



JAPAN P&I CLUB

Vol.46 November 2019

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



A Psychological Approach to Safety Behaviour

§1 Introduction	1	§5 What is the difference between safety and a sense of security?	52
§2 Introduction of the lecture, "Why Psychology is Needed"		5-1 What is Safety? (Definition)	52
2-1 The lecturer	2	5-2 A Model of Safety as an International Standard	53
2-2 Why psychology is needed	2	5-3 Three Supporting Factors (From "Thinking Safety", Loss Prevention Bulletin No. 35)	57
2-3 Quiz	4	5-4 A Sense of Security (Definition)	58
2-3-1 Learning Pyramid	4	5-5 Risk Communication (From Safety to Sense of Security)	61
2-3-2 Quiz	6	5-6 Why is there a need to feel "safe" and "secure"?	64
§3 For the older generations who complain about the younger generations, saying "The youth of today..."	12	§6 The Psychology behind Risky Behaviour	66
3-1 Lamenting the youth of today: an historical perspective (https://mayonez.jp/topic/1015332)	12	6-1 Psychological Reactance (Self-efficacy): No. 5 "I won't do what you tell me"	68
3-2 Reason for lamenting the youth of today	16	6-2 Entrainment and Peer Pressure: No. 4 "What will the neighbours think?"	70
3-3 Characteristics of the youth of today (Masaaki Matoba, Human resources development of PHP Institute, Inc.)	18	6-3 Normalcy Bias: No. 3 "I'm special, nothing can hurt me!" (Justification, cognitive dissonance)	72
3-4 Has the number of eccentric new employees been increasing?	21	6-4 Confirmation Bias: No. 2 "Stop exaggerating!"	74
3-5 Developmental Disabilities	22	6-5 Social loafing: No. 1 "Someone will do it for me"	76
3-6 Developmental Disabilities at Sea	28	§7 How People are Motivated	80
3-7 Vocational Problems and Measures to be Taken when Faced with Developmental Disabilities	31	7-1 Human Development Curve	80
§4 The necessity of psychology from an historical perspective	33	7-2 Effective Control	81
4-1 History of Navigation	38	7-3 Operant Conditioning: Behaviour Contingency	83
4-2 "We are the first generation" from a psychological perspective	42	7-4 Maslow's Hierarchy of Needs	88
4-3 Human Brain Capacity	43	7-5 Obedience to Authority	90
4-4 Patterns of Human Behaviour	45	§8 Conclusion	94
		Lecturer and Author Profiles	96

§ 1 Introduction

On this occasion, we introduce our 20th Loss Prevention Seminar titled "A Psychological Approach to Safety Behaviour" which was held in Japan from April to June of this year, 2019.

Since first holding our first Loss Prevention Seminar in 2011 in Tokyo, we now hold seminars every spring and autumn in 16 areas throughout Japan. In particular, since 2013, we have been introducing cases related to accidents, their recurrence prevention countermeasures and so forth, which all tie in with ship operational competency.

Almost 70% of all maritime accidents are said to be caused by human error. Along with damage to harbour facilities brought about by strong gusts of wind and tidal currents during docking work, **on examining the root cause, in most cases this was down to inadequate prior inspection and careless mistakes. More than 90% of all maritime accidents are said to be caused by human error.**

Therefore, if we eradicate human errors, logically speaking, we should be able to cut the number of maritime accidents by 90%. However, because everyone is unfortunately susceptible to making mistakes, forgets, and panics etc. it will not be possible to achieve this owing to the 12 human characteristics that come into play.

As with a car accident that may occur suddenly at a crossing, many are caused by individuals, however, in most cases, this is not the case when it comes to maritime accidents. Rather, it is a chain of human errors that leads to an accident, and unless the error chain is broken, as a result, an accident is sure to occur.

Following further analysis of the accident leads to the recognition that anyone is prone to making a mistake, and that the chain of events that led up to the accident needs to be broken via a method (BRM) that will realise this.

This time we invite Mr. Noritsu Tsutsui, who previously worked for the Ministry of Land, Infrastructure and Transport in Japan, (hereinafter, lecturer) to share his thoughts on the psychology behind human error.

§ 2 Introduction of the lecturer, “Why Psychology is Needed”

2-1 The lecturer

Nobutoshi Tsutsui

Originally from Akashi, Kobe, graduated from Kobe University (Specialization: Law)

Work experience: Vice-Minister of Land, Infrastructure and Transport, at the Ministry of Land, Infrastructure, Transport and Tourism; Kobe District Transport Bureau; Deputy for Port State Control Affairs; Division Director of Seafarers Labour Standards and License Division (provisional translation). Retired in March, 2019. The lecturer established the position of Psychological Safety Coordinator in KOBE and has been engaged in his role, since.



2-2 Why psychology is needed

Although this is a word coined by the lecturer which comes from the famous proverb: “Know yourself as well as your enemy”, this can be interpreted as “Know yourself as well as your mission”, which is the theme this time. This means that you may face difficulties in a variety of contexts, if you do not know yourself and your mission or the personalities and psychology of others and your relationship with them.

The reason the lecturer thought about this and eventually decided to study Psychology was because of the following.



Photo 1

Life jackets Provided by Sanyo Trading Company Limited

As amended in the Seaman and Small Craft Operator Act, the wearing of a life jacket is extended to all “persons engaged in a 1-passenger small fishing vessel (provisional translation)” as per April, 2008.

As Division Director of Seafarers Labour Standards and License Division (provisional translation) at the time, collaborating with JF Hyogo-Gyoren, the lecturer firmly encouraged the fishermen of Hyogo prefecture to wear life jackets.

As an administrative manager, he had explained such ordinances in order encourage people to obey the law. He believed that it was only natural that people follow the law, and that, problems were caused by the people who do not follow the law. However, one day, which was only a few days after a seminar on the wearing of life jackets, unbelievably, there was a fatal accident involving one of the fisherman who attended the seminar. He fell into the water without wearing his life jacket, and consequently died as a result.

The lecturer was extremely shocked. And then realized the following: It is not possible to change another person’s actions by simply quoting the law to them - we cannot enforce people to obey the law, it is not so easy to move people to action. Using the lecture style to try and impose the law on an audience is flawed. This motivated the lecturer to start studying psychology. He believes that the above theme may serve as a foundation and contribute to safety behaviour. It is his hope that anyone reading this will also enjoy the study of psychology.

2-3 Quiz

2-3-1 Learning Pyramid

In this lecture, the participatory approach was opted for, which will increase learning effectiveness. This method asks that the reader answers and thinks about quizzes and questions and their explanations. Although some of them may be tough in some parts of the text, the lecturer hopes that you will try the quizzes and attempt to answer the questions in 2-3-2. Although the answer can be found in the text, please write down your thoughts as they come to you. A perfect answer is not required here, to the contrary, you may learn something new as a result of making a mistake.

Please refer to the below Learning Pyramid (Figure 2), which indicates Learning Retention Rates derived from the National Training Laboratories.

According to the Learning Pyramid, which shows Retention Rates, as findings suggest, learning retention rates (effective learning) increase, the more active and independent the learner becomes.

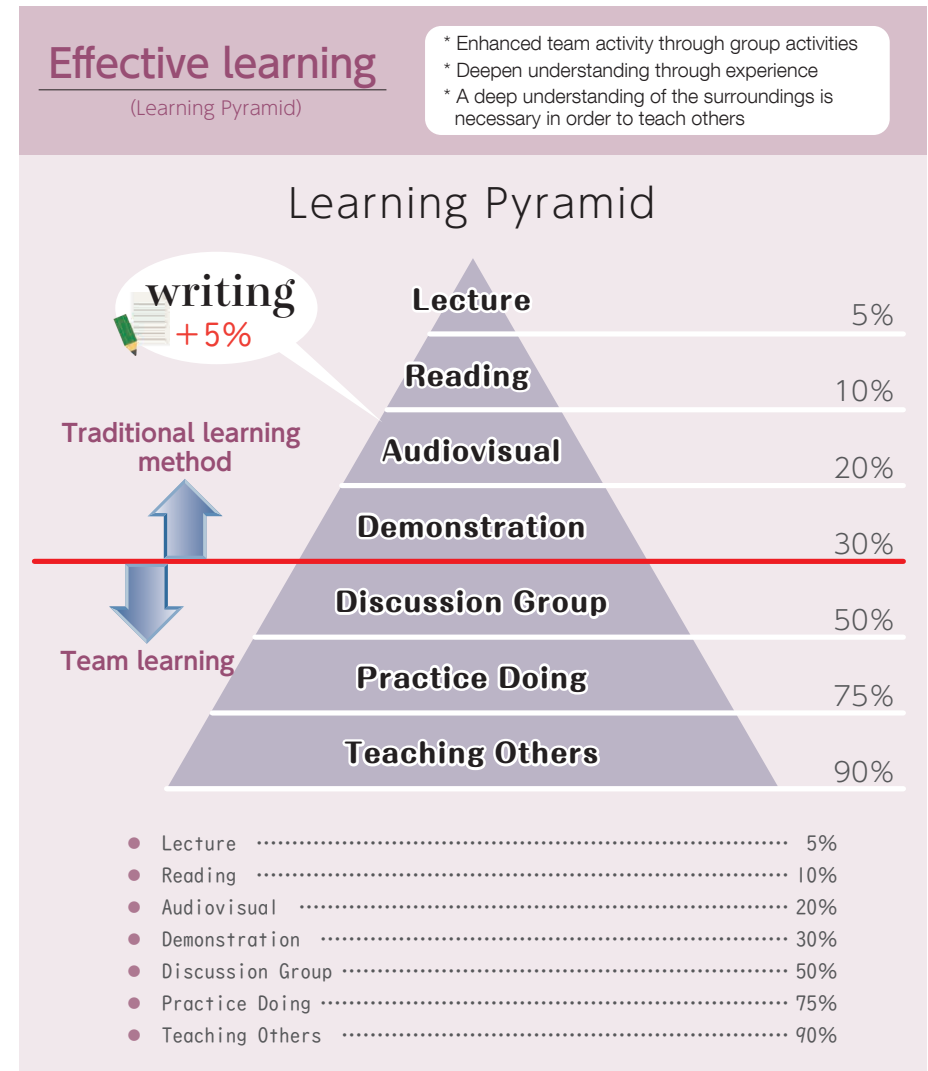


Figure 2 Learning Pyramid

If Writing were between Reading and Audio Visual, the learning retention rate increases by 5%. Please try to write down your thoughts on the Quiz in 2-3-2 before reading through the text.

2-3-2 Quiz

QUIZ 1 The youth of today

▶▶▶ “The youth of today” from an historical perspective. From when did this kind of lament start to become popular? Please write down your own thoughts. This could be around 19XXs, Heisei or the late Showa Era, etc.

QUIZ 2 When was the Industrial Revolution?

▶▶▶ The Universe began with a Big Bang around 14 billion years ago. It is said that our galaxy and earth were born approximately 4.6 billion years ago, and that humans appeared around 500 million years ago. It can be further said that humans significantly changed following the industrial revolution, 250 years before. Assuming that the past 4.6 billion years have been compressed into 1 year, when did the industrial revolution begin? Which exact time, day and month did it occur? Although the answer can be automatically calculated using a calculator or PC, please think about it intuitively.



Figure 3 The BigBang and the birth of the earth

QUIZ 3 At an elementary school's sports festival

▶▶▶ In the riddle that follows, no one is telling a lie. They are all talking honestly. Please read carefully, referring to the picture shown in Figure 4 while clearly imagining the situation.

At an elementary school's sports festival, parents in the age range of early to late 30s, up to their mid 40s, brothers and sisters in the range of kindergarten to children in their early teens, and grand-parents in the range of mid to late 60s are gathered to cheer on the children at the school.

There is a married couple, both in their 50s, and a lady in her 20s at the sports festival. Obviously, she is of a different generation to the rest of the other visitors. The principal who was patrolling felt obliged to inquire and said “Hello.” to the man in his mid 50s.

He said, “Today I am here to see my son's school's sports festival with my wife and daughter. He is a naughty son. Every time he comes back from school, he always has cuts, scrapes and scratches.”

He continued to watch the ground with a smile.

Next, the principal talked to the lady in her seemingly early 50s. She said, “Today, I am here to cheer for my son with my husband and daughter. These days, he is very tall and eats a lot. He is a very active son. He is running around wearing a pair of shorts right now. Oops, he's just tripped over again!” She carefully watched the children in the lower grades participating in a race.

Finally, the principal asked the young lady, seemingly a university student, “Are these your parents standing next to you?” She answered “Yes” cheerfully.

Following on from this, when the principal asked “So, do you have a brother who is much younger than you?”, the daughter suddenly ran her hands through her long hair and stopped answering back. The young lady kept looking up at the sky for a while. Then, with a strained voice and looking into the distance, she said “I do not have a younger brother.”

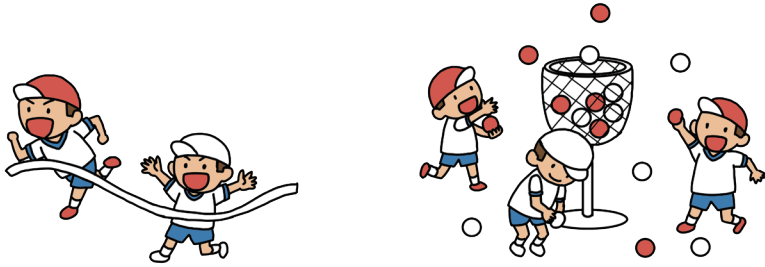


Figure 4 At an elementary school's sports festival

What is the situation here? The question is: What is this parent-child relationship?

QUIZ 4 What is Safety?

▶▶▶ What is "safety"? Please take a minute to think about it and then jot down your thoughts. Then, please choose what you consider to be the correct definition from one of the four choices listed below. (Select the answer intuitively, without looking it up on your PC or smartphone.)

- ① As an international standard, harm is to be entirely eliminated from the scope of activities.
- ② As an international and domestic standard, absolute safety does not exist. A specified activity and its working environment are to be soundly designed with safety in mind.
- ③ As an international safety standard, it is freedom from risk which is not acceptable.
- ④ As a domestic standard, those engaged in safety and those requiring safety can maintain an environment whereby they can enjoy a sense of security.

QUIZ 5 How many risks are there?

▶▶▶ Suggests that there are five risks in the activity field in Figure 5 Risk (1). In order to secure safety, the situation in the below Figure 6 Risk (2) was created by carrying out the following 4 measures applying these 5 risks. How many risks are there in this situation?

- ① Eliminated
- ② Those removed from the activity field
- ③ Reduced
- ④ Isolated

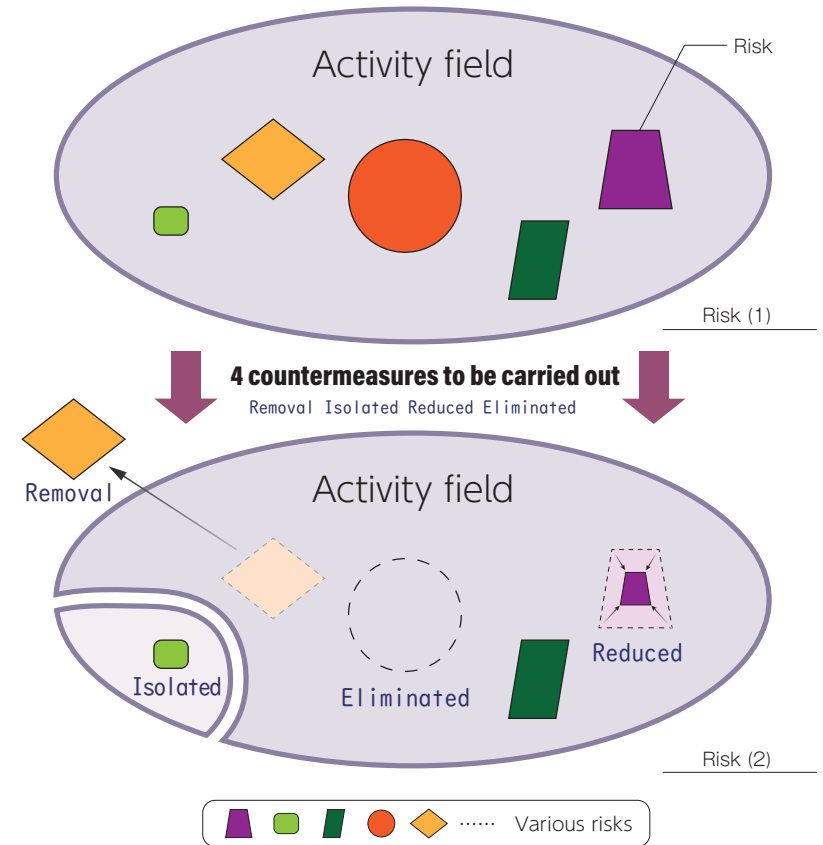


Figure 5 Risk (1)、Figure 6 Risk (2)

QUIZ 6 What is a sense of security?

▶▶▶ Similar to the above ④, What is “sense of security”? Please choose what you consider to be the correct definition from one of the four choices listed below.

- ① As a domestic standard, those engaged in safety and those requiring safety can maintain an environment whereby they can enjoy being safe.
- ② An international and domestic standard does not exist.
- ③ International standard; the securing of trust based on risk communication.
- ④ An international and domestic standard : The products or services have been approved to satisfy safety standards set by an appropriate institute, and a safety declaration has been issued.

QUIZ 7 Why is there a need for “safety” and “a sense of security”?

Please take a minute to think about it and then jot down your thoughts.

QUIZ 8 Effective control

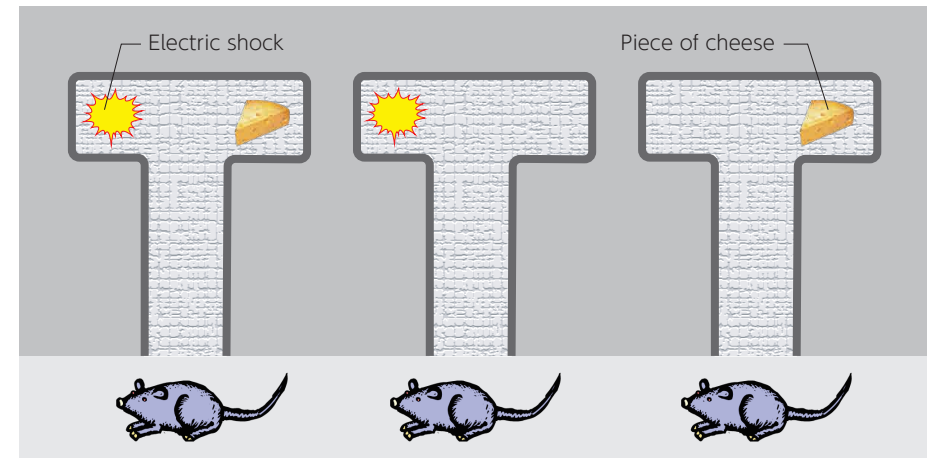


Figure 7 Effective Control

A mouse approaches a T-junction. Now, we want to make the mouse always turn right at the end of the T-junction. This is why there is an electric shock on the left side and a piece of cheese on the right. Which is the most effective of the three in Figure 7 that will always make the mouse turn right?

§ 3 For the older generations who lament the younger generations, saying “The youth of today...”

3-1 Lamenting the youth of today: an historical perspective

(<https://mayonez.jp/topic/1015332>)

Recently, the author often experiences situations whereby senior generations are complaining about the characteristics of the youth of today. Also, most people may have been scalded by a senior citizen at some point for their youthful habits of today. Just as Isono Namihei, who is the stubborn father that appears in Sazae-san (available in Wikipedia), says, “Young people of today are unfit.” This seems to be an expression often used by middle-aged men. It seems that positive comments have been few and far between since this phrase was uttered. Tarnishing them all with one brush just because they are of similar ages is hard on the younger generation.

While young people may be offended by such criticism “unfit”, the lecturer believes that only a few people understand the true meaning of this word and why it is that the older generations say this. Firstly, the lecturer came across an interesting article in the above URL while he was researching the history behind “The youth of today...” The results are as follows:

In Japan

① People who were born in the Heisei Era say:

“My workplace is a slave-driving company. Why do I have to work under these conditions in this day and age. People moan at me as I were a person who received education the easy way, I am really unhappy...” For the younger generation who were born in the Reiwa Era, for example, they seem to be moaning while making excuses.

② People who were born in the Showa Era say:

“When I was younger, my parent(s) did not provide me with an allowance. I moved all the way to Tokyo to attend University and held down a part-time job. I worked very hard without sleeping at night. I rather sent money back home to my parent(s). But I am happy. Young people of today have their parents provide them money, and for some this continues even after they have graduated from university. Why would they be unhappy?”, as they criticise their son or grandson’s generation.

③ People who were born in the Meiji Era say:

“When I was young, it was simply impossible to come up to Tokyo from countryside. What’s more, during the Japanese-Sino and Japanese-Russo wars, I knew it was time for me to enrol when a red-coloured conscription notice arrived. But even under these circumstances, I was happy.” “People who were born in the Showa Era, at best, were evacuated, but they were never asked to fight for their country. They were free to move to the city, and leave their parents behind in the countryside. How can they be unhappy?”, as they criticise those who were born in the Showa Era.

④ Yoshida Kenko (C. 700 years ago)

Criticizes “bizarre (baby) names” in the following way (116th column in Essays in Idleness, also known as The Harvest of Leisure)

“It is really annoying to see a flood of these bizzare names. It’s as if there is a competition to see who can choose the most bizzare name. It is unnecessary to use such unfamiliar and rare characters for naming people. These kinds of unusual and bizarre things always make for a cheap form of entertainment for the intellectual.”



Figure 8 Yoshida Kenko

⑤ The Pillow Book written by Sei Shonagon (c. 1,000 years ago)

“It is lamentable how the youth of today is corrupting our language. It is disgraceful how they feel the need to shorten anything and everything they say.” Criticizing young people’s corruption of the language, especially the use of shortened words.



Figure 9 Sei Shonagon

All of the above can be found in recorded Japanese history. However, looking around the world, we find the following.

In the world

① Philosopher Plato in ancient Greece (c. 2,500 years ago)

Again, criticizing young people’s behaviours, Plato points out their “lack of respect for older people, rebelliousness towards their parent(s), and gang-like violence with a disregard for the law. I fear that the world will become morally corrupt in the future.” The same is probably being said even nowadays.



Figure 10 Plato

② People involved in the construction of the Pyramids in ancient Egypt (c. 5,000 years ago)

People scrawled graffiti on the hidden part of the ceiling and other places not visible, written: “The youth of today...!” This seems to be the oldest record remaining today. As this era was when characters were invented, we can say that this phrase has been in use since the ancient times.



Figure 11 Pyramid

Further, people who were born in the Jomon Era would complain about those who were born in Yayoi Era: “We didn’t know about rice cultivation when I was young, we went to the mountains and rivers to get our food. People starve to death when there are days without food. We lived each day like our lives depended on it. But I was happy.” “The beginning of the Yayoi Era saw the advent of growing rice crops, and we stored our rice in raised floor warehouses. Why would we be unhappy?”

ANSWER

The correct answer to Quiz 1 (2-3-2) regarding as to when such lamenting began: it has been a popular phrase since ancient times since humans developed the ability to express their emotions using language.

So, it is clear to see that this phrase “The youth of today...” is not only applicable to the present day. From the viewpoint of psychology, this can be summarized as follows:

This way of thinking is when a person is always ready to be boastful about how he/she has been living a positive life in such difficult times, as he/she struggled with the era, as if in exchange for youth. More recently, if you tend to be boastful and advise or even push your sense of values onto another, please be aware that this is regarded as a form of power harassment. Thus, if you happen to utter the phrase, **“The youth of today...”**, check that you are not being boastful about yourself at the same time.

3-2 Reason for lamenting the youth of today

As described above, the phrase “The youth of today...” seems to have continued to be uttered since the dawn of humanity, the lecturer would like to look closely at this phrase from the perspective of the social structure and environmental changes that have occurred in recent years. How has this changed in the modern era? The following drivers may have significantly influenced this.

- ✓ Changes in labour population and production capacity
- ✓ Entrance of women into the workforce
- ✓ Information environment brought about by the internet and smartphones

The younger generations have evolved in order to adapt to the new environment. Young people are especially able to use IT, SNS and PCs naturally without the need to refer to an operating manual. In addition, for the Showa generation, although it was quite common for wives to stay at home, it is rather common for both husband and wife to have a double income at present. This generation is now naturally accustomed to a diversity of working styles, including the sharing of housework and raising children.

“Men would be ashamed to be found in the kitchen.”, is now an obsolete word.

Isn't the fact that people can walk without bumping into each other while using their smartphones a typical example of human evolution? While the lecturer does not always applaud such an activity in public places, he admits that the younger generations are well equipped with such advanced skills.

The ability to adapt to a new environment does not come about suddenly, but has developed over the centuries since the ancient times. If this is true, then, because certain skills are no longer used as a result of regression, it seems that the older generations who cannot catch up with those environmental changes tend to say **“The youth of today...!”**

The following are functions that everyone had in the Showa Era, are now no longer applicable as result of de-evolution:

- ✓ Glutton for punishment, to have guts, to have patience and be hungry with ambition (the world-view “Star of the Giants”)
- ✓ Independent thinkers with a sense of responsibility

3-3 Characteristics of the youth of today

(Masaaki Matoba, Human resources development of PHP Institute, Inc.)

A more recent take on the characteristics of the youth of today has been summarized in Figure 12.

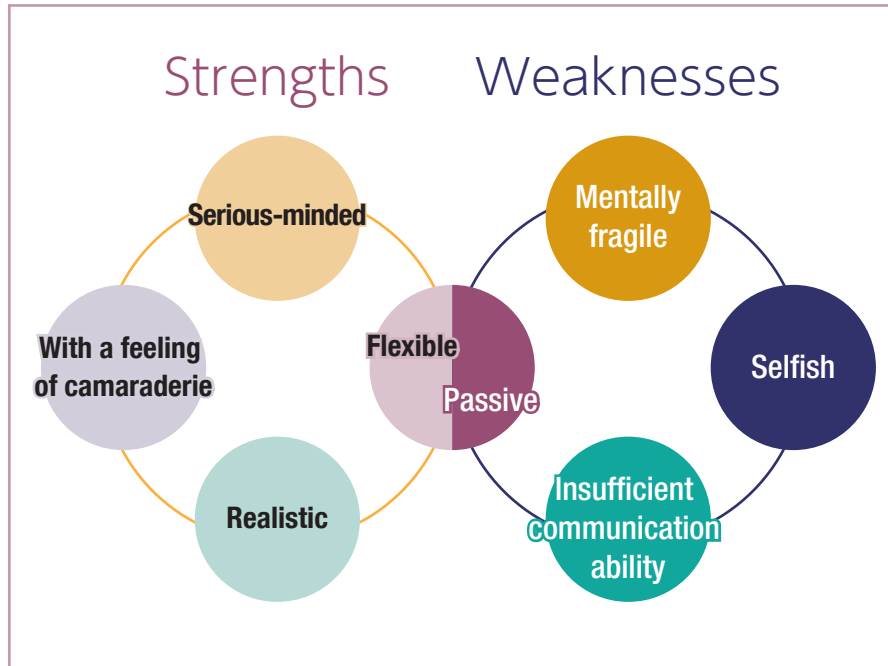


Figure 12 Characteristics of the youth of today

Their strong points are that they are serious-minded, flexible, realistic, and share a feeling of camaraderie. On the other hand, however, their weak points are that they are passive, selfish, and lack the ability to communicate sufficiently.

Considering the reasons as to why these changes are becoming more conspicuous, **the following large environmental changes** seem to play a significant role:

◆ Loss of real communication

An increase in the number of nuclear families

This trend started during the middle of the Showa era when communication with grandfather and relatives and anything to do with the local neighbourhood started to deteriorate.

Local communities

When the lecturer was sneakily taking and eating persimmons from his neighbour's garden in his childhood, the owner caught him red-handed and gave him what for. In the present day, if you did the same, you would be reported to police.

SNS

Over the last ten years or so, it seems that virtual communication and conversations using text (on-line chat) have become the norm because of technology. When the lecturer was a child, there was a boss of the kids in the neighbourhood. And, we all played together, even though we were of different ages, while learning various things through the conversation we had when playing. To the contrary, nowadays, more and more children are playing by themselves on computer games - this has dramatically increased more recently. While we have seen a decrease in real conversation, SNS seems to have come to the fore.

◆ Loss of tolerance experience

The number of city dwellers has increased and, especially in urban areas, opportunities to enjoy experiences with nature have all but disappeared. Even in rural cities, many children seldom experience nature, because they are addicted to video games instead.

Moreover, in the Showa Era, "military-like strict sports clubs" were common. Putting aside as to whether these are good or bad phenomena, these trends are making headway, as can be seen in the changes in the hairstyle of high school baseball players

(previously, a shaved hairstyle was the norm) and their allegiance to fair play.

◆ Loss of chances to think

Before the popularization of the Internet, it was common to look something up using an encyclopaedia or by taking memos while referencing books in libraries. In modern times, the answer can be attained instantly using Google Sensei (teacher) or Professor Wikipedia using a PC or a smartphone. These days, it is rare to see students looking up words in an English-Japanese dictionary.

However, it is too easy to obtain information (answers) these days and people tend to have less opportunity to think by themselves with a tendency to believe information on the Internet without doubt. They seem satisfied that the information is correct without judging as to whether the information from Google or Wikipedia is actually reliable or not. On top of this, we have information that has been intentionally made up, for example, fake news.

These may have a profound impact on severe mental health problems. It is said to be mentally healthy, if one can find the answer to a question easily. However, in the raft of information on the Internet, it is becoming increasingly difficult to find the correct answer we are looking for, which can be very frustrating.

Worse still, we get suggestions via the Internet (SMS) on news, topics and products, which they believe we may make like. But, this only limits what we are allowed to be interested in. Is this backlash for the older generations lamenting “The youth of today!” However, there are older generations that are addicted to the Internet, also, who are in agreement with having such a limited choice.

3-4 Has the number of eccentric new employees been increasing?

Referred to as an age of mental health recently, one in five people are purportedly suffering from a mental disorder. “Psychiatric disorders” mainly consist of Autism Spectrum Disorder (ASD), Asperger's syndrome Attention-deficit Hyperactivity Disorder (ADHD), Learning and Disability (LD), whereas those that are mainly classified under Developmental Disability, Mood Disability and Schizophrenia or Integration Disorder Syndrome, are categorised as Mental disorders. In particular, over the last decade, a worker, who was once simply regarded as an “eccentric person” is now considered to be a person with a “developmental disability”.

People suffer from mental disorders when they are drastically affected by significant environmental changes which cause serious stress, even when the brain itself is not damaged. As per of April 1, 2018, companies including public institutions are obliged to employ persons with disabilities, including handicapped persons and it is especially necessary to properly understand Developmental Disability. (See Table 13)

https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/koyou_roudou/koyou/shougaisha/04.html

To business owners

From April 1, 2018, the mandatory employment rate for persons with disabilities is set to increase.

In the realization of a “cohesive society” where people with disabilities can live freely as members of the local community, all business owners are obliged to hire people with disabilities at a rate exceeding the legal employment rate (Employment rate system for persons with disabilities). This mandatory employment rate will change from April 1, 2018 as follows.

Employers Division	Mandatory employment rate	
	Presently	After April 1, 2018
The private sector	2.0%	⇒ 2.2%
Central government organization or a local government	2.3%	⇒ 2.5%
Prefectural Boards of Education	2.2%	⇒ 2.4%

Table 13 Employment Rate of Persons with Disabilities

3-5 Developmental Disabilities

Developmental Disability is defined as one of the Psychiatric Disorders, and is roughly divided into the following two disabilities.

◆ Mental Disorder

Mood Disability and Schizophrenia or Integration Disorder Syndrome are categorized under this and classified as Manic depression and depression. The illness is caused by not adapting to a new environment which is dramatically different. Treatment, medication and counselling are given by psychiatrists and psychotherapists.

◆ Developmental Disability

Another mental illness, “developmental disability” is caused by genetic factors, pregnancy, abnormalities in childbirth, trauma in early childhood due to physical punishment or experience of a death at a young age.

Although it should be emphasized that environmental changes may be causing people to suffer from development disabilities. Although it was believed that his/her manic depression had been cured by medication, there was a repeat recurrence somehow. The lecturer heard that the reason why he/she could not be cured completely was because the person had a developmental disability.

Regarding a development disability, as there was an abnormality during brain development, a part of the brain does not function as it should. For example, if you cannot throw a ball well, it may be caused by an abnormality in the musculoskeletal or muscle transmission system. However, developmental disability is because of an abnormality in the

thinking part of the brain or brain transmission system. Specifically, he or she cannot talk properly or is not sociable, as a result of an abnormal brain function. In the past, we only mentioned that they were eccentric. However, this is not because of their personality. Again, the current situation is that those people with developmental disorders entered into society without knowing themselves, and they realise their developmental disabilities once the pathological classification is revealed.

The term Developmental Disability has been recognized in society over the last 20 years, but we tend to think that it has been increasing when hearing the term. The lecturer sometimes hears that the number of employees who cannot talk to other people and who cause trouble with customers is increasing; it seems that it was not as noticeable until now. Namely, when we did not use SNS or e-mail like today, we had conversations with people with developmental disabilities. Thus, we might have just thought that “he or she has a strange character” . However, he or she may use email to request holiday leave from their supervisor, even if they are sitting beside one another. It has become common place nowadays that only the sound of people typing on a keyboard may be heard in an office.

Furthermore, despite the fact that he/she may have entered the company with outstanding results, it so happens to be that after while since starting the job, that developmental disorder symptoms start to manifest. It could be that the individual only realized this since becoming an adult (especially since starting to earn his/her own living).

Has the number of the people with developmental disabilities been increasing?

As mentioned above, people with developmental disabilities is nothing new, but it seems that they were not visibly recognizable unlike nowadays. MEXT investigated “Students’ learning and behavioural difficulties” (provisional translation) in 2012.

(Ministry of Education, Culture, Sports, Science and Technology (MEXT) Homepage)
http://www.mext.go.jp/a_menu/shotou/tokubetu/material/_icsFiles/afieldfile/2012/12/10/1328729_01.pdf

According to the results, 6.5% (6.2% ~ 6.8%) of the school children have this tendency which is a significant number. This means that there are 2 to 3 children with a developmental disability in a class consisting of 40 children.

When I asked the lecturer’s first son, who is a teacher at an elementary school, about this, the proportion of those children who significantly show remarkable difficulties in learning and other behaviours may be agreeable with the figures above. However, when including other children who show similar tendencies, the teacher feels that double the number of children may be more true, which means that approximately 13% of all class members: at least 5 children in a class of 40.

Moreover, when mentioning this to a professor at a maritime university, the lecturer heard a surprising reality, that there are students with developmental disabilities or similar tendencies in the range of 26% (double) which appears to be 1 in every 4 students.

Characteristics of People with a Developmental Disability

Regarding Developmental Disabilities, Autism Spectrum Disorder (ASD), Attention-deficit Hyperactivity Disorder (ADHD) and Learning and Disability (LD) are well-known. Among these, ASD was known as Asperger's syndrome until recently. Also, Attention-deficit Hyperactivity Disorder was referred to as ADHD.

It is said that people with developmental disabilities have a biased speciality area, for instance, strong in maths and science, or strong in a particular artistic capacity or language. As for the above mentioned maritime university students, it is natural that a large percentage may have a developmental disability because strength in maths and science are necessary skills for a mariner's training.

People with LD will experience difficulties working in a company with others, however, people seldom work together in the maritime industry. In this text, we will take a closer look at ASD and ADHD within the context of developmental disability. (Source: Materials on mental and developmental disabilities for work supporter training by Ministry of Health, Labour and Welfare) (provisional translation)

① Developmental Disability, Autism Spectrum Disorder (ASD) (Asperger's syndrome)

The following four characteristics are significant.

◆ Faces difficulties in social contexts

Tends to react in an extreme way to others. He/she exhibits either extreme or has almost no reaction to others’ words and actions.

◆ Strong fixations

The range of his/her activities and interests is extremely narrow. Also, it is difficult to understand what is going on. They have a tendency to focus on something very strongly.

◆ Communication disorder

It is often observed that he/she cannot speak effectively or listen well, or they only talk about themselves and do not listen to other's at all. In addition, they cannot read between the lines.

◆ Sensitive, dull and clumsy overall

They are characterized as being sensitive or dull, and either overreact, or show no response at all. While clumsy on the one hand, some are capable of extremely fine work, at the other end of the spectrum. (i.e. fine line drawings)

② Characteristics of ADHD

ADHD manifests the following three characteristics.

◆ Inattention

Makes careless mistakes, does not listen to others, cannot complete one task, cannot make a promise and often forgets; defects that the individual is to overcome as a member of society.

◆ Hyperactivity

Cannot stay still, appears restless and fidgets nervously

◆ Impulsiveness

He or she cannot wait his or her turn and will answer in the middle of

a question. Even when having a conversation at a coffee shop, they frequently tend to interrupt someone in the middle of talking. For those in particular who tend to have this tendency, even at parties, the lecturer hopes it may help one to try and suppress this tendency by remembering “consciously that you have such impulses” .

From the lecturer's experience, there are other ways to identify if a person has a developmental disability (other than those already mentioned) below:

① He/she cannot eat everything in a balanced manner.

For example, on observing that person eating a set meal (teishoku), for example, a pork cutlet on top of a bed of cabbage, they may start eating only shredded cabbage. And then only the pork cutlet... After that, only the rice (perhaps with the odd pickle occasionally)...then, finally, drink the miso-soup down in one go.



Photograph 14
Pork cutlet set meal

② Exhibits peculiar eating habits when eating Curry and rice

Starts eating either only the curry mixture or the rice. Or, he/she may start eating only after having mixed the curry mixture and rice together.



Photograph 15
Curry and rice
(Letutuceclub.net)

If any recruitment officers happen to be reading, try asking the candidate to eat a set meal or curry and rice at the time of the recruitment exam. (Note: this should not be intentionally referred to as part of the elimination process.)



To follow is another example of the lecturer's experience with a person with a developmental disability.

One day, an officer with prominent signs of a developmental disability made a mistake at work. Then, the lecturer, who was his superior (section chief) at that time, asked him to come and see him in a private room and gently warned him in a nonchalant way while trying to contain his anger, “I imagine that prioritizing tasks proved to be difficult for you this time. Let’s be careful next time.” However, the officer called the lecturer the following morning, saying “I cannot come in today, because your warning was too strict”, and did not come to the office for three days.

A Similar occurrence happened for this particular officer in a different department. That section chief officer remanded him in front of all the other members of staff. As a result, he took six months leave of absence, the lecturer heard.

When needing to talk with not only an officer with a developmental disability, but also a subordinate about inappropriate action etc., if possible, one should use a private room and talk to him/her on a one to one basis in a peaceful manner. This antiquated way of reprimanding someone in front of all the members of staff nowadays is referred to as a “public execution”, but, this must never be done. This is “doing more harm than good”.

3–6 Developmental disabilities at sea

On 1 January, 2012, the Ordinance for Enforcement of Mariners Act (provisional translation) was amended. Regarding the “Seafarers health survey (provisional translation) in January 2012”, some parts of their guidance issued by the Safety Management and Seafarers Labour Division in the Maritime Bureau of the Ministry of Land, Infrastructure, Transport and Tourism will be introduced here.

<http://www.mlit.go.jp/common/001011633.pdf>

- **Ordinance for Enforcement of the Mariners Act (provisional translation)**

Considering the degree of the disability, background and work assignment, those who are deemed to be unable to appropriately recognize, judge and communicate while working due to a visual impairment, language or mental **incapacity**.

- **Medical examination pass standard chart**

A suffering from hallucinations, delusions or **any other prominent mental symptoms**, if allowed to work yet who has been judged to **compromise the safety** of oneself and fellow workers, **will not pass**.

In the eyes of the law, anyone clearly suffering from a developmental disability will not be able to board a vessel. However, of the doctors issuing a seafarers health certificate, there are very few doctors that are trained in psychology. Thus, if a candidate exhibits only minor symptoms, it is likely that they will pass the examination and obtain a health certificate.

According to the below [STCW Guide for Seafarers A-1-9 Criteria for Physical Fitness], seafarer should:

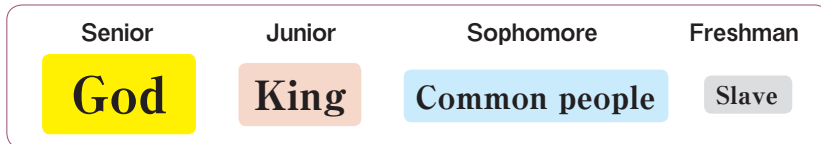
- 2.3 Have no medical condition, disorder or impairment that **will prevent the effective and safe conduct of their routine and emergency duties on-board.**
- 2.4 Are not suffering from any medical condition likely to be aggravated by service at sea or **likely to render the seafarer unfit for such service** or to **endanger the health and safety of other persons** on-board.
- 2.5 Are not taking any medication that has side effects that will impair judgement, balance or any other requirements for effective and safe performance of routine and emergency duties on-board.

See below for [MLC1.2 Medical Certificate]

Basically, regarding an organization that has authority within member states, it is required to develop national regulations that secure the requirements of the Convention.

There is a system in place for educating seafarers that prevents those with developmental disabilities from becoming a seafarer. This is known as the Dormitory System.

Those readers that have experienced the Dormitory System may feel traumatised when seeing these words:



A Dormitory System is a place where students in their Freshman year through to Seniors all live together in an unreasonable environment to learn about themselves, their strength and resilience naturally, and those students who find it intolerable naturally leave the dormitory and consequently the training ground.

The idea behind these dormitories was to prepare seafarers for ship operation in unreasonable conditions, and they were a suitable environments to achieve this, but these days there are no more compulsory Dormitory Systems, and if one does enter a dormitory, they would be in a single room.

Moreover, in April, 2018, following the fatal falling of a cadet on-board the sailing ship Nippon Maru, some in the maritime industry have voiced concerns that there should have been more practical training available and that climbing the mast was outdated and dangerous. Some are calling for a complete ban on the use of sailing ships for resilience training.

As a result, we have seen an increase in the number of qualified mariners who have not learned about resilience or a sense of coherence. A connection is yet to be made, but it is

worrying how there seems to have been a rise in the number of cases, starting with those wishing to quit only after having just started, to those that have suffered from neurosis and even suicide.

3-7 Vocational Problems and Measures to be Taken when Faced with Developmental Disabilities

As mentioned earlier, those with developmental disabilities exhibit the following characteristics. It is important to understand these if we are to go about finding a solution.

- ◆ When he/she is unable to understand utterances only and abstract instructions

 Give concrete instructions (when by, what is to be done, what is to be used etc.) and instruct him/her to complete each task one at a time, occasionally asking them to create a detailed report.

- ◆ When implicit rules and somewhat vague directions are not comprehended

 He/she will understand if the implied is clearly stated. This may involve rewriting the manual or book of procedures.

Through the author’s years of teaching experience, he goes on to show how what may be understood by someone born in the Showa Era may not be interpreted in the same way by someone born in the Heisei Era.

On the day just before an internal audit it was necessary to have some important documents copied. The instruction was “These are very important documents for tomorrow’s audit, please burn (make) copies of them”. He actually burnt it in the incinerator.

Instead of using such an ambiguous term, what the lecturer now wishes he said was, “Please make X number of photocopies”.

◆ When he/she is unable to undertake a number of different tasks at once

This is related to the previous two points. Be sure to explain thoroughly and to provide work in manageable chunks. By understanding people with developmental disabilities and by allotting them prescribed and precise work, this may help prevent human errors.

Here we have learned about the younger generation of today and people with developmental disabilities. To sum up, the lecturer believes that the following measures should be taken.

It is important to understand the environment in which the learner was raised.

When the lecturer's eldest son visited the home of a child with developmental disabilities, it seems that the child's parents also exhibited such a tendency. We may infer that a "monster parent" may also have the same tendency.

To understand that the working place should be a place where employees with developmental disabilities are comfortable and that this should be the same for the rest of the employees as well.

People with developmental disabilities have the potential to become assets to the company if they find the right place. Also, this could lead to a review of procedures and regulations.

It is important to improve the work environment to utilize their precision and commitment and include this in the company's "mission". Some psychologists predict that "people with developmental disabilities will develop the 21st century".

§ 4 The necessity of psychology from an historical perspective

The Universe began with a Big Bang around 14 billion years ago. It is said that our galaxy and earth were born approximately 4.6 billion years ago.

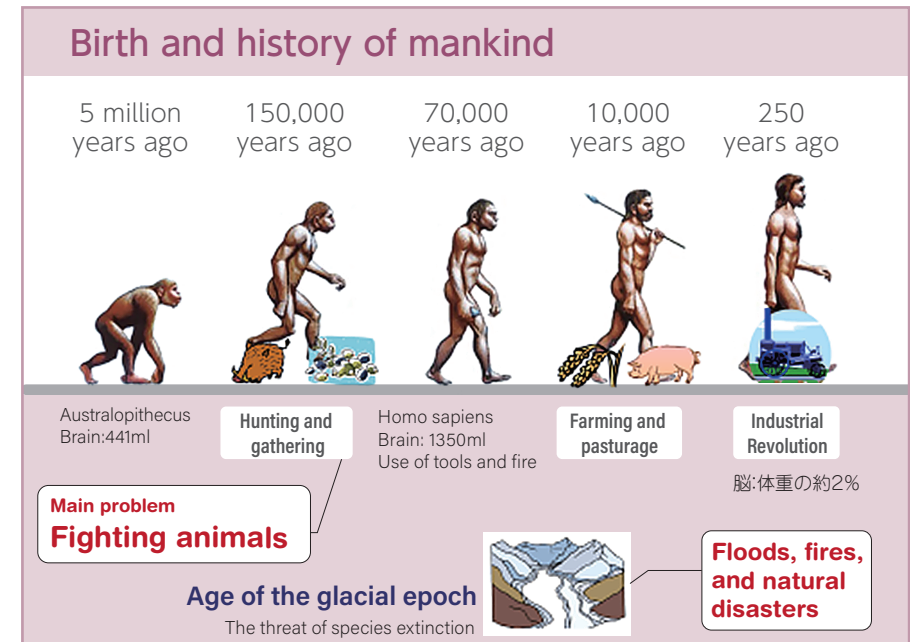
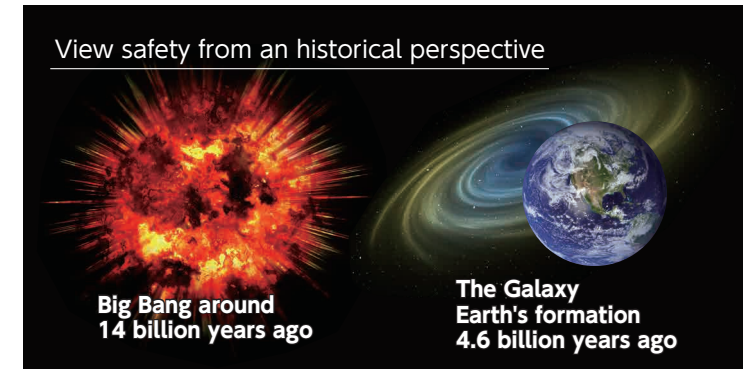


Figure 16 Evolution of the human race

It is said that the birth of the human race was approximately 5 million years ago. The human race at that time, Australopithecus, had a brain that weighed only around 441 ml. Hunting and gathering began approximately 150,000 years ago. The main problem they faced in this era was fighting against animals. Then, about 70,000 years ago, the human race evolved into homo sapiens, when they started using tools and fire. The weight of the brain at this time increased to around 1,350 ml.

Climate changes during these times were dramatic. In the past 400,000 years, the earth saw the glacial epoch repeat several times and warmed for a short period every 100,000 years. During this period, the glacial epoch (the era when there are glaciers all over the earth) and the glacial stage (the coldest period in a glacial epoch) were repeating. Although this glacial epoch comes along in cycles of 11,500 years, the last glacial epoch was about 11,500 years ago. Therefore, the present period is the age of the glacial epoch, and we are about to move into the next glacial epoch.

Farming and pasturage began approximately 10,000 years ago, and the problem of fighting animals was replaced by floods, fires, and earthquakes etc. Although there was a threat of species extinction during the glacial stage, humans managed to overcome this.

This is the reason why our DNA tells us to take in and not discharge excess energy.

At present, without exercising appropriately, middle-aged people tend to gain weight because of the slow down in their metabolism. This mechanism works because of this DNA.

Industrial Revolution

In 1769, which is just 250 years ago, a Scottish mathematician and engineer, James Watt invented the steam engine, which was epoch making for humanity.

Now, mechanical disasters were added to floods, fires and earthquakes, which had been troublesome for humans.

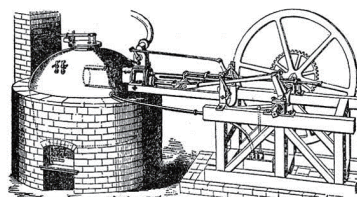


Figure 17

Industrial revolution and James Watt

ANSWER

Only 250 years have passed since human beings came into contact with machines. Quiz 2. Regarding the question, "If the lifetime of our planet (4.6 billion years) was compressed into 1 year, when would the Industrial Revolution have started?" The answer is 31 December at 23:59.58.003. The Internet, which began in 1985, would have started on 31-Dec at 23:59.59.008, only 0.02 milliseconds up to the end of the year. Also, if the lifetime of homo sapiens (70,000 years) was compressed into 1 year, 250 years would equate to 1 day 7 hours 17 minutes 8 seconds and 006 milliseconds, and the Industrial Revolution will have started on 29-Dec at 16:51.04.

Looking closely at the relationship between machines and human beings since the Industrial Revolution, technology has become highly developed and complicated. The speed of development is advancing exponentially. Consequently, the causes of disasters have also become complicated. Regarding a recent electric controlled engine, there is an accident report, of which a large-sized ocean-going vessel stopped its operation for a few days because it took time to investigate the cause which happened to be a tiny faulty micro chip.

Also, huge and disastrous disasters are conspicuous. The crash of one aeroplane caused more than 500 casualties.

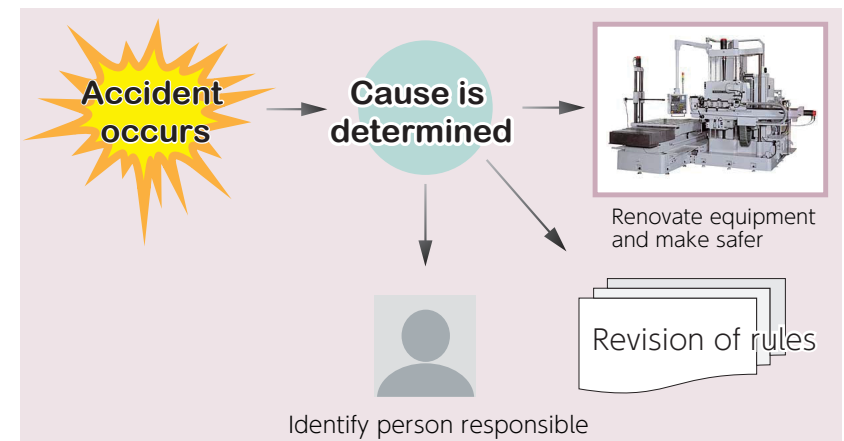


Figure 18 Cause investigation graphic

Currently, in the event of an accident occurring, the related personnel carry out an investigation to determine the cause. As the following three actions are to be taken, we must imagine that the bud of a potentially new accident is existent as a result these actions taken.

◆ When there is mechanical trouble

Renovate equipment and make safer.

As a result, the equipment will be more complicated and will require a higher level of expertises when operating. Educational expenses for companies will be significantly higher. On the other hand, crew who are required to handle complicated equipment may get stressed, which in turn may be sowing the seeds of a new mistake to take place. Also, in the case of the repaired equipment being out of order again, the difficulty involved in trying to fix it will be amplified, which may cause an accident (from bud to shoot).

◆ Revision of operation manual and regulations

If there is a defect in the manual or regulation, it is to be revised.

Procedures and laws have been revised, multilayering has begun, and recordability has been requested. As a result, administrative work, including paperwork, will increase. This may again put further stress on the crew, and, in reality, recording will be repeating itself, of which it may lose substance in the operation manual and regulations. The lecturer is afraid that this may again form a new bud that may lead to another accident.

◆ Identify the person in charge

Identify the person who caused the accident and punish him/her.

The train accident that occurred on the JR Fukuchiyama Line in 2005,

triggered the importance of how it will have affected the victims emotionally. Then, a manhunt to bring the perpetrators to justice was carried out. However, the lecturer believes that this kind of investigation will not get to the “real” heart of the matter behind the cause of the accident. As explained in Loss Prevention Bulletin No. 35 “Thinking Safety” , there are still “grave-post type” safety measures that are frequently seen; analysing only technical aspects and closing the case file by punishing the person in charge, may only make the crew feel wilted, which causes stress, of which a new accident may occur (a shoot from the bud).

As is summarized in Figure 19. It seems that on the part of the hardware side, the revision of handling manuals and regulations are increasing more and more and that aspects related to humans are shrinking. This seems to be mounting to a serious amount stress.

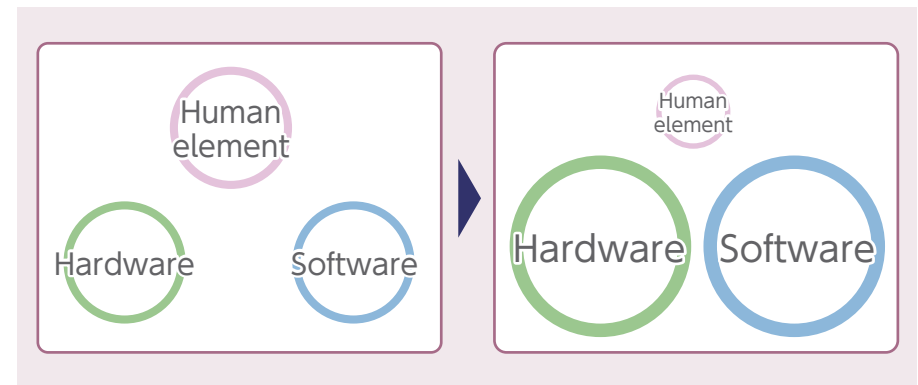


Figure 19 Cause investigation graphic

4-1 History of Navigation

In ancient Egypt around c.3000 BC, ships were built by applying planks to the skeleton. This is a prototype of current vessels.



Figure 20 Ancient Egyptian vessel: prototype of a ship

① The history of navigation

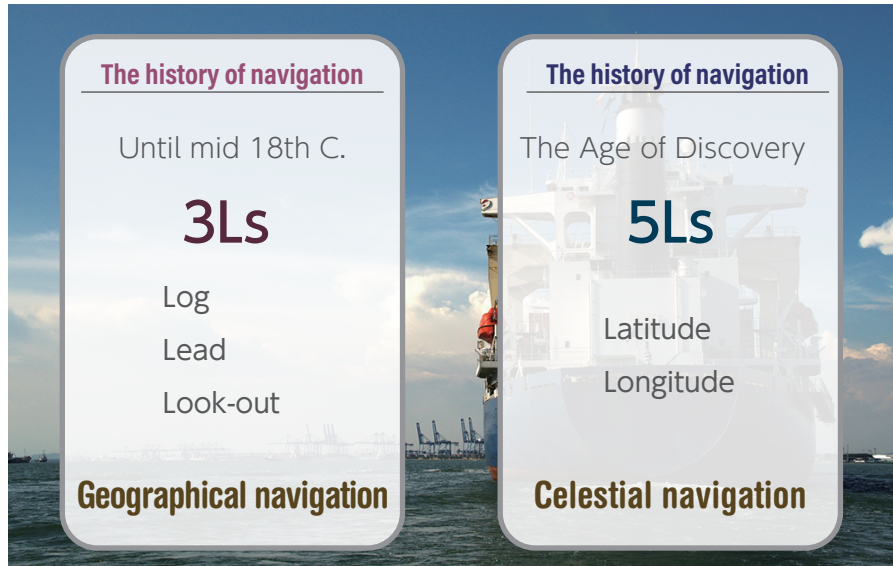
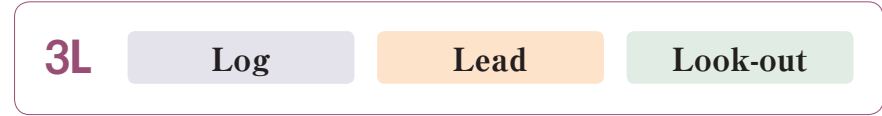


Figure 21 The history of navigation

Until the middle of the 18th century, there was mainly coastal navigation and geographical navigation referred to as the 3Ls.



Later, in the Age of Discovery, Latitude and Longitude are discovered and celestial navigation starts. With the addition of the above 3Ls, it is now known as the 5Ls.

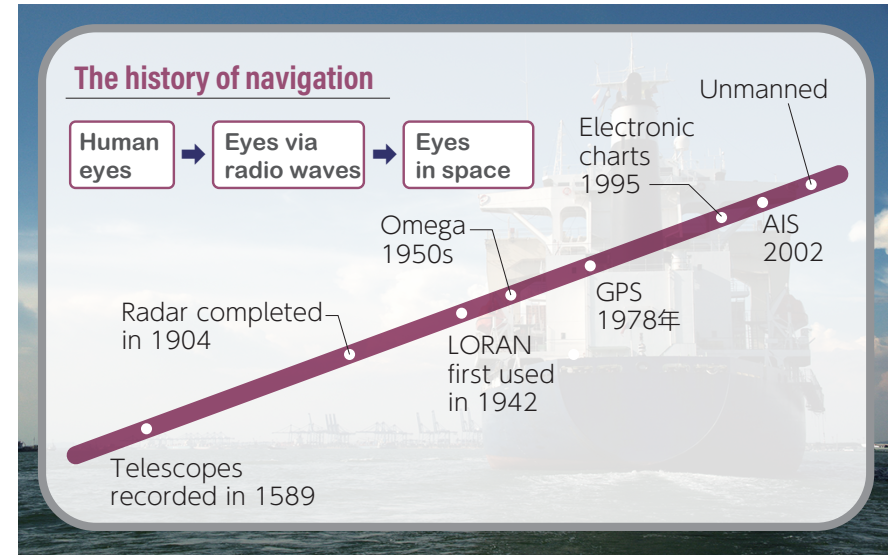


Figure 22 The history of navigation (Look-out and positioning)

It was in the 16th century that people started using telescopes; geographical and astronomical navigation had been used until then.

In the 20th century, Radar was developed. Then, LORAN, Dacca and Omega systems were developed as nautical instruments. At present positioning is carried out by GPS. Moreover, electronic charts and AIS have been developed. Research on unmanned ships has started and it will no longer be a dream for a ship to navigate without crew in the near future.

② The history of power systems

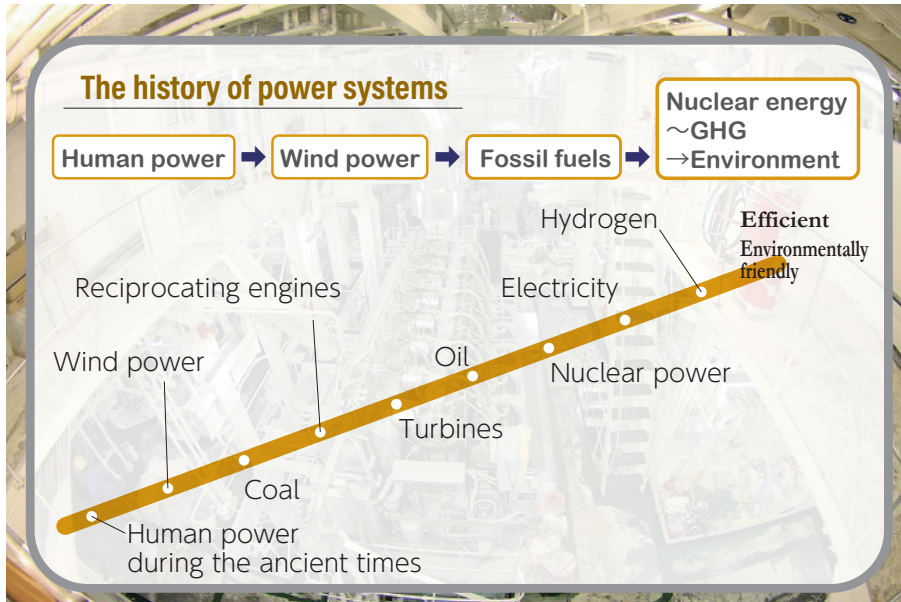


Figure 23 The history of power systems

Looking through the historical lens of power systems, we can see that they started with human power during the ancient times and progressed to sails on a sailing ship powered by the wind in the Age of Discovery. The use of coal and a reciprocating engines were developed during the industrial revolution. Then, reciprocating engines were replaced by turbine engines. After oil started to be used, coal which was manually put into the boiler, was replaced with automatic fuel injection. This also led to the development of the internal combustion engine (diesel engine) and nuclear-powered ships. Currently, electric propulsion engines are now in practical use. The development of engines using hydrogen have also been making progress.

Human ⇒ wind power ⇒ fossil fuels ⇒ nuclear energy ⇒ and hydrogen powered systems have become very efficient over the years and are becoming more environmentally friendly.

③ The history of information processing systems

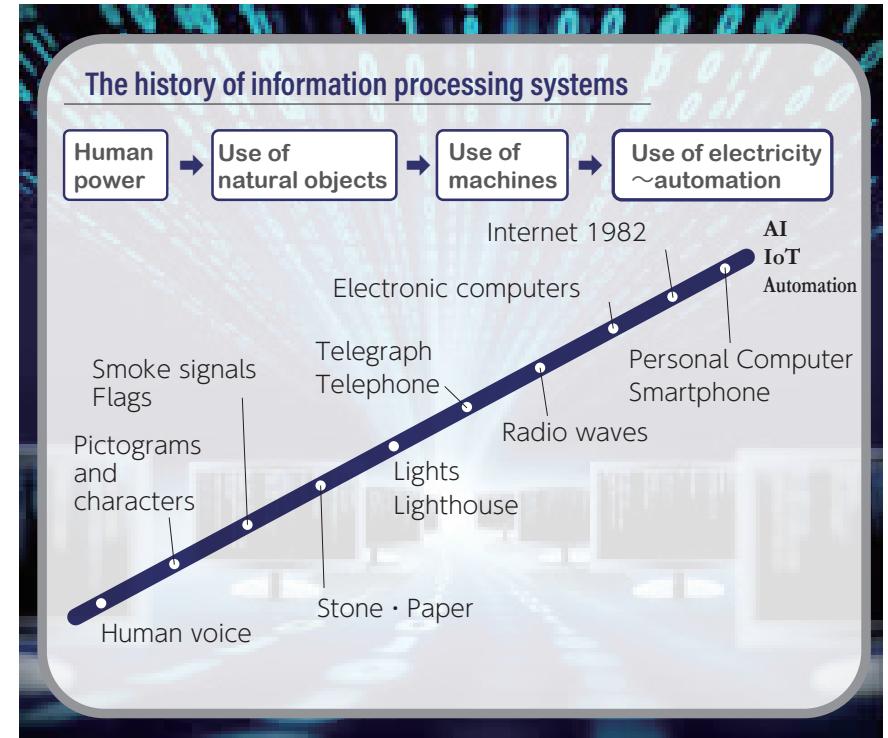


Figure 24 The history of information processing systems

In the ancient times information was relayed directly by voice. Then characters and pictograms written on stone and paper began to be used in Egypt c. 5,000 BC. In addition, smoke signals and flags were used as a means of communication between distant places. Lights and lighthouses were also developed. In 1825, a painter and inventor, Samuel Finley Breese Morse (1791-1872), received a message from his father which was handed over to a messenger and sent by horse. As the message informed him that his wife was in a critical condition, Morse immediately headed to their home in New Haven, but it was too late when he arrived as she was already buried. Morse, who was deeply hurt by not being able to be by his wife's side during her final hours, started researching high-speed long distance communications methods, and invented a telegraphic instrument.

Also, Alexander Graham Bell (1847-1922) invented a communications device in 1876, which went on to become the commonly used telegraph and telephone.

Later, a satellite communication system (Inmarsat) was introduced in 1979.

Then, the Internet, which can be said to be one of the greatest revolutions of all time, was developed in 1982. The means of communication has rapidly evolved from electronic computers to personal computers and now smartphones. Today, we are entering the era of artificial intelligence (AI) and Internet of Things (IoT).

4-2 “We are the first generation” from a psychological perspective

As described above, the period of technological innovation has seen rapid progress from minute to minute, and it has been only 40 years since Inmarsat was introduced, yet the speed at which it has evolved is striking.

Meanwhile, our DNAs which were inherited from 70,000 years ago would not change in the last 40 years. Thus, we should still regard ourselves as being **“the first generation.”** Namely, it is important to be conscious of the following:

- Our relationship with the machine has not been integrated into our genes.
- Regulations and instructions are only measures that prevent the same accidents that occurred in the past from reoccurring.
- It is difficult for humans to grasp and follow all changes in technology and the environment.
- To keep up with these changes, we constantly need education, training, learning, experience and research.
- Accidents based on human characteristics that cannot be prevented by science and technology will not be eradicated.
- Still, accidents due to human error have occurred. In order to prevent such accidents from occurring, it is important to learn the principles of human behaviour, which is why the study of psychology is important.

4-3 Human Brain Capacity

The reason why we can say that the human brain is a very inefficient organ is because it occupies only 2% body weight, yet consumes 20% of all the energy. When we were students and studying for examinations after dinner, most of us would have felt peckish around midnight. Why did we become hungry by simply sitting in front of the desk? It is because the brain had consumed most of the energy which we had taken in and that we were suffering from a shortage of energy.

Our brains are programmed to save energy as much as is possible, while aiming to achieve maximum energy consumption. The following are examples of its energy-saving mode programme:

- Avoids thinking deeply (it gets tired)
- Is not good at thinking logically
- Forgets and does not remember easily
- Not able to reject our assumptions
- Tends to believe that our choice is correct
- Tends to make choice based on first impression etc.

Presumably, the “Twelve human characteristics” which were introduced in “Thinking Safety (Vol.35)” have a deep connection with the energy-saving mode programme of the brain..

12 human characteristics

- | | |
|--|--|
| ① Human beings sometimes make mistakes | ⑦ Human beings are sometimes in a hurry |
| ② Human beings are sometimes careless | ⑧ Human beings sometimes become emotional |
| ③ Human beings sometimes forget | ⑨ Human beings sometimes make assumptions |
| ④ Human beings sometimes do not notice | ⑩ Human beings are sometimes lazy |
| ⑤ Human beings have moments of inattention | ⑪ Human beings sometimes panic |
| ⑥ Human beings sometimes are sometimes only able to see or think about one thing at a time | ⑫ Human beings sometimes transgress when no one is looking |

Table 25 Twelve Human characteristics

4-4 Twelve human characteristics

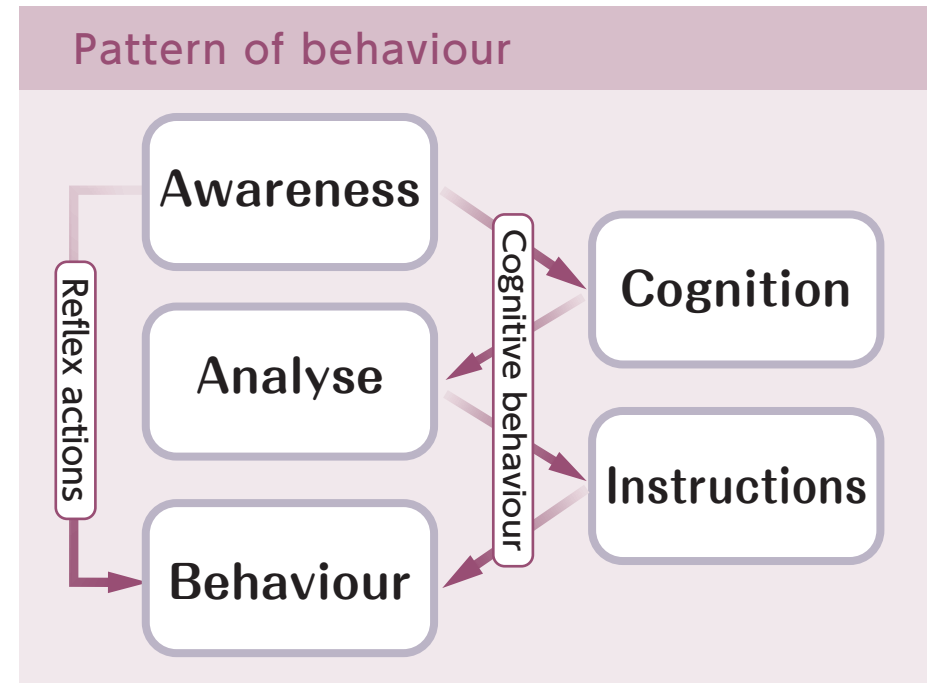


Figure 26 Patterns of human behaviour

Figure 26 illustrates this. There are two patterns of human behaviour, one of which is reflex. A couple of examples of conditional reflexes are those such as tapping the knee to make the shin move, or closing one’s eyes when something flies towards them.

However, what we normally do is called cognitive behaviour. Awareness comes first, then cognition, analysis, instructions and then behaviour.

Firstly, awareness will be explained. Awareness means “visible” or “audible”. In other words, “visible ” is the state when light reaches the retina. Also “audible” is the state when sound waves are vibrating the eardrum.

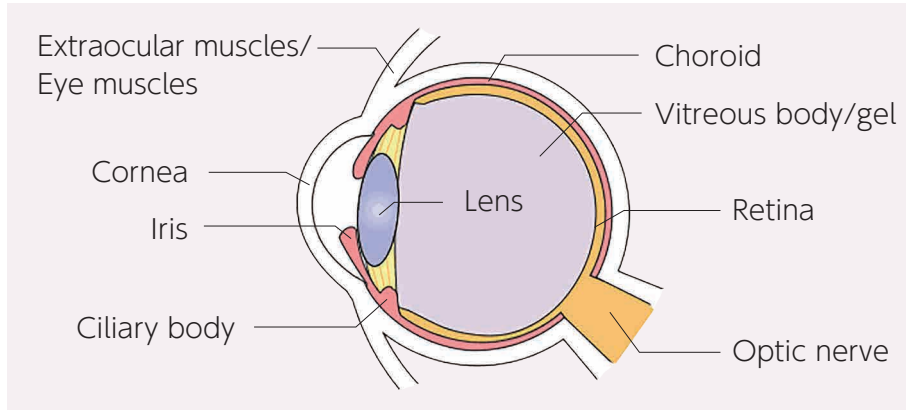


Figure 27 Retina

Meanwhile, we only select and recognize what we choose to “watch” or “listen” to because it is of interest to us.

Field of vision

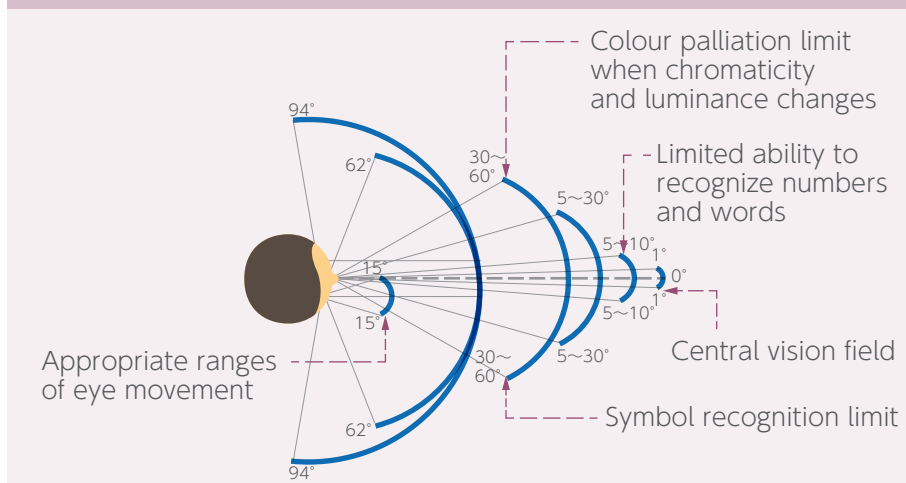


Figure 28 Cognition

For example, when you are concentrated on reading a book, the visible range is only 5 to 10 degrees on both left and right sides, as shown in Figure 28. You may not even notice if someone is approaching you.

The lecturer held a seminar titled “A Psychological Approach to Safety Behaviour” at 16 locations in Japan from April to June of this year, 2019. In the seminar, the participants experienced the following experiments about optical illusions.

He used 3 different illusions, including the Delboeuf Illusion, which is when two pieces of meat of the same size are placed on different sized plates; the meat on the small plate looks larger. The second was the Ponzo Illusion; when the actual size of an object is the same, but looks larger when on the horizon at the top of a triangle, and smaller when it is near the bottom of the triangle. The last illusion was the most famous one that consists of two straight lines of which both have arrows pointing inward or outward at the ends (Müller-Lyer Illusion). The lecturer changed the length of one line slightly on purpose in jest, as most of the participants new it was an optical illusion. This was apparent by the fact that most raised their hands indicating they though they were same in length. There were few participants who thought they were different lengths. Naturally, most participants judged they were the same lengths, including the fourth one whose length had been changes intentionally. When analysing this psychologically, it can be understood that the following cognitive behaviours were apparent.

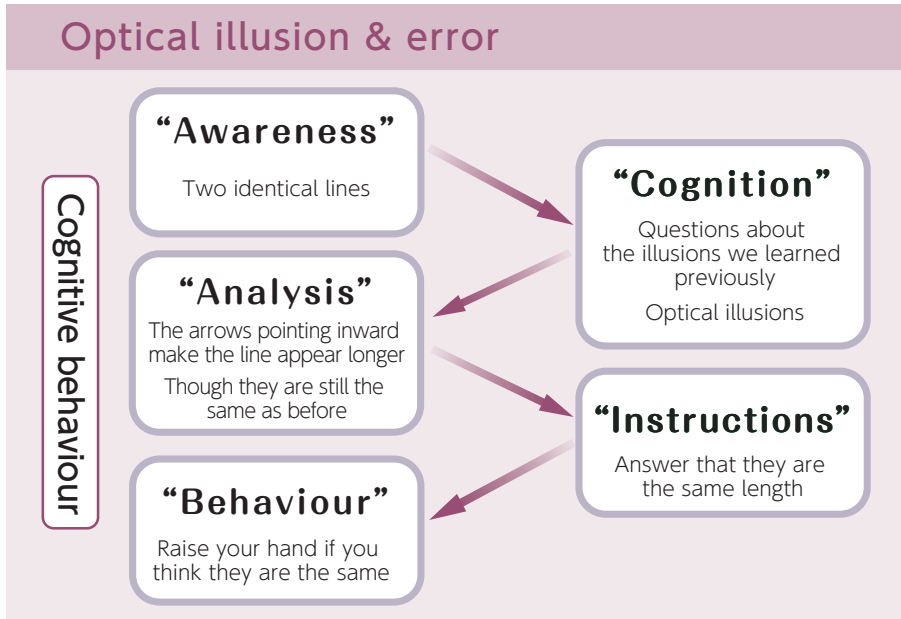


Figure 29 Optical illusion & error

- ① As visual information (visible), the two identical lines and arrows reach the retina.
- ② Because the questions about the illusions are those we learned about (experienced) previously, we recognize (see) these illusions.
- ③ Even though we feel that the arrows are pointing inward making the line appear longer because of the illusion, the previous three illusions were all the same.
- ④ The brain instructs your right hand to answer "they are same" with a weak electric signal.
- ⑤ Recognizing the lecturer having said, "Do you think they are the same?", you behaved in a way so as to raise your hand.

These different five actions occur instantly. Therefore, cognitive behaviour could cause errors. For example, cognitive disfunction regarding colour, size and perspective. In addition, it is another cognitive deficit to think it is a different subject. Regarding the

Müller-Lyer Illusion, though the audience was expecting the lines to actually be the same length, the lecturer changed the length of one of the lines slightly on purpose in jest.

In other words, this can be regarded as analysis deficit. Also, questions may be ordered differently, wrong predictions and even instructions that that not everyone can follow. The causes of error behind cognitive behaviour may be influenced by the following disfunctions and deficits:

- Colour, size and perspective (cognitive disfunction)
- Different subject (cognitive deficit)
- Assuming and patterns (analysis deficit)
- Order and prediction (analysis and instruction deficit)
- Default, the impossible and another behaviour (behavioural deficit)

These parts are the "root cause" of human error. If you think about it in this way, you can see the original cause of human error. Bias and intuition are collective human strengths and this explains why people raised their right hands. The lecturer told everyone to not feel embarrassed, as it was testimony that they are fully developed.

However, it is essential to know that sometimes this can be a hindrance when it comes to satisfying or perfecting safety behaviour. It is also important to ensure that we measure lengths or distances; if length, be sure to use a ruler rather than guessing intuitively, and if it is the distance between your vessel and another, be sure to use the radar without allowing yourself to be confused by the strength of the lights and the size of the other ship.

ANSWER

To exemplify this Cognition, we were shown Quiz 3: At an elementary school's sports festival. **The correct answer being that the son is an elementary school teacher and older brother of the young lady.** Were you able to come up with the correct answer? There were about 540 participants in total at the seminar, but only 8 answered correctly.

The explanation intentionally suggests that their son is an elementary school boy. "He is a naughty son. Every time he comes back from school, he always has cuts, scrapes and scratches...These days, he is very tall and eats a lot. He is a very active son. He is running around wearing a pair of shorts right now. Oops, he just tripped over again!" Also, the lecturer led the audience to believe that there was something complicated about this family judging by the daughter's response.

The parents mentioned that they have a son and the daughter declared that she has no younger brother, which are all key to unravelling this riddle. Their son is one of the teachers. Moreover, with the help of visual aids (Figure 30), you were led to believe that the son was an elementary school child.

This is known as "confirmation bias" which makes it difficult for one to undo the impression that one has already pictured and has set in one's mind. (Details will be described below.)

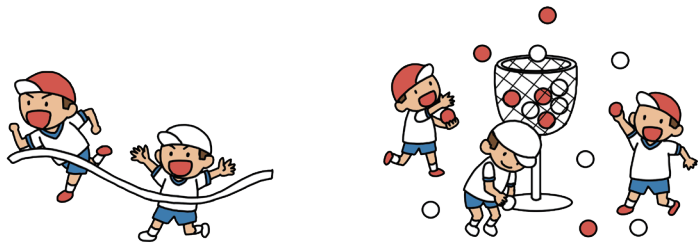


Figure 30 Confirmation bias : At an elementary school's sports festival

Almost all kindergarten children would come up with the correct answer, if we tested them with the same quiz. Because their capacity to listen and think of an explanation comprehensively has not developed yet. There is no shame in assuming and thinking instinctively, because it is a proof of human experience and growth. However, as described above, such kinds of biases sometimes interfere, when we need to be thinking more objectively to ensure safety - such as ship operations.

* Bias

A term which is used to refer to the problem of perception that is caused by unbalanced information obtained by not only trends, biases, preconceptions, biases in data, etc., but also assumption factors which bring about specific biases in thoughts and judgements.

§ 5 What is the difference between safety and a sense of security?

5-1 What is Safety? (Definition)

ANSWER

Quiz 4 Definition of safety: 3. As an international standard, it was said that, ③ **“There is no freedom from unacceptable risk”** .

In 1990, the International Basic Safety Standards 1st Edition (ISO/IEC GUIDE 51:1990) defines that “Quality is not a synonym for safety and consequently the respective roles of quality and of safety should not be confused.” Thus, “there can be no absolute safety.” It was assumed that safety was secured as long as the quality was improved until then, but the actual number of accidents did not decrease at all. As psychology and human errors were studied, safety was defined as “There is no freedom from unacceptable risk.”

Later, in 2014 (ISO/IEC GUIDE 51:2014, it was redefined as “freedom from risk which is not tolerable”. Original citations below:

- ISO/IEC GUIDE 51: 1990 freedom from unacceptable risk
- ISO/IEC GUIDE 51: 2014 freedom from risk which is not tolerable

The following NOTE was added when it was redefined in 2014:

NOTE : For the purposes of this Guide, the terms “acceptable risk” and “tolerable risk” are considered to be synonymous. Tolerable risk; level of risk which is accepted in a given context based on the current values of society.

“It is defined as a standardised level of risk which is accepted in a given context based

on the current values of society.” This may seem a little complicated, so put simply, rather than it being a standardised level of risk, it can be considered on a case-by-case basis and depends on the time and place in which it occurred.

5-2 A Model of Safety as an International Standard

Question 5) How many risks are there? That is, after the risks in the activity field have been either erased, eliminated, isolated or reduced, how many risks would still remain?

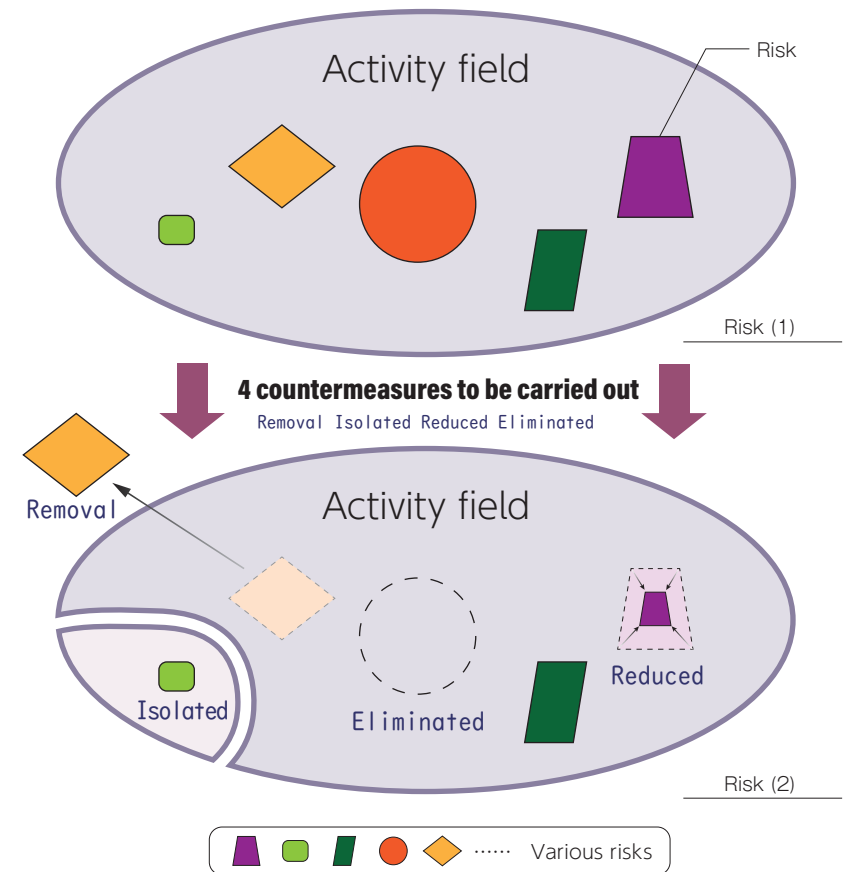


Figure 31 Risk management

ANSWER

The answer is “we do not know (yet)”, because there is the **“Unknown risk”**, for instance, it may be the same colour as the activity field, it may be too small, it may be hidden behind a current risk and so on.

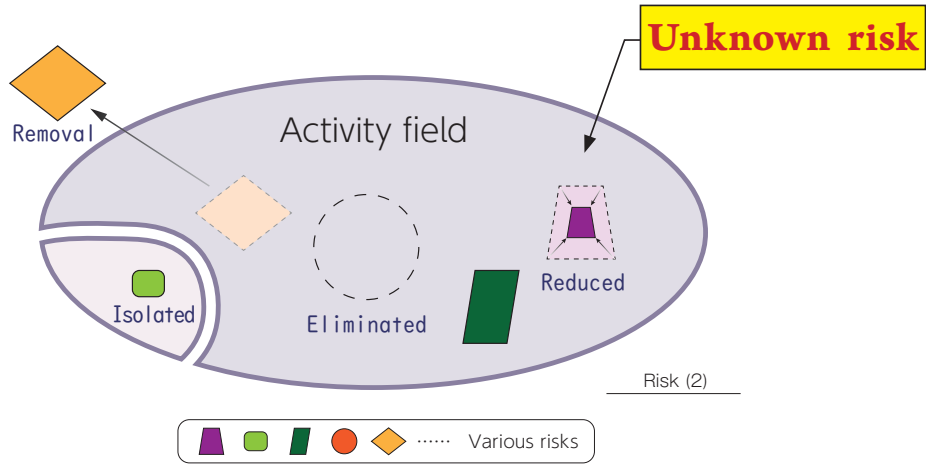


Figure 32 Unknown risk

In Figure 32, there are four visible risks including the eliminated risk from the activity field and there are three risks among the four in the activity field.

However, there is a possibility of “Unknown risks” which are yet to appear in the activity field. This may bring about a new risk if we continue to ignore it. Thus, “we do not know (yet)” is the correct answer. Actually we consider ourselves to be “safe”, despite such circumstances.

The words “Unknown area” were used before now. This term is often used in psychology and it is clearly defined in the Johari Window. The Johari Window consists of four window-panes: ① Known to self, ② Not known to self, ③ Known to others and ④ Not known to others. Figure 33 illustrates this. Each respective pane is referred to as, the Open area, Blind spot, Hidden area and Unknown area. Unknown means that no one knows.

Johari Window

https://ja.wikipedia.org/wiki/Johari_Window

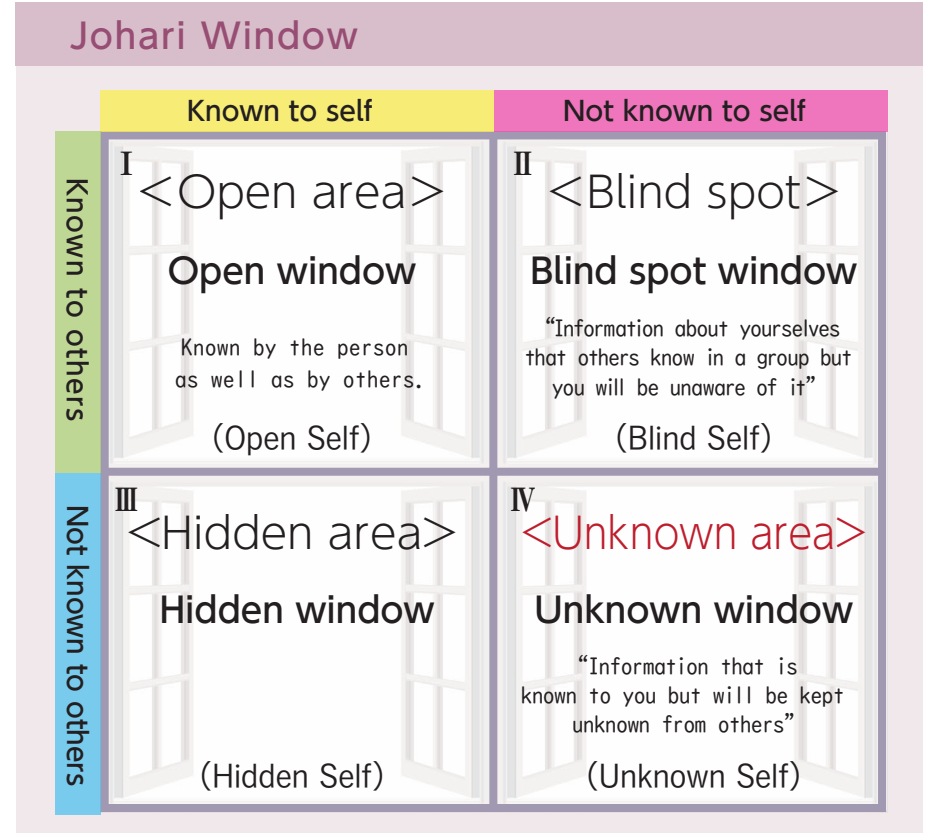


Figure 33 Johari Window (1)

A safety measure requirement would be to enlarge the Open area. In other words, the Open area specifies that all members within the range of activity are equally aware. It is necessary to expand the area in order to heighten safety. We need to turn it into an Open area for the team so as to narrow the Blind spot (things you do not know, but others do know) so that we may learn from their knowledge and experience.

Also, in the Hidden area, which are the things you know but others may not know, is to be opened in order to make the other blind spots public. Then, the Open area will be expanded, which will in turn bring about improved safety, eventually.

As a result, the Unknown area narrows (Please see Figures 33 and 34). Remarks: In order to carry this out successfully, it will require cooperation through team play and team work. This can be applied to the concept of Bridge Resource Management (BRM).

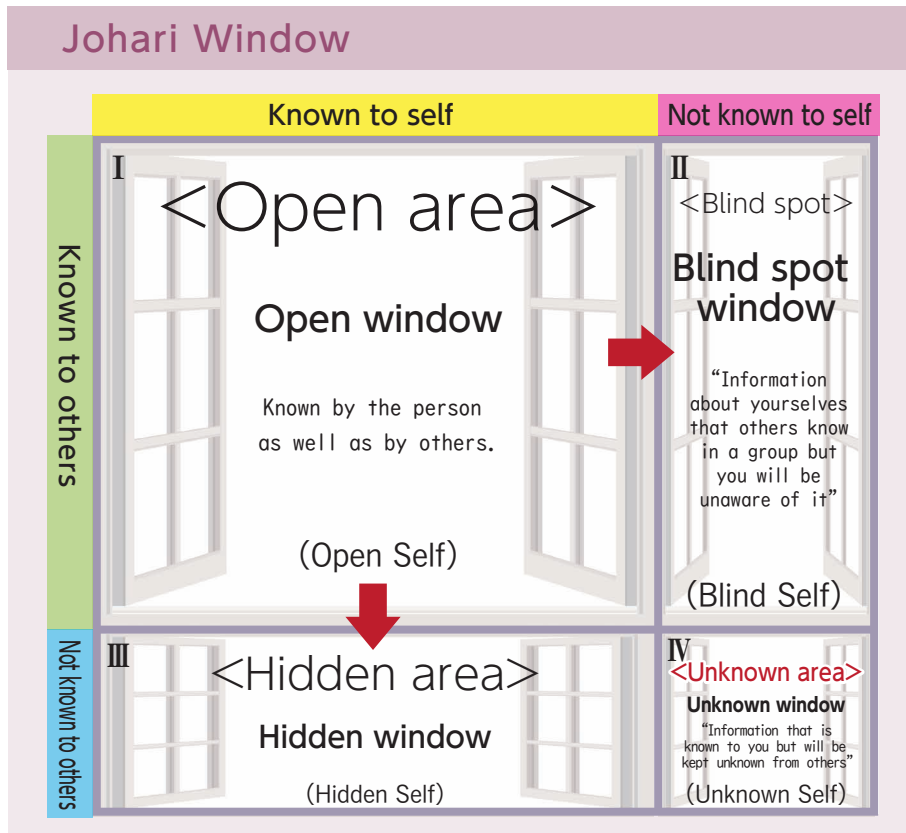


Figure 34 Johari Window (2)

5-3 Three Supporting Factors (From "Thinking Safety", Loss Prevention Bulletin No. 35)

Let's take a closer look at the Three Supporting Factors of safety.

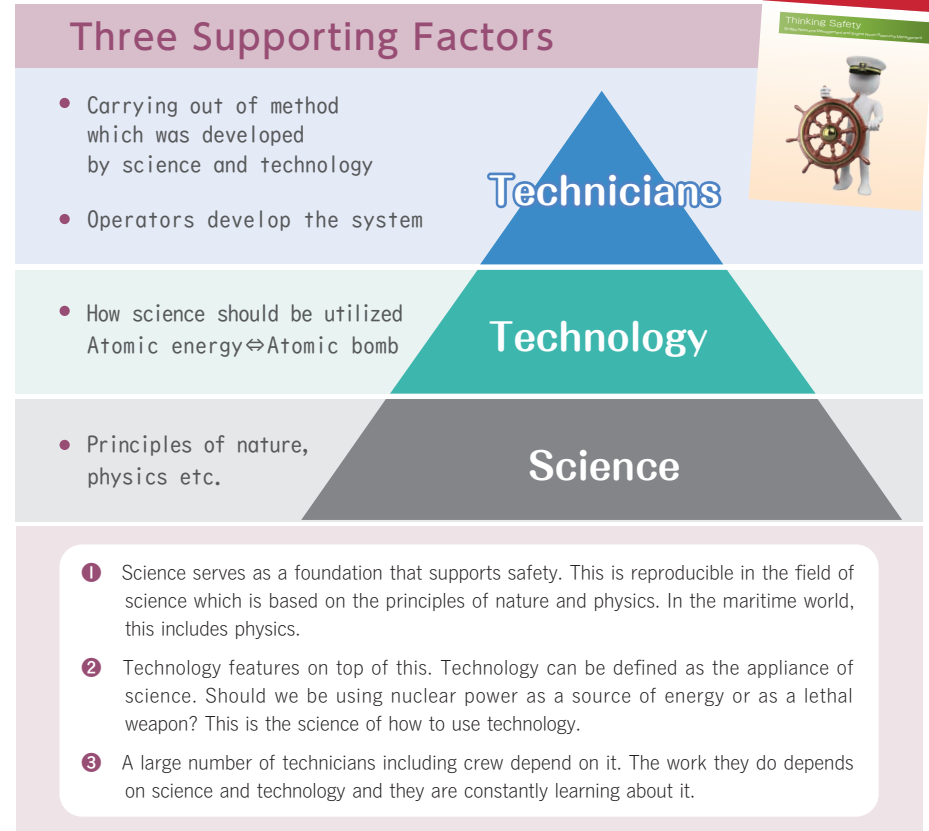


Figure 35 Three Supporting Factors

Technicians develop and operate the system, however, science and technology are also developing at the same time. These technicians must always be on the lookout for problems related to awareness and cognition, such as those mentioned above. Therefore, we need to assume that human errors will occur. We must remember that as long as there are technicians at the top of the system, no matter how much science and technology develops, that human error will always be present.

5-4 A Sense of Security (Definition)

ANSWER

Question 6) The answer to the question, "What is a sense of security?" was... ② **An international and domestic standard do not exist.** There is no one specific definition for "safety".

According to the Koujien Japanese dictionary, it is defined as below. It is seemingly a literal answer.

"There is no fear nor anxiety, but a peaceful mind (provisional translation)"

Although the following may be somewhat dated information, Masaru Kitano (Professor of Meiji University at that time) referred to a sense of security in the following way during a Nikkei BP interview in 2009. I believe that this definition will aid us in understanding our relationship with safety clearly.

Professor, Masaru Kitano commented: "Sense of security is a subjective fact and one whereby the person convinces oneself of that fact" (provisional translation)

We have been discussing both concepts regarding Safety and a Sense of Security. Is the reader aware of the fact that they are similar but then not exactly the same?

Safety can be said to be a specific and objective phenomenon. It is uniform in the way it is observed. It may be universally reproduced. In any era, safety from a technical standpoint does not change, though it requires an engineering approach. An important point to remember is that safety can be thought of something that has happened in the past. When talking about accidents that occurred in the past, we say "we never want to

cause this to happen again". In other words, we tend to think of it in the past tense, and act on this accordingly.

On the other hand, as mentioned above, a Sense of Security is abstract as it is a feeling in so many words. These are subjective and non-reproducible. We may say something like, "Wait a minute! We could rest easy until a while ago." A Sense of Security will differ depending on the individual. In addition, contrary to an engineering approach for Safety, it requires more of a psychological approach. A Sense of Security can be said to be in the present progressive [continuous] form, because this is a thought process between the present and the future.

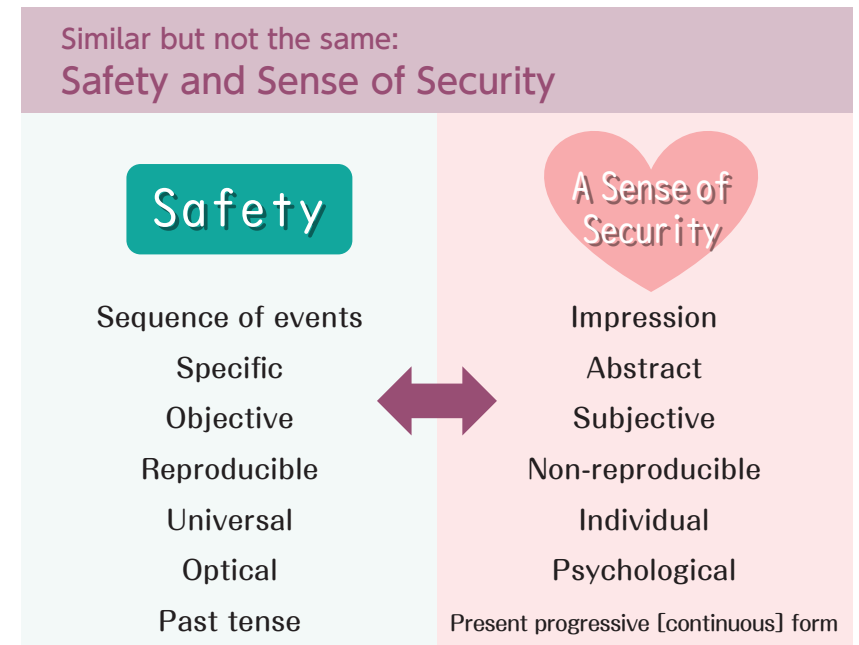


Figure 36 A comparison of Safety and a Sense of Security

So, how do we connect Safety with a Sense of Security? If you place Sense of Security,

which is heart-shaped, personal and present progressive [continuous] in form, on top of Safety, consisting of a sequence of events in the past (including risks acceptable according to Science, Technology and Technicians), it will topple over, meaning that the Sense of Security is weak and unstable.

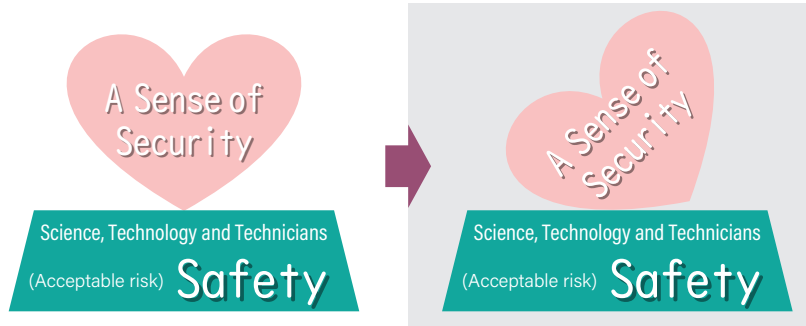


Figure 37 Sense of Security above Safety

Thus, we need to place a Wedge on either side to hold it firmly in place. Then, we must think about what these wedges are made of. According to Professor Kitano, one wedge should be trust based on communication, and the other should be Risk Communication, connecting Safety with a Sense of Security.



Figure 38 Connecting Safety and Sense of Security

5-5 Risk Communication (From Safety to Sense of Security)

What connects Safety and a Sense of Security is trust based on communication. Thus, we are now going to look closer at “Risk Communication”.

Regarding the structure of risk communication, the first level is Safety which is formed by science, technology and technicians, the next level consists of risk assessment and risk management, then on top of that comes risk communication supporting the Sense of Security in the shape of two “wedges” which mean trust.



Figure 39 Risk Communication connecting

Vice-president Nagamura Yoichi of Suzuka University of Medical Science, mentioned that “Risk Communication is not sufficient in Japan”.

Risk Communication (From Hitachi Solutions, Ltd. homepage)

Risk analysis: there are three different process types of Risk Analysis which help to minimize risk.

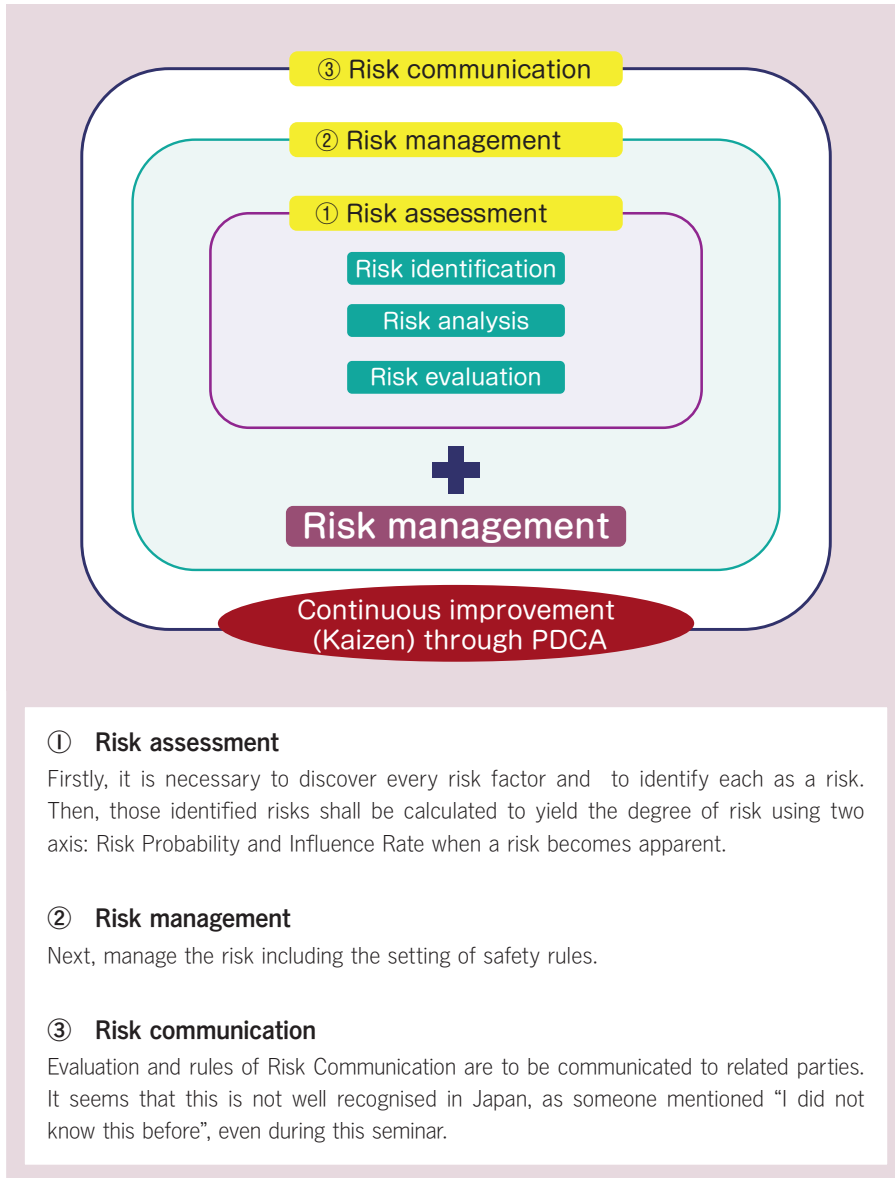


Figure 40 Risk communication

As was explained in 5-2 A Model of Safety as an International Standard, it is important

to expand the Open area as much as possible with communication, so as to minimize the Unknown area.

In Wikipedia, it tells us “topic that does not have its own page to a section of a page on the subject”, however, the following can be said to be examples of Risk Communication, if we look them up.

- Warnings in instruction manuals for electronic products etc. are a good form of communication.
- A number of pages contain precautions on how to use the products safely.
- Since the derailment accident on the Fukuchiyama Line, West Japan Railway Company now issues a safety news monthly bulletin at the station.
- At the supermarket Max Value: each attendant’s monthly goal is written on his/ hers employee name tag. One day, the lecturer noticed a name tag that had written on it, "Goal of the month" for an employee in charge of the frozen products section in a supermarket.
- “Look out for slippery areas caused by condensation so that customers do not slip over.”
- The lecturer was relieved and felt piece of mind. This would also be a form of risk communication.
- Kobe City, where the lecturer worked, posts a Tsunami Disaster Prevention Map on a bulletin board. This is also a very good example of risk communication.
- We can say that education and training that are stipulated by laws and treaties and seminars like this are good examples of risk communication.
- Modern day risk communication takes the form of a homepage.
- Although this is communication from the PR department, the lecturer looked up the words “Sense of Security” on the Japan P&I Club homepage. There were more than 21 hits. On the other hand, for the city of Kobe there were 240 million!

- Why then is the sense of security so over used? Despite the reality that the true meaning is yet to be fully understood. It seems that it is not good to overuse the word Sense of Security, especially for those who have “Safety” at the heart of their main service, particularly the transportation sector. Because, as mentioned earlier, the word Sense of Security is the way customers feel. There are many TV commercials that put “Safety and Sense of Security” together. But, because they are similar but not the same, each meaning of the concept should be understood separately.

5-6 Why is there a need to feel "safe" and "secure"?

In Quiz 7, the participants thought about why there is a need to feel “safe” and “secure”. While these words are often heard, many believe that “safe” and “secure” relates to:

**Oneself, one’s family members, one’s company,
or because one’s boss says so...**

Mr. Tsutsui informs us that it is “necessary for the maintenance of a sustainable society”. The concept of a Sustainable Society was proposed at the Davos Forum in 1998. This led to a new concept named Sustainable Development Goals (SDGs) - international goals to be achieved between 2016 and 2030, referred to as “The 2030 Agenda for Sustainable Development (the 2030 Agenda)” that was adopted by the United Nations summit in 2015.

For details, please refer to the homepage below from the Ministry of Foreign Affairs of Japan (MOFA).

https://www.mofa.go.jp/mofaj/gaiko/oda/sdgs/pdf/about_sdgs_summary.pdf

For the maritime industry in particular, the following five goals have been set: 8, 9, 12, 13, and 14. It will be much appreciated if your companies and organizations, especially those that are global, build target management, production management, process management and a corporate culture with these SDGs in mind.

- Goal 8** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 9** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 12** Ensure sustainable consumption and production patterns
- Goal 13** (Climate Action)
- Goal 14** (Life Below Water)



Figure 41 SDGs

§ 6 The Psychology behind Risky Behaviour

The ratio by type of cause of total accidents as accumulated over the last five years

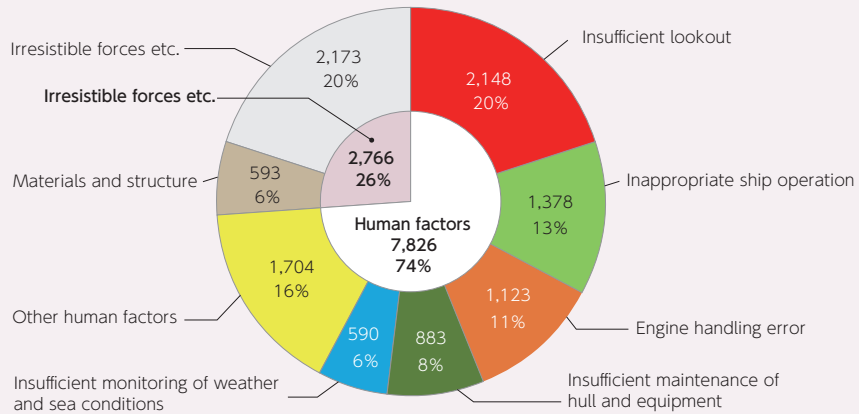


Figure 42 Japan Coast Guard Causes behind accidents

According to a guidebook called “Facts and countermeasures against maritime accidents in 2017 (provisional translation)” issued by the Japan Coast Guard, almost 75% of all maritime accidents are said to be fundamentally caused by human error.

Looking at the chart in Figure 42, Irresistible forces are counted as accident causes, however, on analysing the original cause behind them, we can see that almost all are caused by human error. Thus, 90% of all maritime accidents can be regarded as acts of human error.



Figure 43 An example of human error

As can be seen in the Figure 44, human errors can be mainly classified into the

following 4 causes: experience, environment and work content, communication and human beings.

In this classification, regarding the human errors caused by experience, environment and work content, and communication they can be prevented relatively easily.

However, for many of those which were caused by a human being, it is difficult to take preventive measures. Depending on the individual situation, what may be considered normal is constantly changing, even when it may be the same person.

In addition, if one tries to forcibly eliminate any of these human causes, psychological reactance, psychology of normalcy bias and/or confirmation bias will come into play (discussed in closer detail below), which may make the situation even worse.

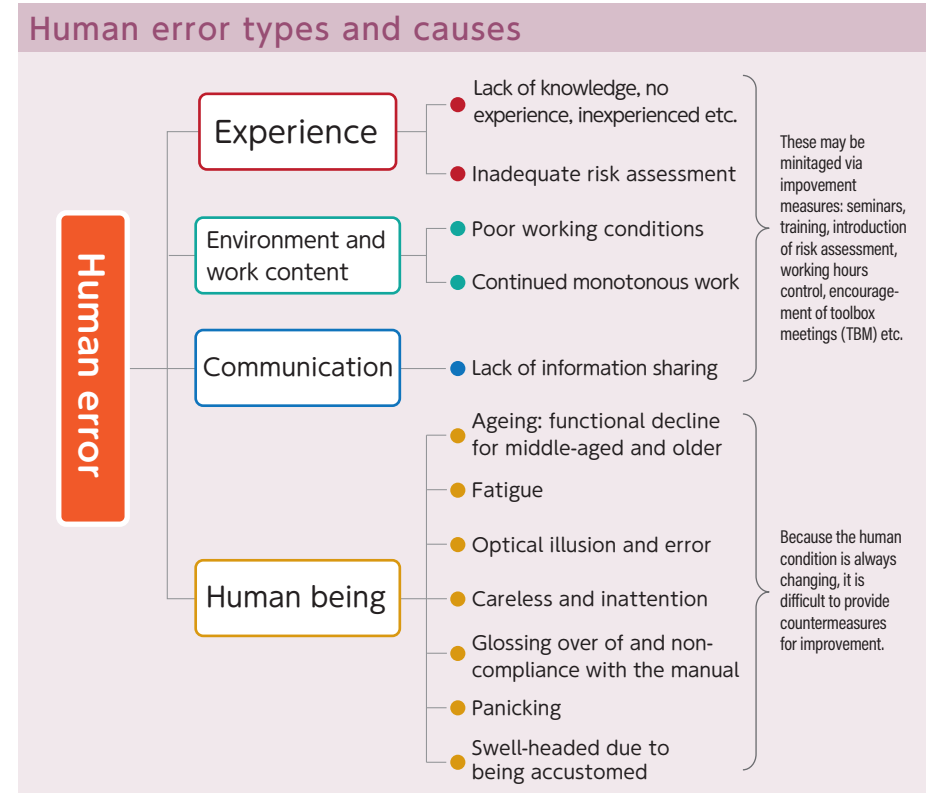


Figure 44 Human error types and causes

The lecturer considered the ramifications on board a ship as a result of psychologically unsafe behaviour. The following 5 items are the most dangerous, he notes. Let us examine an Approach to Safety Behaviour from the perspective of psychology.

- | | |
|--------------|-------------------------------------|
| No. 1 | “Someone will do it for me” |
| No. 2 | “Stop exaggerating!” |
| No. 3 | “I’m special, nothing can hurt me!” |
| No. 4 | “What will the neighbours think?” |
| No. 5 | “I won’t do what you tell me” |

6-1 Psychological reactance (self-efficacy)

No. 5 “I won't do what you tell me”

When being told, “Behave yourself” by your colleagues or “Just do it!” by a family member, we tend to act repulsively, saying “I won’t do what you tell me”. These scenarios are remnant of Psychological reactance.

Although someone wants to do more if he or she is told not to do so, conversely, if he or she feels restricted or has been ordered to do something or not to do something, that person would feel a loss of self-efficacy.

Because a mechanism to recover this self-efficacy starts working concurrently in our mind; simply put, if you are told to do something, you will not want to do it, and conversely, if you are told to stop doing something, you will want to do it. If there was a hole in a wall at a construction site, and it is the same height as your line of sight, and there was a note above it saying “Do not peep through this hole!”, you would probably want to look through the hole. Also, if there was a sign board saying “No passage”, you probably want to use it.

This is typical psychological behaviour based on instinct which is the guiding principle

of human beings: I want to decide and take action by myself. This mechanism is referred to as self-efficacy recovery and/or psychological reactance. Human beings want to be free originally and do not want to act restricted by anyone. This psychological reactance is highly likely to manifest when being told that you can or cannot doing something by someone who is close to you, on the precondition that the situation and its frequency (depriving your freedom) are closely related. This psychological reactance is less likely to manifest between a supervisor and his/her subordinate, but is more likely to manifest between colleagues or family members. Figure 45 shows a diagram of these relationships.

Seafarer is an occupation whereby such psychological reactance is prone to manifest due to the following:

- ◆ High degree of freedom with limited involvement of the manager.
- ◆ Strong confidence and self-consciousness due to a higher education and licenses held.

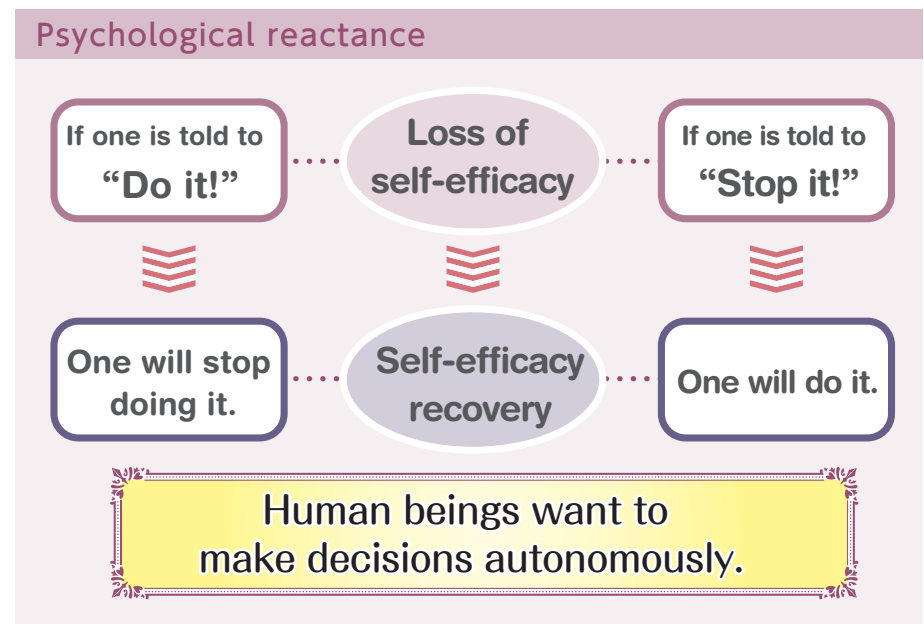


Figure 45 Psychological reactance

For instance, when a person in charge on the ground telephones the Master in the vessel requesting work to be done during a meeting in the office, most of you might have received a reply such as “How many years have I been operating this vessel?” or “Do you know how many years I have been operating as a Master?”

This is also a form of psychological reactance and it occurs because the Master’s mechanism of self-efficacy recovery is active. It will be important to explain this if you have the chance to, because you may be able to avoid an emotional conflict, if both the crew and the person in charge on land are aware of such a psychological mechanism.

6-2 Entrainment and Peer Pressure : No. 4 “What will the neighbours think?”

Human beings are prone to make a judgement or decision influenced by somebody else’s ideas and thoughts. This is known as the entrainment phenomenon. This is because of our DNA that has stayed with us since ancient times. It tells us we may starve to death if we were to move apart from the group. This DNA still remains

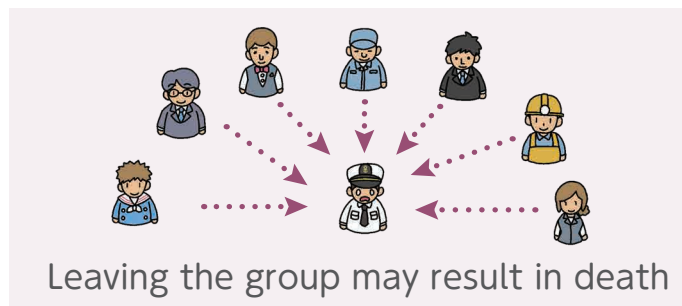


Figure 46 Entrainment phenomenon

In “2-2 Why psychology is needed”, the lecturer explained to the fishermen why he

needed to put on a life jacket, including revisions to the law etc. The reason why life jacket usage has declined is probably because of this entrainment phenomenon.

Next, let’s take a look at what happens with a group of zebras. Imagine that a herd of one hundred zebras sensed a lion's presence.

- ① Even if 30 zebras (30%) ran away, as soon as the lion disappears, they will soon regroup again which ends up being a transient form of entrainment. (Figure 47)

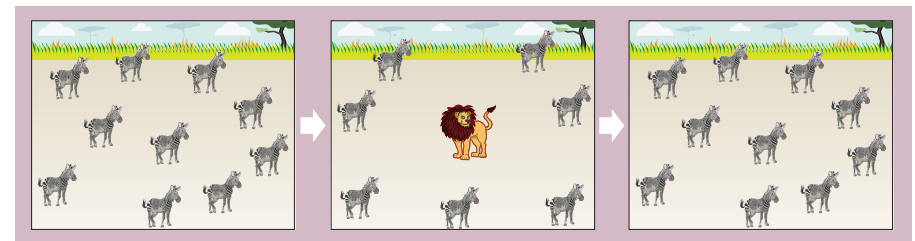


Figure 47 Entrainment phenomenon

- ② To the contrary, in the case that 70 zebras (70%) run away, because of transient entrainment they will all dissipate and will not regroup. Even after the lion disappears, they will never come back again and the group will have disappeared. (Figure 48)

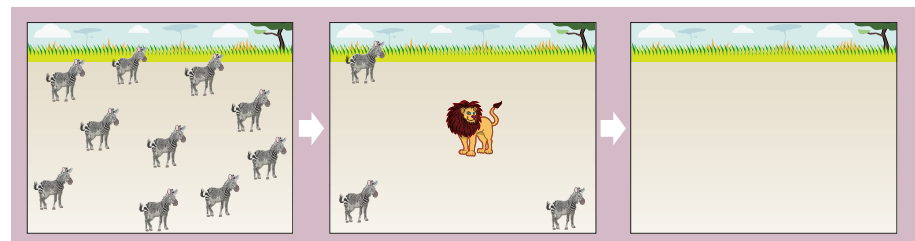


Figure 48 Entrainment phenomenon

From the above, it is suggested that educational effect cannot be achieved if it does not exceed 70%.

6 – 3 Normalcy Bias :

No. 3 “I’m special, nothing can hurt me!” (Justification, cognitive dissonance)

Human beings have the characteristic to underestimate or ignore information that is inconvenient for him or her. Also, we ignore negative information and underestimate phenomena saying “I’m special, nothing can hurt me!” As a result of this, they missed the chance to escape even though they knew that a disaster was imminent. This is known as Normalcy Bias, justification or cognitive dissonance. For example, how do you react when the fire alarm suddenly sounds where you are situated? It is often seen in many experiments, where no one moves, which is exactly the same as “I’m special, nothing can hurt me!”

Normalcy Bias makes us feel that such inconvenient information is stressful. Thus, we ignore it in order to avoid stress and underestimate the phenona saying, “I’m special, nothing can hurt me!”, which may end up with running out of time to escape.

It may be tremendously stressful
to accept information which is not
congruent with our own beliefs

Figure 49 Normalcy Bias

For example, the following news is often broadcast, such as, “Despite the large-sized tsunami warning, he became a victim by not evacuating, but instead dropped by to check the sea shore.”

The News reported that “Despite the fact that an evacuation was urged, the person did not evacuate and went to see the flooded river, to then get washed away.”, “The person

was taking a picture and did not evacuate despite the volcanic fumes coming from Mt. Ontake following the eruption.” and so on. This is all because of the psychology, Normalcy Bias and “I’m special, nothing can hurt me!”

It is important to take the initiative on safety behaviour and it is necessary to eliminate a climate that criticizes or underestimates the people who are taking positive steps.

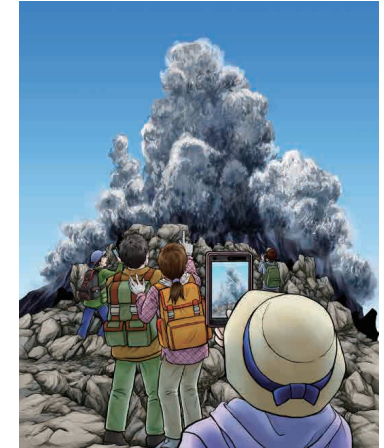


Figure 50 Mt. Ontake Eruption

Peer Pressure and Normalcy Bias

Although this is applicable to all companies of any industry sector, when Peer Pressure and Normalcy Bias that were explained in 6-2 are combined, especially in the transportation and manufacturing sectors, it may cause a serious accident.

In other words, if the employees choose to ignore inconvenient information and, even worse, if all members of the company are synchronized with one another, the safety margin will shrink as they neglect to follow the safety standards which they had complied with in the past, thinking “It would be acceptable to deviate to this extent.” If repeated, their recognition of the deviation will fade and then disappear as the once deviated activity becomes the “standard”.

Taking into consideration the environment and human error, there are many cases where safety may be secured by setting the safety standard (rate) generously at 150% or 200%. However, for whatever reason, (i.e. cost reduction etc..) it may be tempting to think “It’s probably acceptable if we decrease it by..say only 5%,” which the organization may

allow. However, this will bring about a reduction in the safety margin. It is problematic if such psychological biases as “There is safety in numbers,” and “Everything was fine yesterday, so surely everything will be fine tomorrow,” become commonplace within an organization.

This kind of situation helps increase the degree of risk, and as it is repeated, the safety standard drops to 100%. Then, once accepted minor unsafe acts and environmental changes in the activity field (explained in 5-2 A Model of Safety as an International Standard) are present the probability of an accident suddenly occurring increases.

In the manufacturing industry, it would mean the tacit consent of product quality degradation, or in the shipping industry, it would mean deviating from or making a sham of the safety management code and SMS manual. Therefore, the realization that “deviations” and “errors” cannot be avoided, and that safety management based on the fact that “Human beings sometimes make mistakes” is required.

6-4 Confirmation bias: No. 2 “Stop exaggerating!”

People are unconsciously prone to believe only “what they want to believe” and “information that supports what they believe” rather than purposefully seeking information to the contrary. In addition, when investigating two conflicting opinions, there is a tendency to set a high value on affirmative information, and disvalue or even take no notice of negative information. This is called Confirmation bias.

As a person obsessively collects convenient information that is in line with what he/she believes to be correct, his/her bias and assumptions are reinforced; with a lack of objectiveness, there is a risk that they may be overlooking correct information.

This is a true story in the U.S., even though it is commonly said that a bid for an oil-

exploitation right will always make a deficit. The reason is that the bidder collects convenient biased information on “an oil field with 10 billion barrels”. Even in the face of negative information, such as, the oil field is already in depletion or others have pulled out, he or she will still say “OK, I can definitely exploit this,” and bids for 10 billion US dollars in vain. This is said to be a trap for confirmation bias.

When the lecturer asked a Master who had experienced anchorage in the typhoon last year, he received an answer along with the confirmation bias: "There was information about the typhoon available every second regarding the changing course of the typhoon, and he opted for route information which would put the most distance between his vessel and the typhoon, further believing it would be all right because his safe haven as well as anchorage had been located at the same place in the past."

Also, there are criminals who carry out remittance fraud by sneakily using confirmation bias. Posing as a banker, civil servant or business person working for a first-class company, they begin with a sweet story (i.e. they explain that a refund is to be paid), and cheat the victim into going to an ATM to transmit funds. If one is thinking in a level-headed manner, it is obvious that a refund does not require any funds being remitted. However, they get away with cheating people in this way by capitalizing on the psychology of confirmation bias.

It is always necessary to have a certain amount of scepticism, no matter how desirable the information, situation or directions may be.

6-5 Social loafing: No.1 “Someone will do it for me”

When human beings work with a large number of people, they sometimes take the easy option. This is called “Social loafing” in psychology.

For example, when playing tug-of-war, an experiment verifies that people reduce their strength to half, if the total number of team members is increased from 3 to 5.

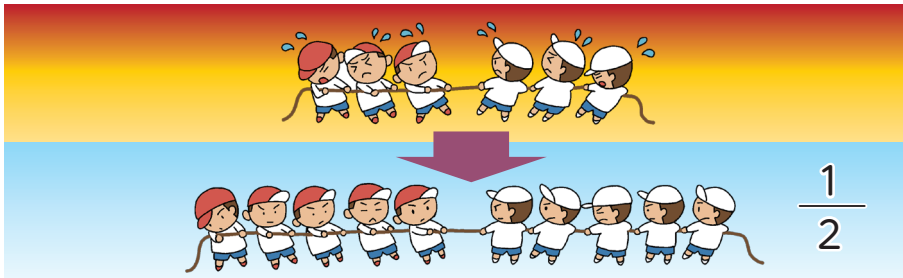


Figure 51 Social loafing

The reason behind this is that our sense of responsibility is reduced when we feel that a proportion of our workload has been taken care of. In addition, because there is a large number of people with him or her, their anxiety to be evaluated decreases. In order to not cause Social loafing, it is necessary to “clarify the workload and evaluation criteria of each person”.

When the lecturer was engaged at PSC, he had an internal audit, periodically. The PSC team consisted of three inspectors and two had already examined the engine room. When the lecture was alone, he found a leak from one of the steam pipes. As the leakage was a large amount, he assumed this had been pointed out by one of the other two inspectors without a doubt and did not record leakage in Form B (points to be noted).

The lecturer was taken to task for why he did not record it regardless of the fact that he was aware of the problem, by the audit in the meeting following the inspection. He

answered that because another two careful inspectors had passed the point in question, he assumed that the pipe had already been recorded in their report, so he was involved in social loafing, completely.

The following is a case which inspired the theory of Diffusion of Responsibility in psychology.

= Murder of Kitty Genovese = From Wikipedia

The murder of Kitty Genovese is a murder that took place in Kew Gardens, Queens in New York US on March 13 1964.

Ms. Catherine Genovese, Kitty, who lived in this vicinity, was on her way home when she was killed by villain Winston Moseley near the Kew Gardens station. The New York Times publicized that even though Catherine screamed loudly for help, none of her neighbours called the police for her. This incident triggered a bystander effect.

When Kitty was walking home, Moseley stabbed her in the back with a knife. As soon as Kitty screamed, a light went on in the window of a nearby apartment. The dweller opened the window and shouted to everyone to keep their distance from Kitty.

Moseley looked up at the inhabitant, gave a shrug and walked back to his car leaving Kitty. But, once the window light was out, Moseley came back to where Kitty was, she was going back to her room, and stabbed her again.

When Kitty screamed once again,



Figure 52 Catherine (Kitty) Genovese

the light went on in the same building. Moseley left the scene in his car. However, he went back to Kitty and then stabbed her fatally in the neck. Later, the gentleman who lived in the same apartment reported it to the police, but it was too late as Kitty was already dead. Six days after the accident, Moseley was arrested and accused. Following the result of the first trial, the murderer got a death sentence, but after an appeal he got life in prison at the second trial. Moseley seemed to understand the bystander effect, as the perpetrator had already committed a similar offence before. Regarding the reason as to why he did not leave in spite of being

watched by the inhabitants at such an early stage, Moseley confessed that everything went according to plan, and that the witness would shut the window immediately and go to bed.

In 2015, the documentary film “Silent Witness” had a scene where Kitty’s younger brother interviewed the witnesses at that time. Among the 38 witnesses, there were those who heard

a voice but could not see anything, those who saw Kitty walking without seeing the criminal, and those who said they were going to report it to the police but were told that it had already been reported (there was no record at the police station), and so on. This was a case of “Someone will do it for me” but by an entire neighbourhood.

The following is required in order to solve such problems caused by social loafing.

In order to carry out the purpose, it is necessary to improve the conditions and environmental equipment adequate for each person to do the best with their initiative.

So far, we have been discussing unsafe acts and psychology. The level of safety will improve more with better knowledge of our own psychological features, observing ourselves more as well as our ordinary lives and being conscious that these psychological factors come into play. There are “12 Human characteristics which everyone has” and these were introduced in the Loss Prevention Bulletin No. 35 “Thinking Safety”.

Twelve human characteristics

- | | |
|--|--|
| <ul style="list-style-type: none"> ① Human beings sometimes make mistakes ② Human beings are sometimes careless ③ Human beings sometimes forget ④ Human beings sometimes do not notice ⑤ Human beings have moments of inattention ⑥ Human beings sometimes are sometimes only able to see or think about one thing at a time | <ul style="list-style-type: none"> ⑦ Human beings are sometimes in a hurry ⑧ Human beings sometimes become emotional ⑨ Human beings sometimes make assumptions ⑩ Human beings are sometimes lazy ⑪ Human beings sometimes panic ⑫ Human beings sometimes transgress when no one is looking |
|--|--|

Figure 53 Twelve human characteristics

§ 7 How People are Motivated

7-1 Human Development Curve

The following is an anecdote of an instructor in the Israeli Air Force. The instructor developed his own theory and was quoted for saying, “When I praise, my student he often fails. To the contrary, when I reprimand him, he succeeds. That is why I keep reprimanding him and never praise him.”

In short, if one is praised, one’s skills will be lowered, but , if one is reprimanded, one’s skills will improve”. However, is this really true?

The Human Development Curve normally rises with a series of ups and downs, but let’s see what the mean of that is here.

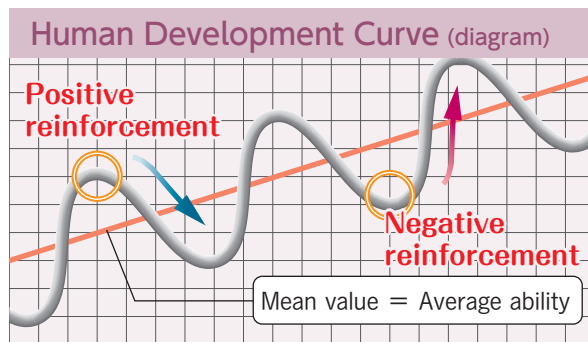


Figure 54 Human Development Curve

In the event of a good result, if someone is praised at the top of the sine curve, the probability of failure will increase. Because the curve will most likely return to the mean average. On the contrary, if someone is told off at the bottom of the sine curve, he or she will probably experience success above the mean average.

As this is a mathematical phenomenon named recursion of the average (probability theory), it is not related to the instruction method at all. It so happens that human growth is not so easily influenced, even when he/she is being praised or reprimanded. In other words, it is enough to observe and have a grasp of what went well and what did not.

7-2 Effective control

Question 8) We want the mouse to turn right at the end of the T-junction every time. This is why there is an electric shock on the left side and a piece of cheese on the right. The question was “What would make the mouse always turn to the right?”

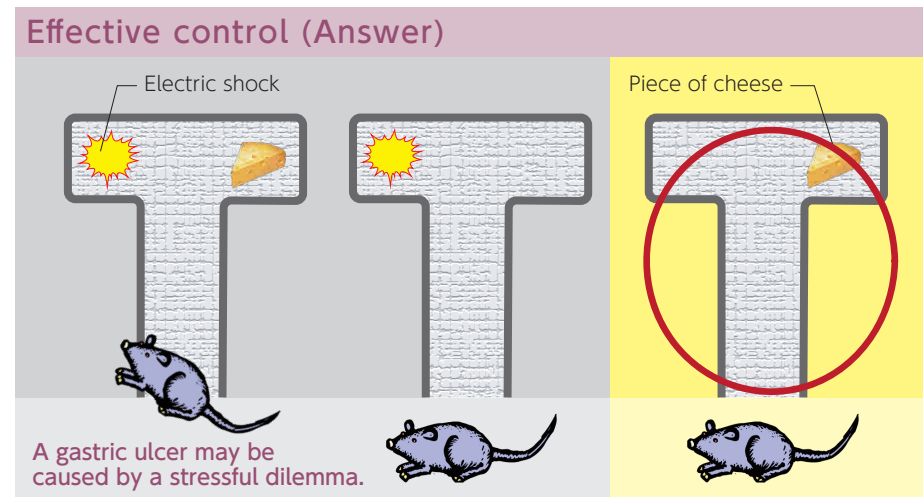


Figure 55 Effective control (Answer)

The worst situation occurred when both cheese and an electric shock were in place. The mouse’s dilemma is that it wants to have the piece of cheese, but it cannot endure the electric shock! A gastric ulcer may be caused by a stressful dilemma.

ANSWER

What if the mouse experiences only electric shocks all the time? In a situation without any rewards, yet faced with entering a dangerous area only, adding nothing but stress, the mouse stayed put where it was. The correct answer is to place a piece of cheese only.

“Cheese only” may mean **“Take the cheese and ignore anything else!”** Please ignore the alternative choices, and forget about mistakes made making the wrong choice.

When attending the Japanese Psychological Association at Keio University in 1979, a psychologist B.F. Skinner emphasized the following points in order to control people more effectively.

- ◆ Avoid control using punishers (demerits), and create a social system which is regulated using reinforcers (merits).
- ◆ Contrary to the fact that the action tends to be repeated even if the reinforcer does not appear every time, the punisher will be frequently needed to prevent repetition from occurring. As this costs, an alternative punisher should be introduced, too.

Namely, regarding the above case using a mouse, it is not necessary to put down cheese every time: they will naturally get used to turning right, even when there is no cheese.

On the other hand, in the case of controlling it using only electric shock, this would be required more frequently which will end up costing a lot. Moreover, if they get used to the situation, you will need to introduce additional punishers. It is ubiquitous to punish people who do not comply with the law. However, it is questionable, if its effect is regarded as a punisher as it would not be a preventive measure in terms of preventing recurrence.

7-3 Operant conditioning: behaviour contingency

Behaviour Analysis, which is a part of the field of psychology, was initiated by a psychologist called B.F. Skinner. Regarding the above described in 7-2 Effective control, let us take a closer look at Operant conditioning (behaviour contingency).

Definition (From Wikipedia)

Operant behaviour can be defined as a behaviour which changes the frequency in accordance with the environmental changes such as appearance or disappearance of stimulation immediately after the behaviour is recognized.

Operant conditioning is learning that follows self-frequency changes in accordance with the environmental changes immediately after the Operant behaviour is spontaneously recognized.

Being different from the process of classical conditioning, there is no innate stimulus (unconditioned stimulus) “trigger” behaviour in Operant behaviour but the living creature behaves spontaneously.

Also, the word operant is a coined word from operate by B.F. Skinner.

On the other hand, the term behaviour contingency can be defined as the relationship between changes in spontaneous frequency through operant behaviour and environmental changes immediately after it was spontaneously carried out. The following four factors are related to behaviour contingency.

◆ **Reinforcement**

(this can be **reinforce, positive reinforcer or strengthening stimulus**)

It is a stimulus which increases the spontaneous frequency of the last operant behaviour by its appearance. (provisional translation)

◆ **Punisher**

(this can be **punisher, negative reinforcer or aversion**)

It is a stimulus which decreases the spontaneous frequency of the last operant behaviour by its appearance. (provisional translation)

◆ **(Reinforcement)**

An increase in the frequency of spontaneous operant behaviour.

◆ **(Punishment)**

A decrease in the frequency of spontaneous operant behaviour.

With these combinations, the behaviour contingency can be classified into 4 types (please see Figure 56)

- **Positive reinforcer:**
Reinforcement by Reinforcer appearance
- **Weakened negative reinforcer:**
Punishment by Reinforcer disappearance
- **Weakened positive reinforcer:**
Punishment by Punisher appearance
- **Negative reinforcer:**
Reinforcement by Punisher disappearance

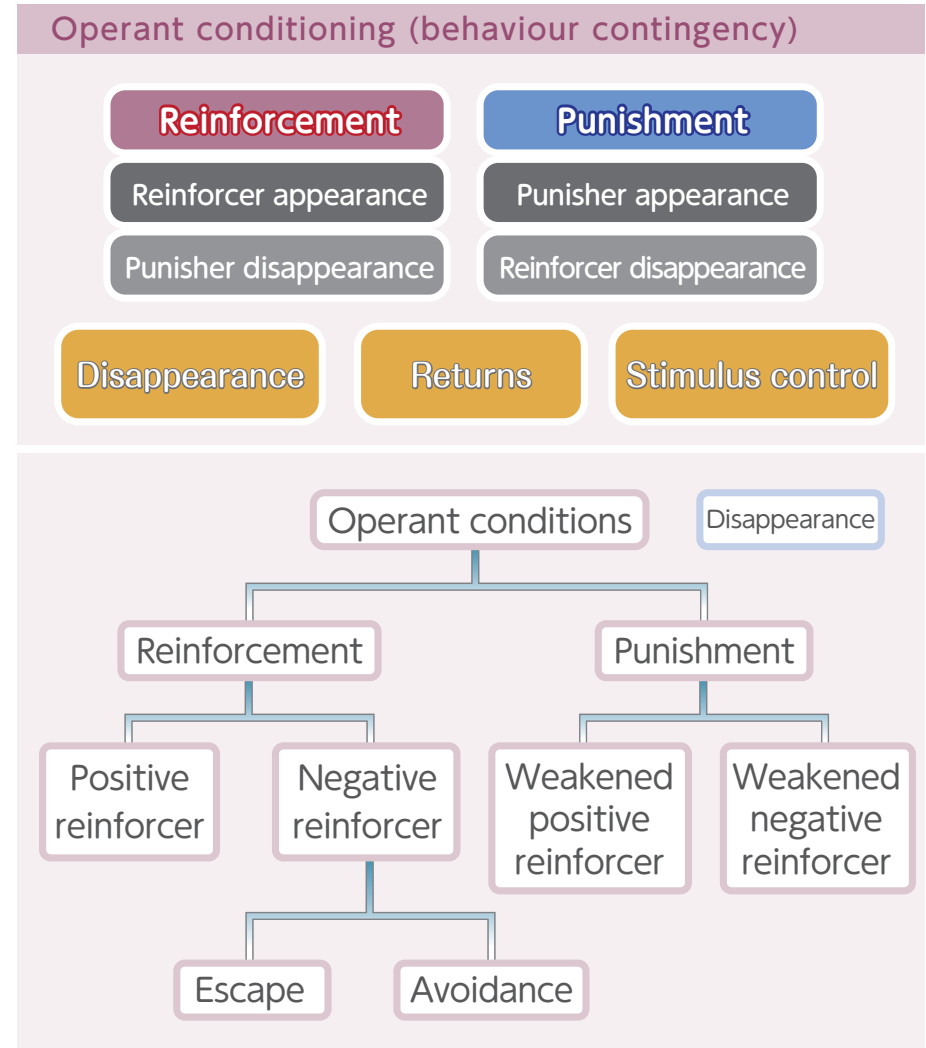


Figure 56 Operant conditioning

Let us check this with examples we see around us.

There are “patterns that become habitual” and “patterns that rarely become habitual”; patterns become habitual when merits are present and demerits disappear, and for patterns that rarely become habitual, it is when demerits are present and merits disappear.

Also, there are some patterns whereby they disappear, return or require stimulus control. Thinking about the answer to the question, “What motivates us?”, it is necessary to satisfy Belongingness and love needs, Esteem needs and Self-actualization needs (more mentioned below) together with effectively utilizing the “Reinforcer”. For this to happen, it is necessary to bestow a certain degree of freedom and authority. Especially in an organization, such as a company, it is important for the managers to talk about their dreams. And it is necessary to watch over the growth of employees without being emotional. Also, let them obtain the reinforcer, so this becomes a “ritual” and “habit”.

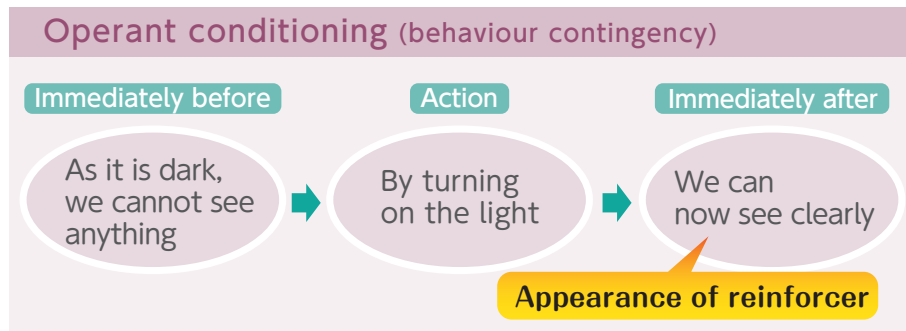


Figure 57 Operant conditioning

For example, when we use the toilet or bathroom, we ensure that we put on the light. However, in rare cases, we forget to turn off the light afterwards. This is because of a “Weakened positive reinforcer”. As it is a demerit for the user to use the toilet or bathroom in the dark, when this demerit appears, we forget to turn off the light in the toilet or bathroom.

When you were told off by your wife (partner) at home for forgetting to turn off the light in the toilet or bathroom, please make an excuse by saying “This is because of a weakened positive reinforcer according B.F. Skinner’s Behaviour Analysis. I am sorry.” Please apologise by saying so. The lecturer will not bear responsibility if your wife or partner gets even more angry, shouting “Stop being silly!”

When the “merit” of you being able to clearly see due to the light coming on, the behaviour will be repeated in the future. This will lead to the behaviour of turning on the switch every time it is dark.

After that, when you forget to turn off the light after leaving the toilet or bathroom, “Weakened positive reinforcer” appears and if this becomes a bad habit, you will always forget to turn off the switch. At this moment, if your wife or partner warns you by saying “turn off the light”, 6-1 Psychological reactance (If you are told “Do it!”, you do Not want to do it.) may come into play. And, if recovery of self-efficacy is working effectively in the brain, you will find it tedious turning off the light.

It is necessary to be aware of the following in order to change someone’s behaviour:

① Clarify the goal :

Be specific about what kinds of changes are to be brought about. For instance, reducing weight by 10kgs.

② Observe the behaviour:

Continue to check if the desired effect is being attained. For example, record you weight in graph every day.

③ Use of Reinforcement for needed behaviour:

For example, compliment him/her on losing weight. For human beings, recording the activity will play a role of reinforcement. If it is possible to see the weight loss on a recorded graph, he/she will continue with the weight loss programme. This can be generalized as “Token Economy” .

* Token

Exchangeable (having a possibility to be exchanged) reinforcers are those that can be exchanged with other reinforcers, for example, collecting tenders, vouchers, points etc. These can be referred to as tokens. For example, for a chimpanzee to perform a task repeatedly, hand it a voucher that can be exchanged for food.

④ Reduce the incentive to unwanted behaviour:

For instance, snacks and sweets cannot be placed in the kitchen, etc.

7-4 Maslow's Hierarchy of Needs

This Hierarchy of Needs, the so called pyramid, was created by the U.S. psychologist, Abraham Harold Maslow (1908-1970).



Figure 58 Maslow's Hierarchy of Needs

There are deficiency needs such as Physiological needs, Safety needs and Belongingness and love needs among human needs. General Japanese employees would be almost satisfied with their Physiological needs and Safety needs.

The following needs to be satisfied would be Belongingness and love needs. These needs: to belong to a group or circle, would also be satisfied once one enters a school, company etc.

More recently, there are new needs on a Vessel: Needs to connect to the Internet. Although the lecturer dares to use the phrase “Youth of today”, there are new needs in the Belongingness and love needs stage. If a ship is “Without Wi-Fi connection, they will not get on board.”

The next stage is Esteem needs. The need to be recognized by other members of the group, to be recognized or respected by others, too. For instance, this includes feelings of joy when you see “likes” 👍 on your Facebook wall and in Instagram etc. Then, the highest need is Self-actualization which is a desire to elicit self abilities and do creative work. The desire is to work with one’s own talent and to be recognized without being tied down to a place such as company or organization. At this stage, there is a high possibility of intrinsic motivation (thinking by yourself and acting actively and independently) manifesting.

Regarding the satisfaction of Belongingness and love needs, it is essential to show your acceptance as a group member. An odd man out shall never be recognized. In order to satisfy this, the most simple thing to say is good morning or thank you in return. It is important to start from this kind of simple greeting. “Ignoring” someone should be the last thing to do. Problems of bullying at school or ostracising emanate from this.

Esteem needs will enable one to raise their personal presence within the organization. In order to encourage this, provide opportunities for employees to give presentations, which are common in many companies and, regarding those results, to praise them via a commendation system. Such systems and activities including Quality Control activities of the 1970s are very effective.

In order to satisfy self-actualization needs, it is important to determine the person’s ability through “education” and “training”, to recognize talent and to bestow freedom to some extent in a company.

Give them authority and allow them to talk about their dreams. The opposite of this would be to neglect them, to suppress their proactive behaviour, not to listen to them, and not to expand their range of responsibilities.

We hear that more and more resourceful employees leave companies even when they have high salaries. However, the reason is never because of the salary. It is because these “things not to be done” are too restricting for them. From the title “How to build the strongest team: lessons learned from the US navy (provisional translation)” translated originally from Michael Abrashoff’s “It’s Your Ship”.

7-5 Obedience to Authority

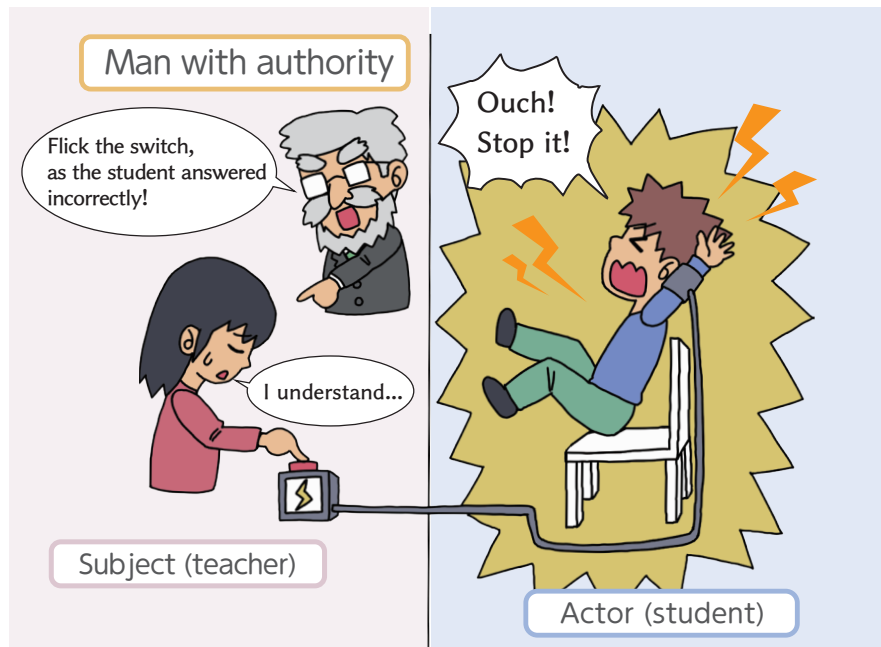


Figure 59 Obedience to Authority

There was an experiment on “obedience to authority”. Adolf Otto Eichmann Commander of the SS was responsible for Auschwitz. After the war, he was arrested while on the run and then held for trial. Though it may be considered that he was a kind person really. But, how could such a kind person be capable of carrying out such a cruel act of mass extermination? To find out, an experiment was conducted at Yale University US.

It 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.

On seeing the pain on the respondent's face and not being able to stand it any longer, the teacher would ask the professor, “Can I stop?”, but the professor would only reply “This is an experiment, please continue.” The experiment would then continue with the teacher asking questions, until the current was at 450 volts. The purpose of this experiment was to see how long the teacher could keep asking questions for until he/she gave in.

With the voltage set to 100 volts, there was a possibility of death, 450 volts would mean imminent death. But, the respondent was an actor posing as a volunteer, and the chair was not connected to a source of electricity, so naturally there was no electricity running to the

chair. The agonizing pain on the respondent's face was all a show.

The study at Yale University predicted that 1-2% of the subjects would see the experiment through to the end (450 volts resulting in fatality), but the actual results are as follows.

- ◆ When the subjects could only hear the respondents on the other side of a wall, 60% kept electrocuting the respondents. In Germany, as many as 85% of the subjects continued.
- ◆ On the other hand, that percentage was 30% when the subjects were in front of the respondents and could actually see them in agony. Subjects who stopped in the middle of the experiment apparently felt the most stress.

This shows that no matter how kind or loving a person may be, he/she will have the tendency to easily yield to authority.



Figure 60 Obedience to authority (in the Vessel)

What is going on in a Vessel? Safety First is always the number one priority. However, pursuing profit is also important at the same time. Because those responsible for ship operation need to avoid troubles, they tend to say, "We understand that safety must come first, however, delays at port must be avoided."

Also, the Master will have to consider meeting the delivery date even if it appears to be somewhat impossible.

From the crew members' perspective whose priority it is to ensure safe navigation, that first priority seems to have disappeared somewhere.

If there are two criteria with a huge gap in between (in this case, safety first and profit first), in order for someone to have a better impression of you, you can give a negative impression first and then give a positive impression. In the human psychology, a gain loss effect can be anticipated, if the negative impression dramatically changes into a positive impression. However, if you get this wrong, they will be confused and ask the question "Which criteria should we go for?"

Although the top management says safety first, it is also necessary to confirm whether it has been achieved through their every action.

For example, when entering port is delayed for a safety reason, does the sales manager not 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!" or "Don't just stand there!" ?

Please check it out either in the office or on board. Human beings are weak beings that have to obey authority. Therefore, the attitudes of managers and on-site managers who embody Safety will influence safety.

§8 Conclusion

Following the Meiji Restoration, Japan was propelled to a formative global power as a result of technical strength grounded in strong mental virtues. On an international scale, Japan is no longer becoming a country with a “falling birthrate and ageing population” but already is a country with a low population with a substantially greying society.

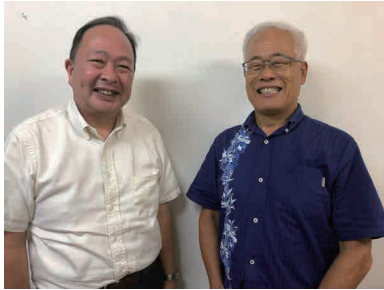
Sweeping mental health problems aside, the country is still seeking to resolve problems of safety using mainly only technology. The author feels that the current and prevalent atmosphere is one that does not desire a “sustainable society”. Already more than 1% of employees in a Japanese company are non-Japanese, thus globalisation should progress. The more the population grows with the new generations, the prevalently held conservative “common sense” way of thinking will no longer be the norm.

While being aware of these changing environments, it is important to become more human oriented in many ways by deepening one’s understanding of human psychological characteristics; five different psychologies and a variety of psychological biases were mentioned above. If you are interested, I guarantee that you will have a new value sense if you read a book on “Psychology” either at a bookshop or in a library.

In concluding this seminar, the lecturer apologises for coining the word: “Know yourself as well as your mission”, for today’s theme.

- ◆ **If you know both yourself and your mission well, the various choices in your life will be assured.** (Nobutoshi Tsutsui)
- ◆ **Know yourself as well as your mission.**

If you know both yourself and your enemies well, the various choices in your life will be assured.



Co-authored by:

Left: Captain Takuzo Okada, The Japan Ship Owner's Mutual Protection & Indemnity Association

Right: Nobutoshi Tsutsui, Psychological Safety Coordinator, KOBE



JAPAN P&I CLUB
日本船主責任相互保険組合

Website

<http://www.piclub.or.jp>

● **Principal Office (Tokyo)**

2-15-14, Nihonbashi-Ningyocho Chuoh-ku, Tokyo 103-0013, Japan

Tel : 03-3662-7229 Fax : 03-3662-7107

● **Kobe Branch**

6th Floor Shosen-Mitsui Bldg, 5, Kaigandori Chuoh-ku, Kobe, Hyogo 650-0024, Japan

Tel : 078-321-6886 Fax : 078-332-6519

● **Fukuoka Branch**

6th Floor Meiji-Dori Business Center 1-1, Shimokawabata-machi, Hakata-ku, Fukuoka 812-0027, Japan

Tel : 092-272-1215 Fax : 092-281-3317

● **Imabari Branch**

2-2-1, Kitahorai-cho, Imabari, Ehime 794-0028, Japan

Tel : 0898-33-1117 Fax : 0898-33-1251

● **Singapore Branch**

80 Robinson Road #14-01B SINGAPORE 068898

Tel : 65-6224-6451 Fax : 65-6224-1476

● **Japan P&I Club (UK) Services Ltd**

5th Floor, 38 Lombard Street, London EC3V 9BS U.K.

Tel:44-20-7929-3633 Fax: 44-20-7929-7557