whole picture.   |
| ③ | <b>V</b> | Voice     | : Speak out to others proactively.   |
| ④ | <b>E</b> | Excuse    | : Not to permit or approve but rather forgive and accept.  |
|   |          | Enjoy     | : It is also necessary to enjoy yourself.  |

The lecturer believes that for “**O** Over Look” it is necessary to ask oneself the following 3 questions before making a decision or taking action, by looking at oneself with a clearer perspective.

1. **What** are you doing?
2. **Why** are you doing it?
3. **What is to be gained** from doing it?

Coupled with the following two questions, we can expect a desirable outcome.

Is one's choice tightly connected with **one's position**?

Was it influenced by **one's emotion**?

This is defined as metacognition in psychology. It is the recognition of cognitive activity such as thinking, understanding and judgement from the viewpoint of a higher perspective (meta). Imagining that one's boss or coach is beside one, one will be able to see oneself and things more objectively.

The author introduces techniques on how to practice the principles of LOVE.



## LOVE in practice ①

### Learn to grin and bear it when “greeting”

▶ You may see others who do not reply to you, and it could be that you may not like or are actually not keen on getting along with them at work.

However, it is recommendable to greet people and show gratitude proactively, trying to learn to grin and bear it. Because such an attempt helps to improve your communication skills with such kinds of people.

Among younger personnel, there is a scandalmonger type “grumpy old man/men” who is an expert of “character assassination” when it comes to his superior who he does not favour; for example, he intentionally blames and calls his senior boss and co-workers names, saying “my boss cannot even do table calculations in Excel”.

The lecturer once had a subordinate who was terribly good at this “character assassination” and the lecturer could not be emotionally involved with him at all. However, just for team-building purposes, the lecturer decided to repeatedly greet and show him gratitude. He had no reaction at first, but after six months, the subordinate began to greet the lecturer back. And then, the atmosphere at the office improved, something that was a successful experience for the lecturer. Continuously greeting someone to elicit a favourable reaction is called “mere exposure effect” in psychology.

## LOVE in practice ②

### Speaking out

▶ There was a new president of a leading company who was able to successfully outshine a number of his rivals. When the author asked this president why it was that he was promoted so dramatically, he explained as follows:

“When I was a junior member of staff, I always observed our president. The president took every opportunity to tell employees “You are all respected members of society.” He, in fact, made a point of not referring to his staff using diminutive suffixes (-kun or -chan) he rather referred to them using a more equal suffix (-san). The president would

often look around the office and proactively spoke out to both the younger and middle-ranking personnel. Closely mirroring my president's attitude, I worked hard with the same determination to be responsible.

I always just practised what he did and found myself in the position that I am now, thankfully”.

Psychologically, the former president's attitude is true to “Satisfying love/belonging needs” (For details, please see P.74 of our Bulletin No.46” ).

### LOVE in practice ③

#### Let's be an office mum

► In any office, there is a member of staff who is not too serious about efficiency, yet who is bright and reliable with competent skills. In addition, this person can communicate with others regardless of their position equally, without treating them differently because of their position.

This notion is not only applicable to middle-aged women but men and even younger people. This truly is the antonym of “grumpy old man/men”.

If such recent intolerant working places were to be compared to a machine, the lecturer considers, and not enough oil is applied, friction will build up between the parts, and such parts will overheat unnecessarily and become contorted.

This “office mum” can be compared to “highly effective lubrication” in the office.

### LOVE in practice ④

#### Never stop thinking

There was an experiment known as “Obedience to Authority” during the post handling of World War II.

Adolf Otto Eichmann, Commander of the SS was responsible for the Auschwitz concentration camp.

After the war, he was arrested while on the run and then held for trial, at which it was revealed that he was a homely and kind person really. Then, there was an experiment conducted at Yale University US, in order to find out how such a kind person could be capable of carrying out such a cruel act of mass extermination.

As a result, it turned out that he was involuntarily obedient to orders.

This means that when human beings stop thinking rationally, they even commit atrocities.

Thus, it is important not to stop thinking rationally, in order to not bring one's life to ruin.

Our brains are programmed to save energy. In other words, we can say that the human brain is "a very inefficient organ" because it occupies only 2% body weight, yet consumes 20% of all energy. Therefore, we must accept the fact that we must not stop thinking and challenge our brains.

(For details, please see P.37 of our Bulletin No.46)

In the future, the lecturer **thinks that enhanced critical thinking skills ( 疑術力 ) will be required over an exclusive devotion to technical skills ( 技術力 ).**

## § 3 JR Fukuchiyama Line Derailment

(Source: Japan Transport Safety Board Report)

Before examining the marine accident from a psychological perspective, we need to take a closer look at the derailment accident that occurred on the JR West Japan Fukuchiyama Line on 25 April 2005.

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### 3-1 Accident summary

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At around 9:18 a.m. on the 25th of April 2005, on a right curve section between Tsukaguchi Station and Amagasaki Station in Kukuchi, Amagasaki City, Hyogo Prefecture, on the Takarazuka JR Tozai Line and the Katamachi Line (Gakken Toshi Line), a rapid train headed for Doshisha Mae Station derailed. The front five cars of the seven-car train careered off the tracks. The front four cars derailed completely, two of which ploughed into a apartment building by the tracks. The first car rammed into the piloti (parking lot) of the apartment building and the second car collided into the external wall of the building becoming almost completely compacted by the third and fourth cars. Impaled in the wall, the first and second cars were wrecked beyond



Photograph 5 Fukuchiyama Line  
Derailment 1 (From Wikipedia)



Photograph 6 Fukuchiyama Line  
Derailment 2 (From Wikipedia)

recognition. The third and fourth cars completely blocked the oncoming tracks. Of those involved in the accident, 107 perished (including the driver) and 562 were injured, making it one of the most catastrophic transportation accidents in history.

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## **3-2 Problems with JR West Japan's management practices**

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JR West Japan's management practices are at the centre of the incident.

- ① The company had become exposed to intense competition from other Kansai private railway companies such as Hankyu Railway since the JNR era. Due to such influence, it was said that there had been a strong sense of opposition from private railway companies competing with JR West after JNR was privatized. Aware of the need to overcome growing competition from private railway companies, the company saw fit to increase the speed of its trains in order to shorten commuting times and increased the number of trains operating, which is what is believed to have led to them favouring a speedy service and profits over safety.
- ② It was also pointed out that at JR West Japan, because of fierce competition (as mentioned above), on long routes, employees faced an excessive rush of complaints from passengers when timetables got disrupted.
- ③ It was pointed out that contributing factors behind the slow progress of safety documentation was down to the fact that the company, since the privatization of JNR, was running many lines in the red, coupled with growing competition from private operators. Add to this the fact that some facilities were completely or partially destroyed by the Great Hanshin-Awaji Earthquake, and concrete collapsing in a shinkansen tunnel (Sanyo Shinkansen) which led to ever increasing expenses.

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### 3–3 Problems with the timetables

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- ① The Fukuchiyama Line, on which the accident occurred, competes with the Takarazuka Line, Kobe Line, and Itami Line of the Hankyu Corporation, and aims to operate trains on a second-by-second, in line with other competing lines.
- ② At a speed of 120km/h and a stopping time of 15 seconds, the train was operating on a timetable that was already not realistic, with the same amount of time being needed despite the addition of stations to be stopped at one after another. In December 2003, because it was operating on the same timetable as before, stopping at Chuzanji Station, any spare time needed to be cut in order for the train to run according to the same amount time required before. For this reason, there was a chronic delay occurring. In particular, at the point between Tsukaguchi Station and Amagasaki Station, the timetable for the fastest train according to the standard running timetable had been reduced even more when it was adjusted in October 2004.
- ③ At that time JR West announced that as a company policy they were to do away with any extra time.
- ④ When the Accident Investigation Committee examined the schedules of JR and private and public railway companies nationwide, it was only JR West that had a timetable with no time buffer.

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### 3–4 Problems with *Nikkin Kyōiku* ("Dayshift Education")

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Referred to as *Nikkin Kyōiku*, it consisted mainly of punishment.

- ① If an employee was unable to meet the goals set by the company, they were "re-educated", however this did not involve retraining of

specific duties or technical skills, rather harsh training was imposed as punishment.

- ② For example, they were made to sit in the middle of the duty room in full view from the staff rest room, the guard station and the roll call location to copy out or write reports all day long about employment rules and business philosophy that were not related to events such as violations and negligence. They were not allowed to go to the restroom without permission from their supervisor, and were made to stand at the end of the platform all day to greet fellow crew members arriving and leaving. They were ordered to do weeding and clean the toilets on the premises, etc. In some cases, so-called “naming” and “shaming” was used. In others, a group of managers placed them under house arrest in a private room and threatened and abused them daily, leading to depression and suicide.
- ③ From the above, the following was pointed out : Nikkin Kyoiku had not led to any positive effects on preventive measures, on the contrary it had only added to the amount of psychological pressure experienced by the crew. The driver involved in the accident had received Nikkin Kyōiku on three occasions in the past due to driving mistakes and complaints. He told friends and people he knew how severe Nikkin Kyōiku was: he was made to write reports all day long. He hated asking permission to go to the restroom by his superior. He did not understand the meaning of simply copying company precepts, etc. and was worried what he would do if his salary was cut or if he were to lose his job. Furthermore, after a 72-meter overrun at Itami Station, just before the accident, it was clear that the driver was requested to report the overrun distance to the conductor using an on-board telephone.

Half a year before the accident occurred, National Diet members pointed out that such education “could only cause a serious accident”. In fact, it was picked up by the media that Nikkin Kyoiku was "a contributing factor behind the accident". The Ministry of Land, Infrastructure, Transport and Tourism’s accident investigation report states that

this kind of education is mostly emotional manipulation, and that the cause of the accident was thought to have been down to JR West's use of Nikkin Kyōiku.

In addition, the driver who caused the accident had only 11 months of experience, and shortly before the accident, experienced trainer drivers retired in large numbers, thus there was a conspicuous lack of able trainer drivers.

Consequently, this was all controlled by the punisher (fear of Nikkin Kyōiku), which only burdened the driver with excessive economic and mental stress. It would seem that we are always faced with the two-pronged issue of business priorities verses safety; everything is directly related to the working environment and working style (way of thinking and priorities); and sadly the lecturer thinks that this derailment accident was an accident waiting to happen.

Following the accident, transport safety management regulations were introduced in 2006 and integrated the previously separate aviation, railroad, land transport, and marine transport accident investigation bodies into one. With the launch of the now Japan Transport Safety Board in 2008, Japan transportation safety culture and organizations within have been reconfigured anew.



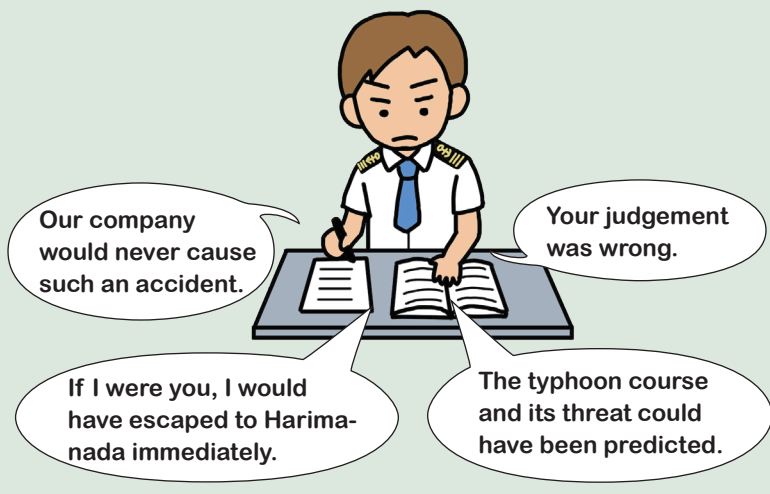
## § 4 Kansai Airport Connecting Bridge Damage (Source: Japan Transport Safety Board Report)

We will now take a look at the oil tanker Vessel H's accident that damaged the connecting bridge at Kansai Airport during Typhoon No. 21 in September 2018.

Type of ship: Oil tanker Vessel H  
Gross tonnage: 2,591 tons  
Type of accident: Collisions (bridge)  
Date and time of occurrence: On the 4th of September 2018, at approximately 13:40 (JST)  
Point of occurrence: The connecting bridge to Kansai International Airport in Senshu port of Osaka Prefecture

After the occurrence of the accident, the lecturer who was in charge of accident prevention duties as a civil servant, received the following comments from various maritime involved parties: similar primary comments like these were heard following the typhoon's wind and flood damage of 2019.

This phenomenon can also clearly be psychological.



- Primary comments just after the accident show cognitive distortions.

From a psychological perspective, this is congruent with “**hindsight bias**” whereby human beings tend to criticize as an afterthought (the wisdom of hindsight).

\* **Hindsight Bias**

The tendency to think that something was predictable, only after the event has occurred. A prediction recorded after the event (Retrospective Prediction).

The person who made this comment does not realize this bias is occurring.

For example, please imagine this situation: A housewife was once very happy to get her new cloths for half-price at a bargain sale, however, she realized that the reason why the price was so cheap was simply because they were poor-quality products. She then protected and justified herself by saying “I thought that this was poor-quality because it was very cheap.

At this moment, it would not be wise for her husband to say, “I don’t understand why you bought that if you knew this.” Your words would not only be regarded as criticism of her self-preservation instinct, but also considered psychologically aggressive behaviour and your wife would be disappointed with your lack of affection.

However, this line of questioning can be useful for a “Why Why Analysis” that is carried out when analysing accidents.

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## 4–1 Accident summary

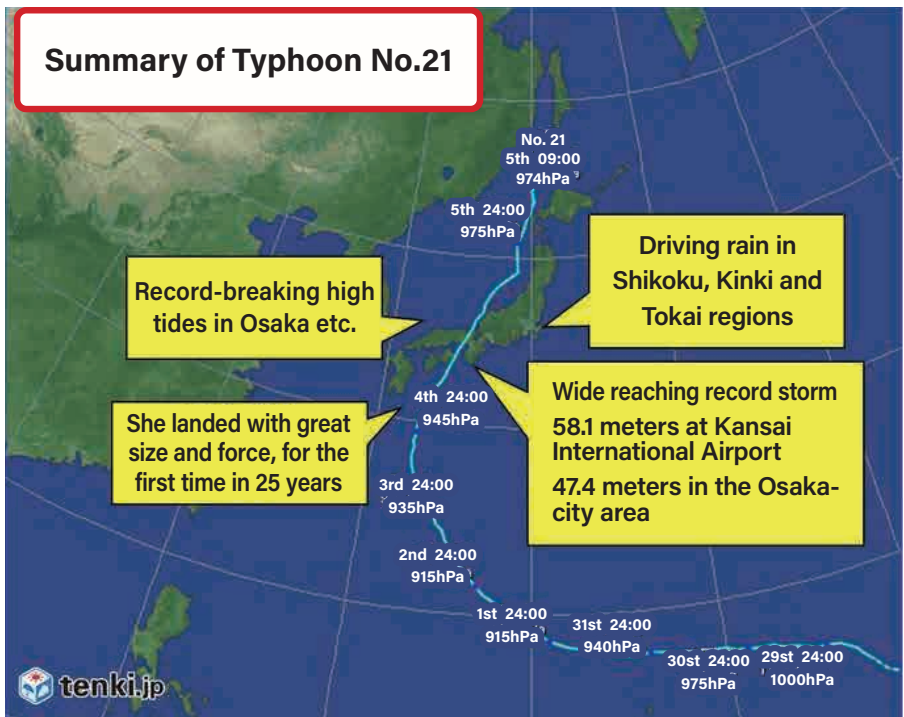
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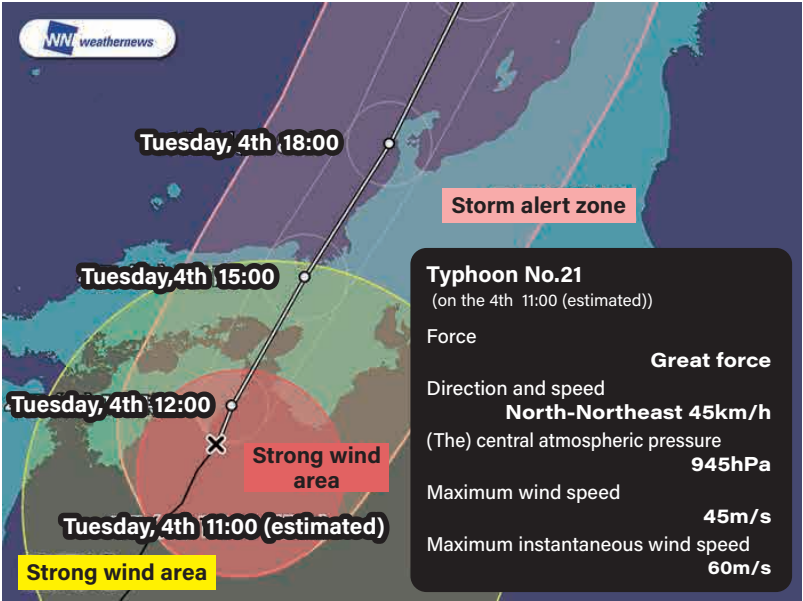
With Typhoon No.21 (Jebi) approaching, a typhoon warning had been issued for the Seto Inland Sea including Osaka Bay. The oil tanker Vessel H with its Master and 10 other crew members was anchored offshore, to the South East of Senshu Port. As the typhoon approached, the tanker was hit by increasingly strong winds and began to drag anchor causing it to drift northwards where it crashed into a bridge connecting Kansai

International Airport to the mainland at 13:40 on the 4th of September.

The deck of Vessel H's bow on the starboard side was crushed whilst the Kansai International Airport connecting bridge sustained bending, rupture and abrasion to one of the bridge's traffic girders. In addition, rails were twisted and overhead electric pylons collapsed on the railway girders, and a gas pipe was also ruptured. Despite this, none of the ship's crew suffered any casualties.



Photograph 7 Typhoon No. 21: Japan Weather Association



Photograph 8 Typhoon No. 21: Weathernews Inc.

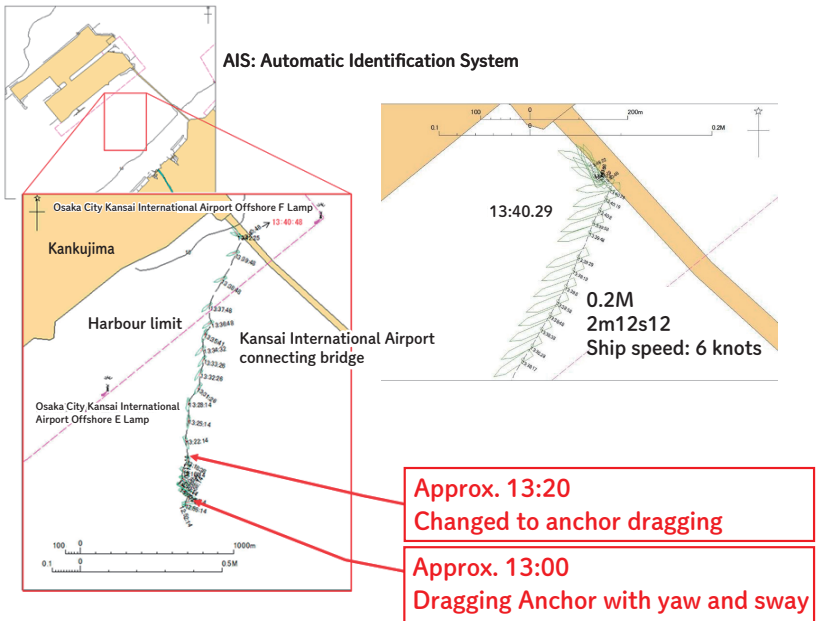
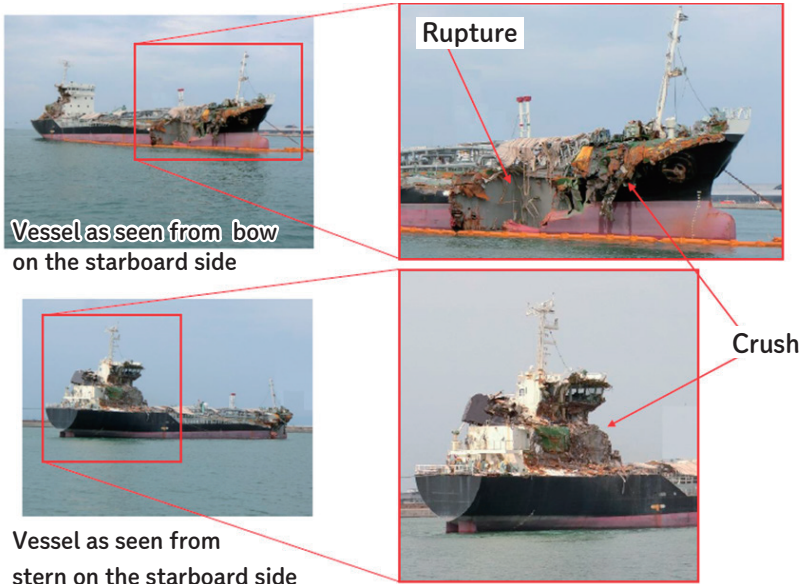
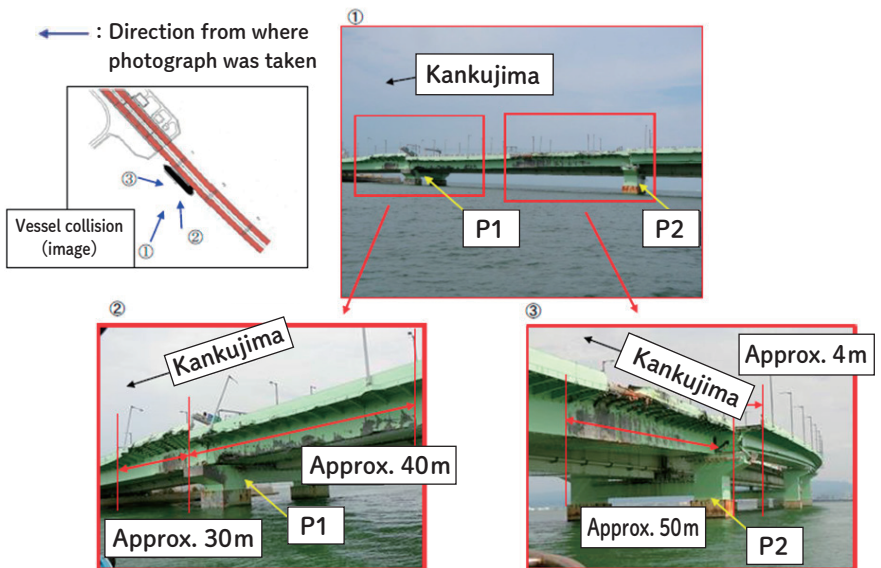


Fig. 9 Vessel H Track chart via AIS From Japan Transport Safety Board Report



Photograph 10 Damaged Vessel H From Japan Transport Safety Board Report



Photograph 11 Kansai Airport Connecting Bridge Damage  
From Japan Transport Safety Board Report

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## 4-2 Psychological influence regarding the cause of the accident

(Extract from Japan Transport Safety Board Report)

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The following is an extract from the Japan Transport Safety Board report. As shown below, the psychological factors that inform choices and the strong influences behind choices are highlighted in red.

- (1) It is thought that the Master made his decision to take shelter from the typhoon and set anchor where he did due to his experience of having previously set anchor in the same location for similar purposes, and because he believed that Typhoon No.21 would pass to the east of this location. It is further considered that he based his decision on the choice of location upon the fact that he believed the typhoon would proceed rapidly and that they would not be exposed to strong winds for a prolonged period of time, that the anchor site was surrounded by land, that the muddy seabed would provide good anchorage, that other ships were also anchored there to take shelter, and that the next cargo loading was due to take place at Sakai Senboku Port in Hanshin Harbour. It is also believed that the Master made his decision unaware of the Loss Prevention Guide and the requirement that ships should avoid setting anchor within 3 nautical miles of Kanku Island.
- (2) It is thought that the Master opted for a single anchor mooring due to his belief that when employing a two-anchor mooring, any change of wind direction could cause the anchor and anchor chain to become entangled and lead to a reduction in mooring power, and because when he had previously employed a single anchor mooring, he had been able to counter any typhoon winds by using the main engine.
- (3) At approximately 12:30 with maximum instantaneous wind speeds

of more than 20 m/s, the Master advanced slow ahead using the main engine and placed the joystick in the hover position. It is thought that this was to counter any anchor drag.

- (4) At 12:58:14, the starboard bow was hit by winds from a <016> direction with an estimated maximum instantaneous wind speed of 37.0 m/s. The course over the ground was <308.4> with a speed over the ground of approximately 0.9 kts. The vessel was facing leeward and mooring power was decreasing. It is thought that the anchor had already begun to drag by this point.
- (5) At approximately 13:00, the Master confirmed via the ship's radar that the ship was being brought to leeward towards Kanku Island. It is thought that he realised the anchor was dragging and moved the joystick to full speed ahead trying to steer the ship windward.
- (6) At 13:10:14, with maximum instantaneous wind speeds from a <140> direction and average wind speeds from a <130> direction, and with a course over the ground of <063.5>, it is believed that the ship was brought under control by using the rudder and the main engine, that the ship was no longer facing leeward and that anchor dragging had been arrested.
- (7) It is thought that the Master believed himself to have countered the anchor dragging since he had managed to stop the ship drifting by employing harbour full propeller rate.
- (8) It is presumed that the Master believed anchor dragging to have stopped since the ship's radar screen indicated a speed over the ground of "0" and this led him to set the joystick to the hover position causing propeller thrust power to dissipate and a loss of forward thrust.
- (9) At 13:18:38, the forward bow was hit by maximum instantaneous wind speeds of 30.3 m/s and average wind speeds of 25.8 m/s with a course over the ground of <349.3> and a speed over the ground

of 1.3 kts causing the ship to be brought to leeward. It is thought that this was the start of the ship once again drifting leeward.

- (10) After continually monitoring the ship's radar, the Master realised that the ship was approaching Kansai International Airport connecting bridge and noticed that the ship had begun drifting leeward. It is thought that this was what led him to start sailing at full speed ahead on the main engine.
- (11) The ship continued on a single anchor mooring. However, there was a lack of sea area on the leeward side, an increase of sea depth because of a storm surge which led to the anchor chain pulling away from the seabed and causing a reduction in mooring power, and an increase of wind pressure and wave drift forces acting upon the ship. It is presumed that the cumulative effect of these were to cause the anchor to drag and the ship to drift, leaving insufficient distance within which to regain control before crashing into the connecting bridge.
- (12) It is supposed that the ship, without her main engine continuously employed, could not regain control and drifted due to the continuous wind pressure and wave drift forces exerted upon it.
- (13) When taking refuge from a typhoon, in order to select the best spot to shelter, it is often necessary to consider adapting the voyage plan and chartering plan. It is thought that prior to the approach of Typhoon No. 21, had there been proper discussion between the Master, the ship owner, and the operator, a greater number of anchoring site options could have been revealed and the Master could have hence chosen a different site, thereby possibly avoiding this accident. Furthermore, B company's SMS stipulates that in the event of any possible threat to the safety of any shipping operations such as to the operation route, the harbour conditions, or any of the sea and land facilities, interim changes to the voyage plan or to the allocation of shipping should



be made following discussion between the Master, the ship owner and the operator.

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## 4-3 Psychological explanation regarding weather judgement

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The Master of Vessel H was thinking the following:

- Typhoon No.21 would move eastward of the anchorage.
- Very strong wind would not blow over a prolonged period of time.

At the time of the accident, the Master had obtained information about Typhoon No.21 through television, his PC, and tablet device etc. Also, the Master had received information on the typhoon prior to unberthing, and was aware that Typhoon No.21 was coming. On the Route Map, the anchorage was situated in the typhoon's right-side semicircle. However, looking at the weather chart, the Master believed that the typhoon would pass the east side of the anchoring point. This will be analysed from the viewpoint of the psychology, as follows:

Assumed course of  
the typhoon



Normalcy Bias

\* **Normalcy Bias** (Please refer to page 60 of the Loss Prevention Bulletin No.46, "Psychological Approach to Safety Behaviour" .)

Human beings have the characteristic to underestimate or ignore information regarding him or herself. We tend to ignore negative information and underestimate phenomena saying, "I'm special, nothing can hurt me!" But this is because of cognitive distortions, which may delay our ability to escape from an imminent disaster.

According to the person in charge at Japan Weather Association or privatized weather forecasting companies, “It is understood that typhoons move on a diurnal course. Except for freak typhoons, they normally move in the same way as forecast 24 hours before.” The forecast at that time also predicted that the centre of a typhoon would pass on the west side of Kansai Airport. It was almost 100% certain that the vessel’s anchorage would fall in range of the “dangerous semicircle”. Influenced by other pressure, which will be described below, the Master believed that the typhoon was to pass the east side.

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## 4–4 Psychological explanation regarding selecting of anchorage point and method

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= Choice of anchorage point =

The Master selected the anchorage point based on the following:

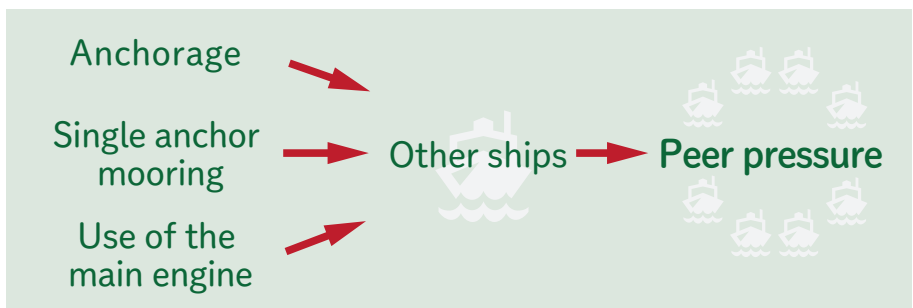
- As both a navigation officer and a Master, he had previously selected the same area 2 or 3 times as a suitable place to shelter from a typhoon.
- After unloading was completed and prior to casting away from their berth on the 3rd of September, the Master obtained an update on Typhoon No.21. Despite the ship being within the danger zone of the expected path of the typhoon, after checking the weather charts the Master believed that it would pass to the east of his chosen point of anchor.
- The anchoring point was further selected for the following reasons: it was surrounded by land, offered a muddy seabed which would provide good anchorage. Other ships had anchored there to take shelter. The next cargo loading was scheduled to take place at Sakai Senboku Port in Hanshin Harbour.

- The Master believed that Typhoon No.21 would pass to the east side of the anchorage and proceed rapidly thereby leaving the ship not exposed to strong winds for a prolonged period of time. He did not anticipate loss of control of the ship or any anchor dragging.

### = Anchoring method =

The Master mentioned the reason as to why he settled for single anchor mooring as an anchoring method as follows:

- The Master understood the precautions on anchoring in rough weather in accordance with the company's safety control standards. With regard to two-anchor mooring, however, he assumed that the holding power of the anchor and cable would be reduced when the wind direction changed.
- Every time he conducted single anchor mooring in the past, he managed the wind of the typhoon by using the main engine.



The Master had a false sense of security because other ships were also carrying out single anchor mooring. It has been proved that unexpected results may occur, when psychological peer pressure and the above mentioned normalcy bias overlap.

\* **Peer Pressure** ((Please refer to page 59 of the Loss Prevention Bulletin No.46, "Psychological Approach to Safety Behaviour" .)

Human beings are prone to make a judgement or decision influenced by somebody else's ideas and thoughts.

In addition, it can be analysed that the following elements of psychology were contributing the Master's decision.



### \* Psychology of Successful Experience

The following experiences will help one recognize their own possibility, when performed effectively in given situations.

- Mastery experiences  
Factor including one's own experience, is one's own experience of achieving something or having won success.
- Vicarious experiences  
Observing others achieve something and winning success.
- Verbal persuasion  
When one receives verbal encouragement that he/she has the ability to achieve something.
- Emotional & Physiological States  
Being in high spirits with alcohol, drugs and other factors.
- Imaginal experiences  
Imagining visually oneself or other's successful experiences.

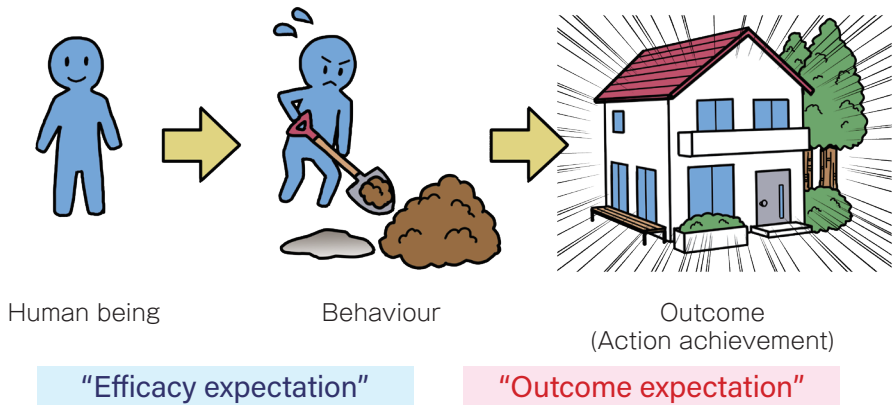


Fig. 12 Sense of achievement

Human beings feel a sense of achievement when seeing the favourable result of something that was anticipated. They are then spurred into action because of "efficacy expectation". Successful experiences reinforce confidence. When one says "I could do that then, [so I can do it now]" is a sign of confidence.

= Perceptual illusions =

The Master falsely believed the following points to be true because of perceptual illusions:

- The Master believed himself to have countered the anchor dragging since he had managed to stop the ship drifting by employing full speed ahead.
- He further believed anchor dragging to have ceased due to the radar screen which displayed a speed over the ground of '0' , hence leading him to set the joystick to the hover position. It is assumed that as a result of this, propeller thrust power was dissipated causing a loss of forward thrust.

The ship was equipped with a VecTwin Rudder.

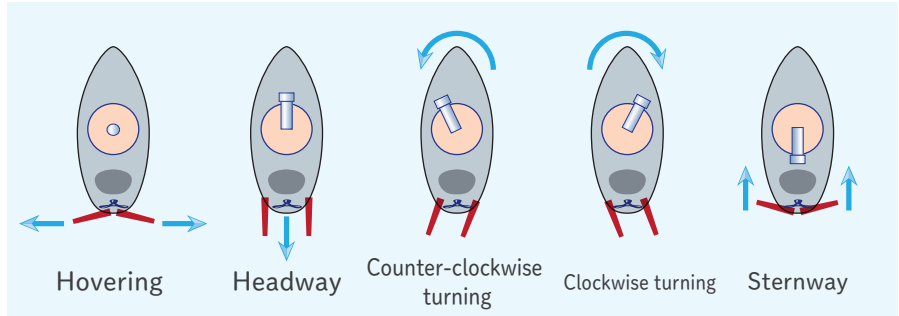


Fig. 13 VecTwin Rudder

At approximately 12:58 on the 4th of September, maximum instantaneous wind speeds reached 25.7 m/sec and anchor dragging began. At approximately 13:00, the Osaka Marine Traffic Information Service contacted the ship to inform her that she was dragging anchor. From this point, there was an attempt to manoeuvre the ship windward by employing full speed ahead which led to a speed over the ground of '0' being displayed on the radar screen. The Master was under the illusion that anchor dragging

had stopped. It is thought that in fact a mere balance between forward thrust and opposing drift speed had been obtained. At this point, the Master returned the joystick to the hover position.

**\* What are perceptual illusions?**

For example, when we are waiting for a train to pass through and then it rushes past us, we would feel as if we are being pulled. Or when we are driving a car alongside a train at the same speed, we feel as if the train has stopped. There are also many optical illusions.

= Correct answer =

When casually looking at both pictures, the left picture appears to show a parent and his/her child, whereas the picture to the right may give you a sense of perspective that there is some distance between the two people.

The two people appear to be a parent with his/her child

Shows a stronger sense of perspective

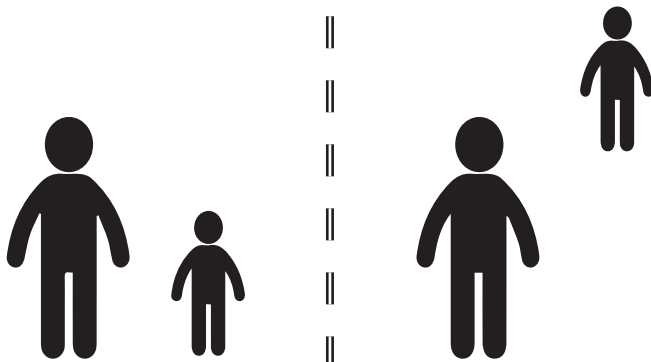


Fig. 14 Perceptual illusion

The lecturer took the liberty of drawing the lines in his mind, as shown.

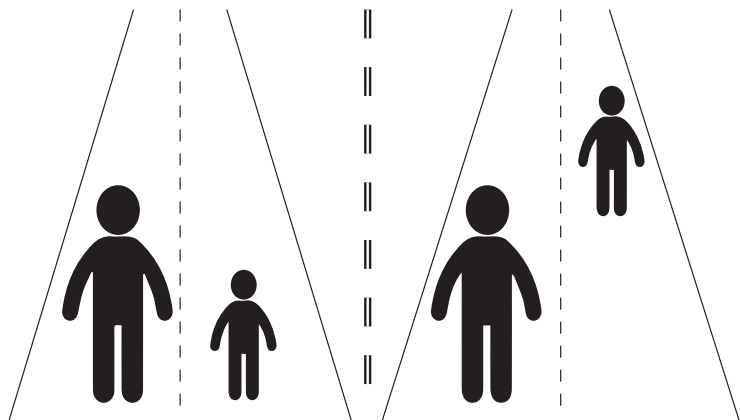


Fig. 15 Perceptual illusion

This is because he freely drew lines in his mind, as shown in Fig. 15.

Here we can see that it is difficult to imagine the lines, as shown in Fig.16. We learn that human beings face difficulty thinking differently about something once they have it set in their mind.

Here we can see that it is difficult to imagine the lines like this.

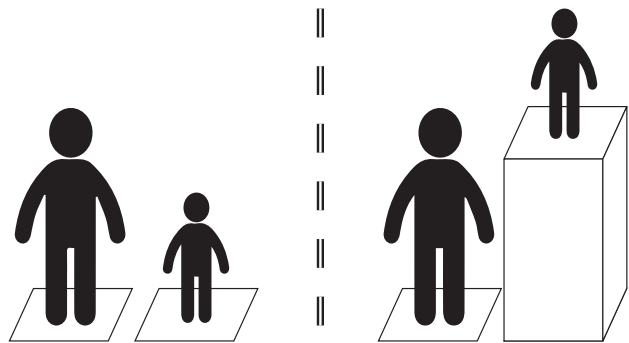


Fig. 16 Perceptual illusion



The brain actually knows that it is not a problem that we interpret something automatically or in an intuitive way in real life. However, it may mislead us to “misunderstand” something when we are faced with certain conditions as in Fig.16, something that we would not normally think intuitively about. According to human nature, the brain wants to save energy paying extra attention to something, and in the event that there are unanticipated conditions, a “perceptual illusion” is likely to occur caused by the gap between recognition and fact.

Imagine that you visually spot two different lights, one is bright and the other one is dark, when navigating during the night. With only visual information, we tend to believe that the ship with the bright light is closer to us and that the other with a dark light is in the distance. In fact, there would be a number of masters and navigation officers who have discovered that the ship with the dark light was in fact closer to their vessels, just because the power (level of wattage) of the other ship is unknown. Have you not had a tense moment like this finding it difficult to eliminate such an assumption?

It is important to always double-check by confirming the distance via radar, in order to reduce the amount of perceptual illusion error (human error).

**“Human beings are not aware of the fact that they have no awareness of his/her own mannerisms or habits.” (Provisional translation)** This is one of the conclusions reached in this guide. The lecturer believes that it is essential to be aware of the various psychological distortions in order to enhance safety.

= Priming effect =

(How we can make the most of our memories and mindsets: using your brain more effectively From "Brain Create" )

Here is another pop quiz. Priming effect is a form of memory that is affected by prejudice, which means it “helps us to recognize something because we have an idea of what is beforehand. “Which means...??? If this this does not make any sense, then, in order to experience the priming effect first hand, please read the following words.

## Carrot, Tomato, Cucamber, Cabbage

This quiz does not suggest that you memorize all of the above words. There is one word which is not recognized as part of the English language. Did you notice which it is? Which is not English? The answer is **cucumber**.

Most people strangely but actually correctly read this as **cucumber** (spinach). This is because **cucumber** is placed after two other vegetables in the group.

In this way, the phenomenon whereby the memory that you already have can be influential to this kind of occurrence is known as the priming effect. The reason why it is hard for you to recognise this typo by yourself is mainly because of this priming effect which made you biased. Thus, you can reduce these priming effect mistakes by letting others proofread for you.

False recognition also stems from the same memory mechanism. Major mistakes which human beings tend to make can be a result of false recognition, but this is not always negative. Not being worried about small things, if you decide to take it easy, things may go smoothly many times.

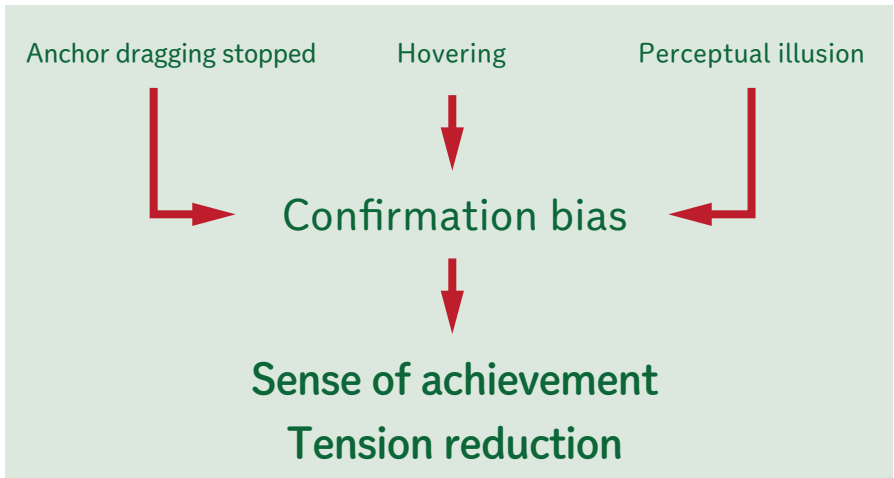
False recognition may even sometimes make you draw an association with something irrelevant, which may bring you to an innovative idea. Priming effect as false recognition has survived brain evolution, and this could be a blissful message that being creative (which may be a hidden positive effect) is essential to the development of human beings.

= Limit of concentration =

- Believing anchor dragging to have been stopped, the Master set the joystick to the hover position.

Wind speeds exceeded 20 m/sec at approximately 12:00 and from this point it is believed that the Master began to make a concerted effort to verify the condition of anchorage. Subsequently, the first anchor dragging began at approximately 12:58, and an attempt was made to control the position of the hull making full use of the engines and the VecTwin Rudder. Then at approximately 13:10, the Master, being under the illusion that anchor dragging had been arrested, set the joystick to the hover position.

- Wind speed exceeding 20m/sec. (Approximately 12:00)
- Hovering (13:10) **for 70 minutes**



Concentration for an adult human normally lasts for around 45 to 50 minutes. At best it is 90 minutes. Thus, it makes sense that one class for elementary and junior high schools is set at around 45 to 50 minutes and that one lecture at a university is set at 90 minutes.

There are waves every 15 minutes at a sustained period, and after that three more waves (45 minutes in total), then concentration gradually decreases.

Here, we understand that the Master's level of concentration nearly reached its limit, because 70 minutes had already elapsed especially from when the wind speed increased to the start of hovering.

= Psychology behind sense of achievement and tension reduction =

There is a story titled "A man who was famous as a tree climber" in Essays in Idleness also known as "The Harvest of Leisure" written by Yoshida Kenko (c.700 years ago). This is the story.

A man who was famous as a tree climber was guiding his servant in climbing a tall tree. This expert climber ordered the servant to cut the top branches. During this work when he seemed to be in great danger, the expert did not say anything. Only when he was coming down and had reached the height of the eaves did the expert call out, "Be careful! Watch your step coming down!"

Kenko asked the expert, "Why did you say that? From that height he could have jumped the rest of the way if he so chose."

"That's the point," said the expert. "As long as the man was up at a dizzy height and the branches were threatening to break, he himself was so afraid I said nothing. **Mistakes are always made when people get to the easy places.**"

Also when you get an *ippon* win in kendo, it is customary to part by stepping back attentively, not turning back and around carelessly. Moreover, it is customary in *Sadou* (Japanese art of tea ceremony), after serving tea to your guest, to keep the position of your hand as it is when returning to your original position of *seiza* (sitting in a kneeling position) without losing one's concentration to the end.

A famous tea master, Sen no Rikyū (1522 – 1591) exhorts his *Zanshin* (importance) in his song: *Naninitemo okitsukekaheru tebanarewa koishikihitoni wakarurutoshire* (When

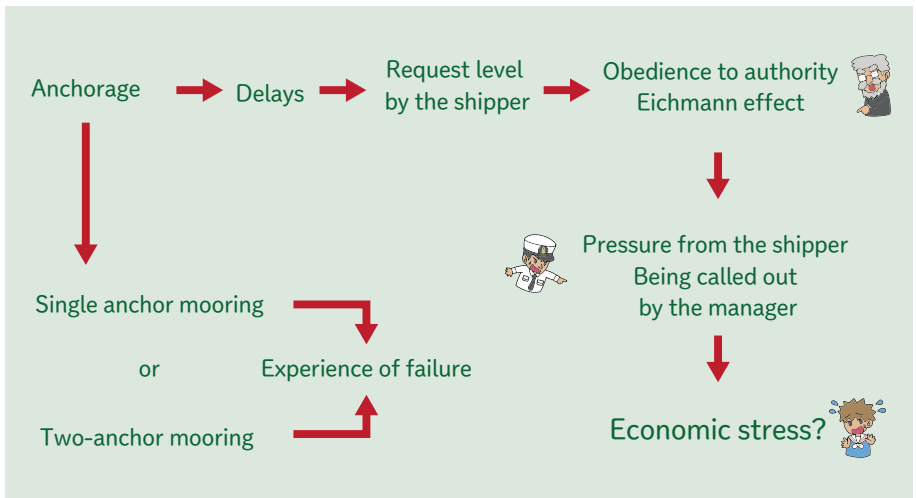
withdrawing hands from tea utensils, move them with *yoin* [lingering memory/aftertaste] as if parting from someone you love.)

The word *zanshin* is used in Japanese martial arts and traditional artistic skills. Literally interpreted to mean an afterglow/lingering memory which shows the state of being conscious, especially just after honing one's skills, one is still tense while releasing or relaxing. (From Wikipedia)

= Other factors =

- Presumably the next cargo loading/offloading which was due to take place at Sakai Senboku Port in Hanshin Harbour was influential.

As the above is briefly mentioned in the Japan Transport Safety Board Report, the background of which is summarized in the chart below.



Considering the above mentioned Hindsight Bias, the following comment “If I were you, I would have escaped to Harima-nada immediately” was made. It is true that a

suitable place to anchor was to be found near Shodoshima and Ieshima, at which the wind was blocked. Naturally, the Master would have had a similar thought. However, it is possible to imagine that the Master may have made his decision as a result of a mixture of normalcy bias and peer pressure, together with economical stress; perhaps the Master was thinking about schedule recovery following the passing of the typhoon.

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## **4–5 Psychological explanation for Obedience to Authority (Eichmann effect)**

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Regarding Obedience to Authority, the lecturer will describe this from a psychological perspective as follows. (For details, P.76 of our Bulletin No.46)

The Eichmann effect was to find out to what extent a sincere person, known to be just, on average would obey orders to give a helpless victim fatal electric shocks.

A renowned university professor (authoritative person) assembled two groups of volunteers in their 20s-50s, one group playing the role of teacher (the one with the questions) and one group to play the role of a student (the one who answers questions). The purpose was to measure the impact of punishment on learning and memory. The students were then set a task of remembering simple words. The experiment was as follows: A student sat in an electric seat, and if he/she was unable to answer the teacher's question, the teacher would give him/her an electric shock.

When the teacher asked the question, "Red", and the student mistakenly answered "House" instead of the required answer "Box", the teacher would flick a switch that delivered 15 volts of electricity. Every time the respondent answered with the wrong answer the voltage was increased by another 15 volts.

The person who was supposed to be given an electric shock was an actor, and the chair was not connected to a source of electricity, so naturally there was no electricity running

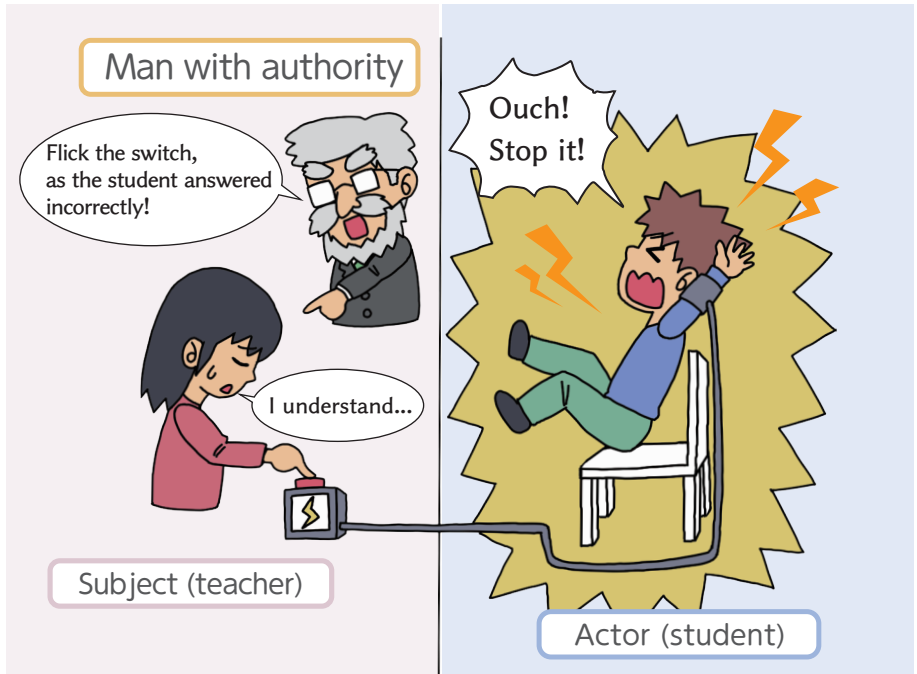


Figure 17 Obedience to Authority

to the chair. The agonizing pain on his face was all a show. On the other hand, the subject asking the questions was actually a volunteer and rather was made to undergo a kind of mental torture. The purpose was to measure the proportion of subjects who could endure up to 30 mistakes (450 volts).

It was assumed that this would only be around 1~2%, however, in practice, the percentage was 30% when the subjects were in front of the respondents and could actually see them in agony. And, when the subjects could only hear the respondents on the other side of a wall, it reached 60% (85% in Germany). Subjects who stopped in the middle of the experiment apparently felt the most stress. Nowadays, such human experiments that inflict stress or mental duress on subjects are discouraged. Thus, this experiment and its results can be said to be valuable.

In a company, is it often the case that the president, while officially saying "safety first", frequently shows a "profit- first" mentality ?

From a psychological point of view, this is thought to be influenced by the Gain-loss effect and the fact that it encourages obedience to authority is clearly apparent because of the social power.

= Gain-loss effect =

When there is a too great a gap between two standards, show the negative impression first and then the positive impression next. With this, people have a more positive impression.

There is a huge gap between Safety First and Profit First. Normally, safety is not directly connected to salary on most occasions. On the other hand, when pursuing profit, one may be awarded more (Reinforcer appearance) and if one does not pursue profit, one may be called out (Punisher appearance). Therefore, human beings tend to choose "Profit First". Please refer to page 71 of the Loss Prevention Bulletin No.46, "Psychological Approach to Safety Behaviour".



= Social power =

After the Murder of Kitty Genovese, the power that causes obedience to authority was studied by French, J.R.P. & Raven, B.H. (1959).

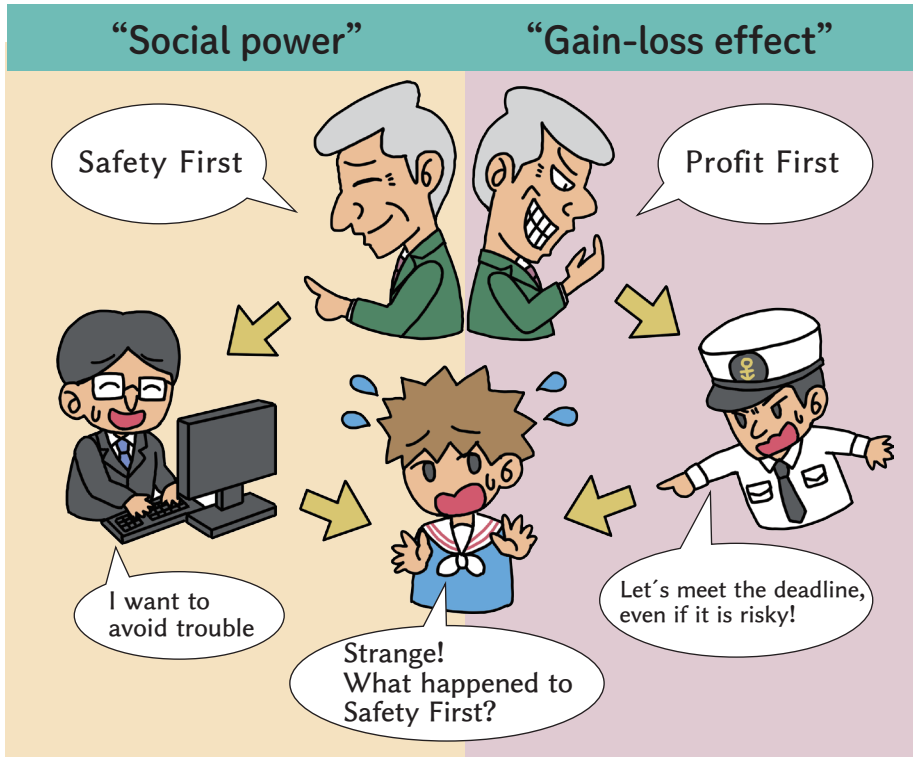


Fig. 18 Gain-loss effect and Social power

Their work is titled: Basis of Power, this means “Human beings are prone to be strongly influenced by those in authority”. In order to have a social influence, one needs to have social authority. In the field of psychology, the social influence of authority is called “social power”. How is social power defined, then?

Regarding their findings, the following 5 different influencing aspects were concluded.

**Reward Power** : The target subject complies in order to obtain rewards controlled by the agent.

**Legitimate Power** : The target complies because he/she believes the agent has the right to make the request and the subject has the obligation to comply.

**Referent Power** : The target complies because he/she admires or identifies with the agent and wants to gain the agent's approval.

**Expert Power** : The target complies because he/she believes that the agent has special knowledge about the best way to do something.

**Coercive Power** : The target complies in order to avoid punishments controlled by the agent.

= "Obedience to Authority" that inhibits safe behaviour =

Are not managers in companies or those in charge such as masters or chief engineers in the vessels saying this?

- Although the president says, "safety first" , does he really mean it?
- When port entry is delayed for the sake of safety, does not the sales manager say, "It is always hard to clean up afterwards, and we are always the ones to be doing this?"
- Also, when the crew are behaving carefully, does not the Master say, "Hurry up! Don't just stand there!" or "You are always so cloddish." ?

Although, in the JR Fukuchiyama Line accident, it was revealed that methods for training personnel and economical pressure as a backdrop were thoroughly investigated and the cause and effect of the accident was clarified, however, in the case of Vessel H such an investigation doesn't appear to have been taken seriously.

In the Transport Safety Board Report, the following were pointed out:

- How were the business attitudes of the Shipowner and Management Company?
- What was the quantity, quality and the effectiveness of educating seafarers like?
- How was the cargo owner's attitude (strictness and penalty regarding management such as operating time, cargo loading etc.)?
- Quality of system of shift personnel and on-board transportation organization (instructions given to senior personnel by younger personnel)
- What was the process of decision making like? (it only seems that the Master made all decisions in this case)

The lecturer heard that the age of the Master was the youngest (in his 40s) in the crew arrangement. Although the Master was not mature enough, the lecturer believes that he selected the best choice. This investigation does not address the environment directly influencing the choice of action or specific actions.

In order to prevent recurrence, it will be necessary to further investigate the economical and social background along with the environmental factors which led such decisions being taken.

In addition, there is a high possibility that recurrence may not be mitigated through technical solutions alone such as prohibiting anchoring within 3 miles and encouraging the use of two-anchor mooring etc. As the Loss Prevention Bulletin repeatedly warns, the “grave-post type recurrence preventative measure” is not realistic as a form of recurrence prevention. But instead, we must construct a “preventative-type recurrence preventative measure” by paying attention to BRM and the quality of communication.

Figure 19 illustrates the sheltering condition of anchorage in Osaka Bay at 13:54 on the 15th of August in 2019, following anchorage restrictions. We can see that each vessel adheres to the rule of anchoring offshore in a restricted area near Kansai and Kobe Airports.

Although there were no reports of a collision or contact damage, the lecturer can only sympathise with the Masters who were seeking refuge during rough weather. Is it that only the lecturer thinks this is true to the proverb: “*Atsumono ni korite namasu wo fuku*” (A burnt child dreads the fire.)”?

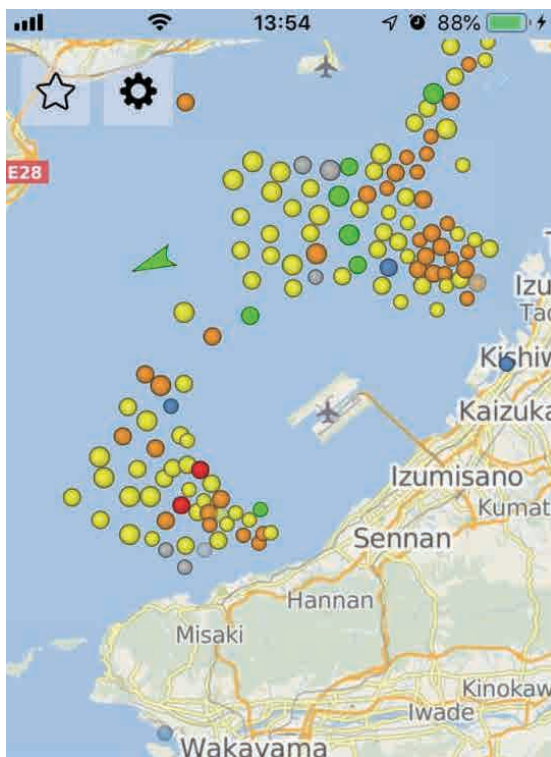


Fig. 19 Osaka Bay on the 15th of August, 2019

## § 5 Anger management

Among all of the various human emotions, we are now going to look at “anger” which can be the most troublesome.

In recent years, it has become a necessary requirement that we learn to manage anger and realize a society where people do not hit people and people do not allow anger to restrain us.

Using various references, we are going to look closer at “anger” from the viewpoint of the following:

- Human individuality is formed depending on the surrounding environment.
- At the same time, human beings also influence their environment.
- Your emotions and physical conditions are shown in your attitude and facial expression.
- We may not always express preferences easily, but it is often easy to know when someone dislikes something because it shows right away.
- Negative feelings can be transmitted.
- Smiles make a comfortable human relationship.
- Humans shall be able to make the best decisions

## 5-1 Mechanism of anger

Professor (Associate) NOMURA, Michio, of Kyoto University defines “anger” as follows:

= Definition of anger =

“Negative emotion which was generated by feeling as if one’s own mind and body had been assaulted or violated physically and socially.” (Provisional translation)

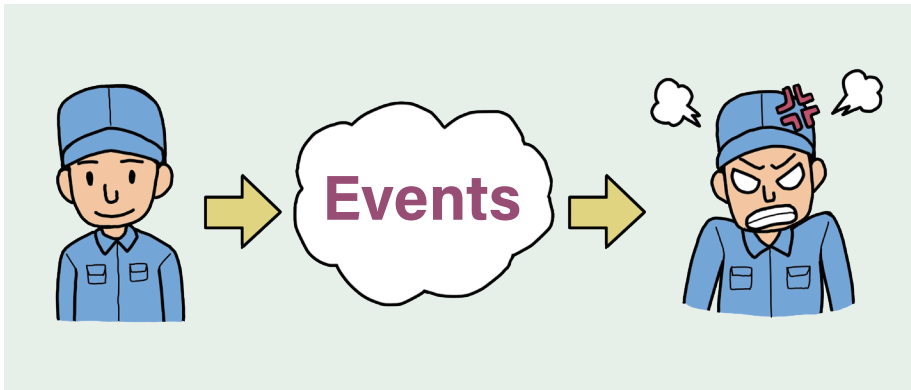


Fig. 20 Mechanism of Anger

Namely, there is an event and it is this that leads to anger. When the amygdala in the brain senses a threat to itself, it causes the body to secrete hormones that cause a stress response (Anoradrenaline and Noradrenaline). The action causes an increase in heartbeat, blood pressure, respiratory rate, blood flow to skeletal muscles, sweating and so on. And, in order to fight (being ready to erupt angrily) or escape, a “fight-or-flight response” is triggered to move the blood in the body to the muscles. As long as the event that caused the anger does not disappear, Noradrenaline keeps being released and the angry emotion increases further.

### = Anger hormone =

**Noradrenaline** affects thinking, consciousness and mentality.

**Adrenaline** influences parts of the body such as muscles and organs.

### = Positive side of anger =

Anger brings not only negative aspects but positive ones too; frustration and provocation sometimes inspires us. It brings us adaptive behaviour which tells us to do our best at resolving a problem. Also, by releasing anger in any way, you will also release stress.

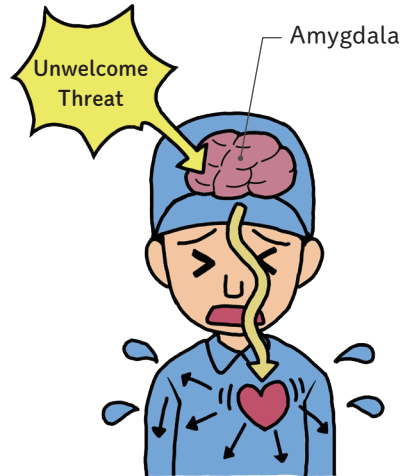


Fig. 21 Anger Mechanism

### = Negative side of anger =

However, erupting angrily may lead to the following problems: Compared with the positive aspects, the negative ones are more remarkable. Therefore, it is necessary not to erupt angrily.

- Human relationships deteriorate. As the negative emotion continues between one another, it is sometimes exacerbated.
- Once erupted angrily, one will feel stressed and this will affect the body.
- As a result, the atmosphere will be at its worse.
- If publicized on the internet, via video or a tweet, it will be disadvantageous from both a personal and business point of view.

## 5-2 Ways to cope with anger (Anger management)

(Source: How to exercise Anger management “Mochirabo” )

As can be seen in Fig.22, How to cope with one’s anger (Anger management), it is suggested that there are three methods.

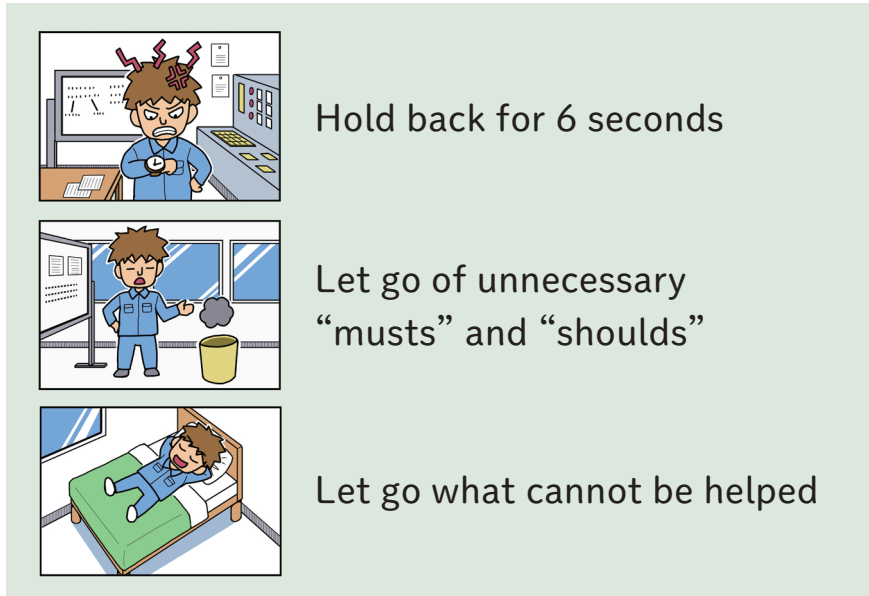


Fig. 22 Ways to cope with anger(Anger management)

= Hold back the urge to get angry for 6 seconds =

**Noradrenaline** induces an elevated mood and passion, but only lasts 6 seconds!

Impulsive angry behaviour can be suppressed in just 6 seconds.

Only 6 seconds of Patientce  
or  
Regret it your whole life



### = Let go of unnecessary “musts” and “shoulds” =

Anger is awoken when the values that one believes in “this should be” are broken. It will be useful to have an understanding of our sense of values such as “I should do this” or “it must be this”.

For example, everyone has different values even when waiting to meet someone. When someone else forces their assertions onto another, he/she may get angry. This is because it is necessary for him/her to release his/her own “should” and “must”.

- “I absolutely must be there at least 5 minutes early”: Crew are instilled with this value.
- “If he/she is delayed no longer than 5 minutes, I can accept that”
- “I do not mind for waiting for 30 minutes, as long as he/she lets me know in advance.”

Because there are various criterion depending on the individual, it is necessary to avoid thinking about these things selfishly. And, even if you get angry when the other person is delayed, neither the time you wasted nor your anger cannot be undone.

### = Let go what cannot be helped =

It is also important to understand that there are things that can and things that cannot be changed by anger. For example, no one can change the weather even if it may be irritating, all we can do is complain “why is it raining today, even though it’s my precious holiday!” It is important to stop clinging to the same thought and change your way of feeling ASAP.

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## 5-3 Ways to cope with anger both during conversation and not during a face-to-face conversation

(Source: How to get along with “anger” from “Nikkei Gooday” )

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### = During a conversation =

In the event of you getting angry with someone during a conversation, the following technique to help defuse anger will be effective.

- To repeat or ask what the other person said. However, please note that the other person will get if you do it excessively.
- You can ward it off by saying “Yes...” or “Right...” However, if you show what you are honestly feeling, the other person may get angry, too.
- If the situation permits, it will be effective to clear your throat/cough.



### = Not during a face-to-face conversation =


The following is an effective way to get through the situation when not during a face-to-face conversation.

- Try drawing three quick but deep breaths.
- Step out for a while
- Drink some water
- Fasten a tie
- Go to a window and open it to let some fresh air in.


## 5-4 Happy hormones

As can be seen in Fig. 23, you can stop eliciting anger or calm your anger through the secretion of a good number of happy hormones. There are two different types.


**2 kinds of “Happy hormone”**


 **Serotonin**

- ▶ Plays a role in modulating the autonomic nervous system and relieves insomnia
- ▶ Reduced serotonin also affects depression

 **Oxytocin**

- ▶ Functions as a stress relief and helps prevent infectious diseases
- ▶ Decreases urge to threaten others and enhances trust and affection

Fig. 23 Happy hormones

= How to increase the level of serotonin in the body =

It is said that one is able to increase their level of serotonin by doing the following:

- Wake up in bright and natural light
- Take 30 minute walks both in the morning and in the evening
- Take five deep abdominal breaths a day
- Take a long soak in a warm bath

= How to increase the level of oxytocin in the body =

- Communicate with your family and partner proactively
- Initiate physical contact with your pet
- Watch or read moving films or books

= As for the lecturer =

The lecturer practices the following activities in order to increase his level of happy hormones mentioned above.

- Regular exercise (running, playing softball etc.)
- Checking facial expressions in front of the mirror (training expression muscles)
- Kneels down in the bath + breathes abdominally (four times per minute for five minutes) (This is used in yoga, too.)
- Break out of the same old routine (change commute route and communicate with outside-of-work friends etc.)
- Shout out in a loud voice (when refereeing softball in his spare time, this is something that he doesn't usually do in his everyday routine)
- Also, it is important to laugh (he often goes to a storytellers' hall for *yose* and *rakugo*.)

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## 5–5 Psychopath (Antisocial Personality Disorder ASPD)

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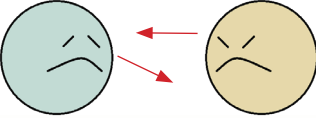
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This is a kind of mental defect, recently, and “tailgating” while driving has been often cited as an example. A psychopath can be characterized as follows:

- Has an abnormal lack of conscience
- Does not display sympathy and is callous towards others
- Is chronically comfortable with lying
- Is not responsible for his/her behaviour at all
- Lacks guilt
- Is overconfident, boasts and is selfish
- Has charm that is superficial along with insincere and chatty speech

In particular, when tailgating is caused by someone driving an expensive car, it is said that the driver is prone to be boastful because he/she can identify him/herself with the value of his/her car. (According to Tatsunari Iota, a psychology counsellor)


In order not to fall victim to such individuals or the above mentioned “grumpy old man/men”, the appropriate way to handle such difficult people is as follows:



**Do not confront him/her and avoid direct eye contact**



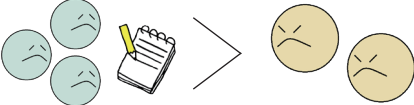
**Put a wide space between yourself and your opponent's range of view**




**Maintain a distance of one meter or more**



**Do not place an ashtray, flower vase and so on near him/her**



**Have witnesses in the room when keeping a record, don't be alone with him/her**



**Video or record after obtaining permission**



**Decide on the time**  
Inform the police (about forcible obstruction of business, extortion, unlawful trespass etc.)

## §6 Conclusion

We have described SOC (Sense of Coherence), and analysed maritime casualties from a psychological viewpoint; we also looked at anger management. This can be summarized as follows:



**SOC enhancement cannot be avoided. Let's start today.**



**Human error is deeply related to Confirmation bias.**



**When being "obedient to authority",  
we cannot expect to see free and just behaviour.**



**Let's hold back the negative emotion "anger" .**



**By understanding our brain physiology and our psychological actions,  
let's build a safe and spiritually rich society, workplace and home  
where hurting one another is a thing of the past!**



**It is important to be "critical"**

Such critical thinking skills ( 疑 術 力 ) will be required over an exclusive devotion to technical skills ( 技 術 力 ). Also, "*Shin-Gi-Tai*" (mind, body, and spirit) as a Japanese concept that describes the importance of a holistic approach in life that encompasses mental, technical, and physical training, is necessary. The lecturer created a new approach to "*Shin-Gi-Tai*" which consists of believing (trusting), being critical and well-being (sense of security).



**Please be safe by calming down  
and letting drop both your anger  
and the anchor.**

# Adult Developmental Disorder Diagnostic Test

☆ Please circle those applicable. When finished, add up the numbers for each block.



## Diagnostic Test ① -A

Do you act without considering the outcome of something dangerous or risky?

Do you interrupt someone while they are speaking?

Do you talk about yourself frequently and do others mention that you talk for a long period of time?

Do you find it difficult to wait in a queue? Do you find yourself wanting to cut-in?

While you may have no ill intention, do others tell you that you get in the way?

On feeling frustrated, have you ever struck someone on impulse?

Do you feel that you need to be the first person to enter a shop, even when there is no need?


## Diagnostic Test ① -B

Even when seated, do you find that your legs fidget and that you twiddle your fingers?

When you were a child, did you find that you could not stay seated and preferred to walk around during class?

On days off or when free, do you find yourself itching to go outside rather than stay in?




Would you say that it is not that you dislike silence, but that you feel the need to say something even if out of context?

In short periods of time, do you prefer to do repetitive tasks over more complicated ones?

When working on something for an extended period of time, do you find that you lose concentration and make mistakes?

Do you find that if a part of your body is not moving that you can't relax?  
Does it relax you to fidget?

Do you find yourself thinking about something else when talking to someone?


## Diagnostic Test ① -C

Do you find yourself dozing off when talking with a superior or during important meetings?

Do you try to not forget something, only to find that you end up forgetting?

Do you pay careful attention in order to not make a mistake, only to find yourself making a careless mistake?

Do you often lose important items such as a key, wallet or mobile phone?

Even when looking around you, do you have a tendency to bump into objects or drop and break things?

Do you keep a record to make sure that you won't miss an appointment, only to find that you clean forget about it and end up missing the appointment?

On believing that you accomplished something perfectly, is it that you actually missed something?


Total

--

Diagnostic Test ②

On receiving instructions on how to do something at work, do you make repeated mistakes because you have not understood something?	
Even though you may have something that you want to say or are thinking, do you find it difficult to collect your thoughts well enough to express yourself?	
Do you take an extended amount of time to read difficult documents and meeting minutes etc.?	
When reading papers or a book, do you find yourself losing your place?	
Can you not perform simple addition quickly without the need for a calculator?	
Are you unaware of written words that you are mispronouncing?	
Do you look at letters and find that the way they are pronounced is seemingly unrelated?	
Do you find yourself reading the same sentence over?	
When reading something, do you change the words or make grammatical alterations?	
Have you been picked up on using punctuation inappropriately?	
Is your handwriting untidy and do you often misspell words?	
Total	

## Diagnostic Test ③

Do you find it difficult to read between the lines and make inappropriate remarks?

Do you have difficulty in understanding people and have you ever been told that you are insensitive?

Is it difficult for you to accept things that are different from your everyday routine or out of the ordinary; do you find yourself rejecting them?

When told that you are free to do as you please, do you find yourself doing the same regardless? Do you feel uneasy in a place where you are free to do as you please?

Are you ever told that you are too particular and selfish?

Have you ever been scalded for not understanding a person's feelings when talking with them; were you scalded in such a way that it made you cry?

When talking, do you stand straight, with little gesture, free from expression?

Do you find it difficult to understand jokes?

Do you find it difficult in understanding someone's real intentions or what they may be hinting at?

Do you have an aversion to loud noises, and find that you cannot listen to someone in a noisy place?


Can you not wear course or clothing that rustles?

Do you dislike mixed rice or a number of ingredients that are mixed?

Even if someone places their hand on your shoulder, do you feel as though you have been hit?

Total

## Adult Developmental Disorder Diagnostic Test: Results

### Diagnostic Test ①

#### **ADHD Attention Deficit / Hyperactivity Disorder**

<b>A</b>	If you selected YES more than 3 times, it could be that you are ADAD impulsive.
<b>B</b>	If you selected YES more than 4 times, it could be that you are ADHD hyperactive.
<b>C</b>	If you selected YES more than 3 times, it could be that you are ADHD attention deficient.

### Diagnostic Test ②

#### **LD Learning Disability**

If you selected YES more than 3 times, it could be that  
you have a learning disability.

### Diagnostic Test ③

#### **Autism spectrum, Asperger's Syndrome**

If you selected YES more than 7 times, it could be that  
you have autism spectrum disorder.

<http://haltutatusyougai.net/genin-3/>



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