



AIRCRAFT ANNOYANCE : A PSYCHOSOCIAL APPROACH



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SUMMARY

- Why and how shall we enrich actual annoyance model ?
- Annoyance a contribution of non acoustical variables
- How people cope with annoyance
- Research leads



1

WHY AND HOW SHALL WE ENRICH ACTUAL ANNOYANCE MODEL ?

Decrease of
noise source
since 20 years
BUT
annoyance is
still at the
same level

WHY ?

Sound
intensity =
only 30 % of
reported
discumfort

ISSUE ?

Regulations
are created
among those
norms

HOW
TO
DO ?

WHY AND HOW SHALL WE ENRICH ACTUAL ANNOYANCE MODEL ?

Improve residents
quality of life

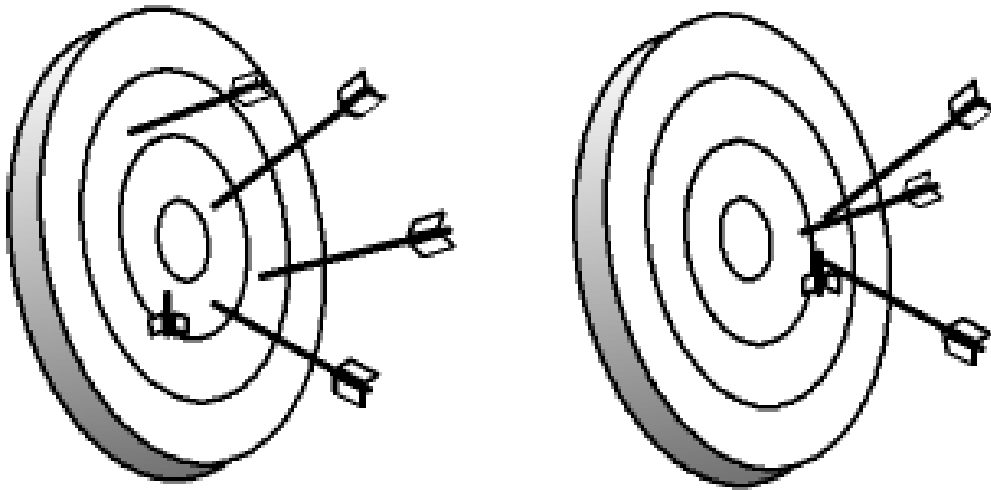
TO ?

Create new policies
more in line with
annoyance feeling

WHAT
FOR?

Enrich models
by adding new
variables that
can make
model better
fit with feeling
of annoyance

VARIOUS BIAS IN ANNOYANCE MEASUREMENT SITUATION...



Weak correlation between annoyance expressed and sound intensity

We all listen differently according to the time of the day

Noise effect persists after exposure

AND IN THE INTERVIEW PROCESS...

"The ICBEN scale was applied and the respondents were asked questions like "thinking about **the last 12 months** or so, **when you are here at home**, how much does noise from noise source bother, **disturb, or annoy you**, by selecting one of 11 categories from 0 (not annoyed at all) to 10 (extremely annoyed)".

3 bias in this question

Memory capacity issue

Variability along the day

Question of semantic

SO ANNOYANCE EXPRESSION IS MORE THAN NOISE INTENSITY

**A PONCTUAL FEELING IN A SINGULAR CONTEXT DOES NOT
ALLOW TO APPRECIATE ALL THE ANNOYANCE CHARACTERISTICS**

Example

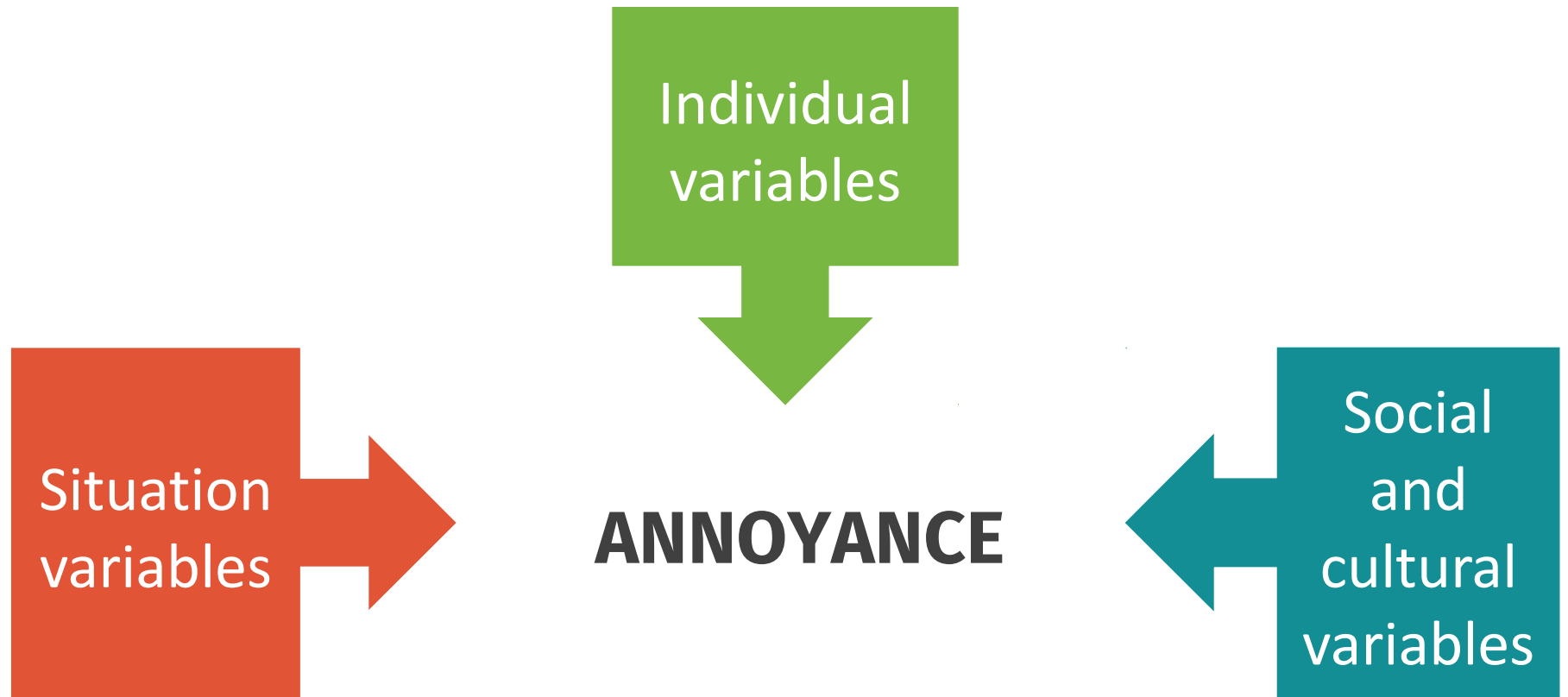
ANNOYANCE



FUN



ANNOYANCE A REFLECT OF VARIOUS VARIABLES IN INTERACTION



By Moch, Maramotti, 1995, Guski, 1999, Miedema, Vos, 1999

MEANING OF NON ACOUSTICAL FACTORS

- Non-acoustic factors in environmental noise can be broadly defined as all those **factors other than noise level alone** which contribute to noise annoyance and similar effects (Flindell, Witter, 1999)



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ANNOYANCE, A CONTRIBUTION OF NON ACOUSTICAL VARIABLES

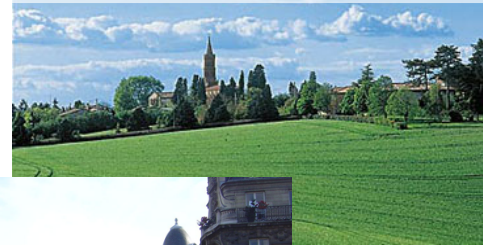
**Situational
variables**

**Accessibility to
information**



AÉRO → JOBS
Personal benefit

**Urban versus rural
environment**



**Residential
satisfaction**

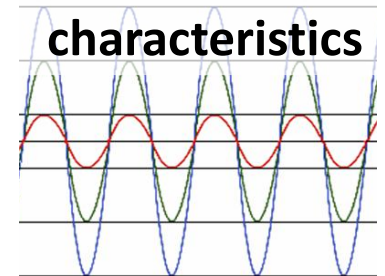


**Human vs
mechanical
sound**



**Presence of
vegetation**

**Sound
characteristics**



Individual variables

Fear about airplane crash



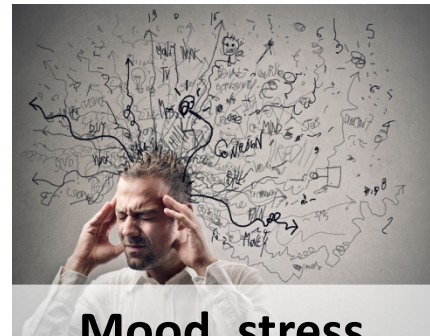
Place attachment



Noise sensitivity



Perceived control



Mood, stress, well being



Expectation lifeplace

Residential history



Believe impact on health



**Social and
cultural
variables**

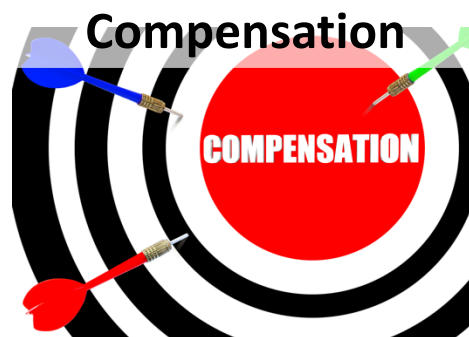


Voice

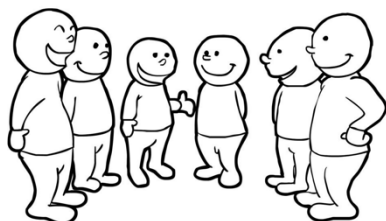


**Trust and
recognition from
authority**

Education level



Social behavior



PROCESS OF ANNOYANCE

ACOUSTICAL AND NON ACOUSTICAL FACTORS



PROCESSING



COPING / ADAPTATION STRATEGIES



3

HOW PEOPLE COPE WITH ANNOYANCE

FROM STRESS... TO COPING

● WHAT IS STRESS ?

When an individual perceives a real or imagined contradiction between requirement of the situation and the biological, psychological ressources he has.

(Dalle Mese, Tarquinio, 2012)

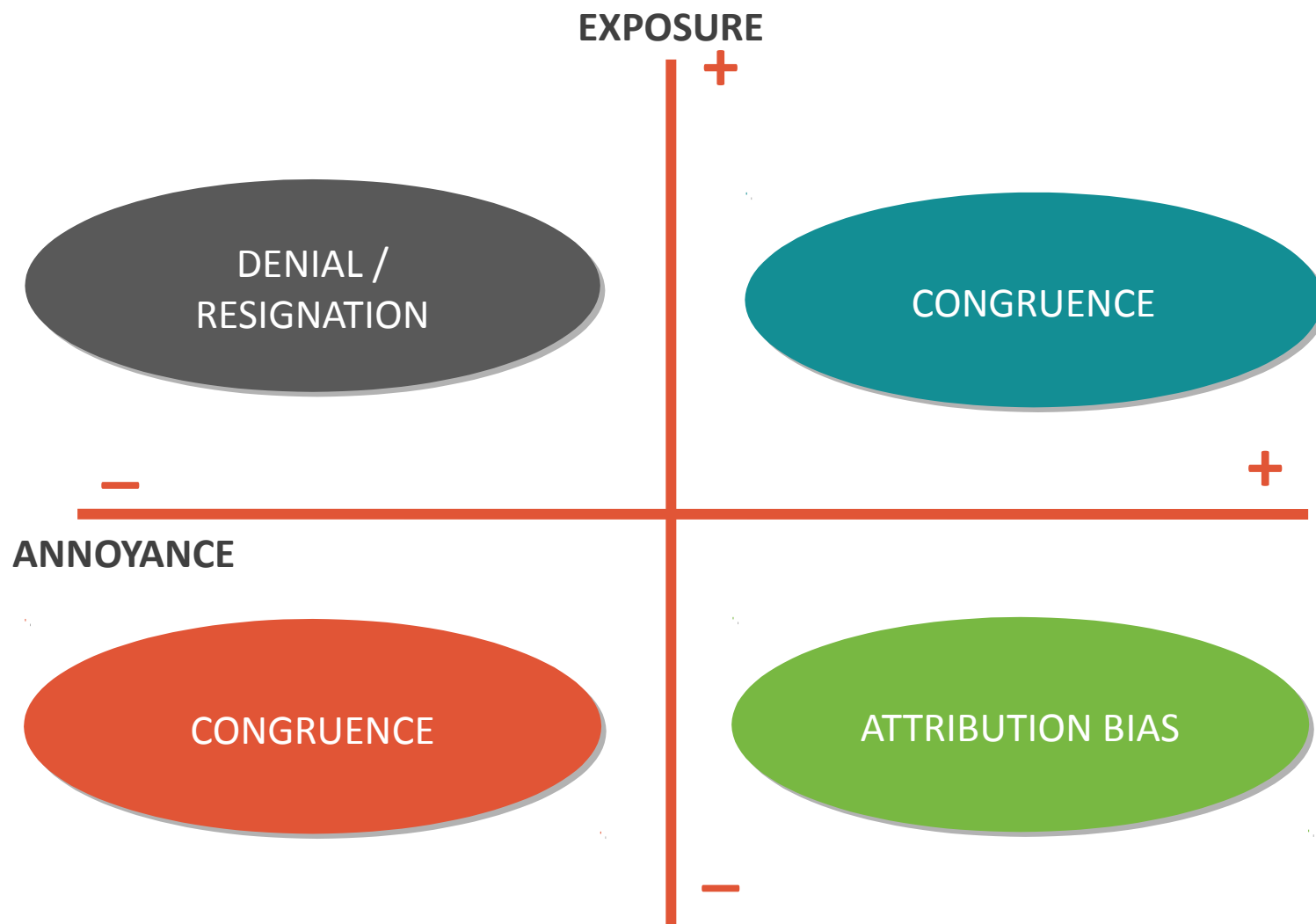
● WHAT IS COPING ?

Transactional processes which mediate and cushion the impact of stress thanks to behavioral and/or cognitive strategies in order to maintain a psychosocial adaptation (Lazarus et Folkman, 1983)

2 types of coping :

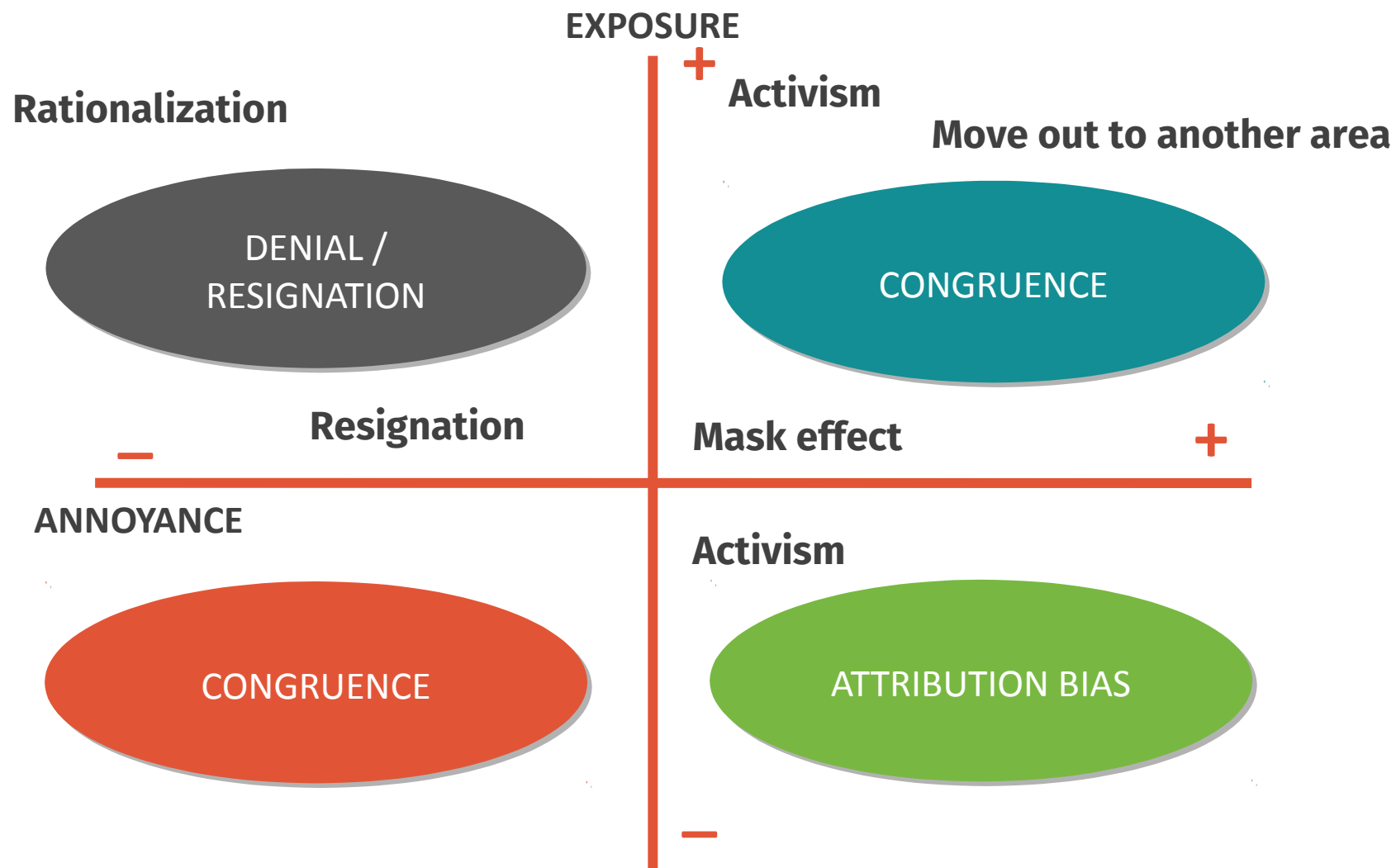
- ✓ focus on problem solving
- ✓ focus on emotion

DIFFERENT WAY TO COPE



By Levy Leboyer and Moser (1987)

DIFFERENT WAY TO COPE



By Levy Leboyer and Moser (1987)

COPING, A DIFFICULT PROCESS



- Noise annoyance has often be correlated to a weak well-being (Ouis, 2001)
- Noise sensitive people cope more slowly than the other (Job, 1999) and adopt more often avoiding strategies instead of adaptation (Stansfeld & Clark, 1985)
- People don't have appropriate vocabulary to describe exactly their annoyance feeling, they are tinkering vocabulary to describe noise and the associated feeling (Coulon, 2012)
- To be aware and to cope with it, people need first to perceive where this annoyance comes from but once indentified, noise annoyance become overwhelming (Coulon, 2012)



4

RESEARCH LEADS

BETTER UNDERSTAND ANNOYANCE COMPONENTS

- Conduct a large inter-cultural research on the topic
- Conduct longitudinal experiment, during night/day time; seasonal time
- Conduct quantitative but also qualitative survey in order to have a more accurate representation of what annoyance means
- Explore the impact of variables like social norms, consideration for the environnement, multi-exposition on annoyance

BETTER UNDERSTAND LIFESTYLE

- 
- Ask people to talk about their expectations in term of quality of life not only in terms of aircraft annoyance

DEFINE A NEW INDICATOR TO EXPLAIN ANNOYANCE



THANK YOU !

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DISCUSSION



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EXTRA SLIDES AND BIBLIOGRAPHY

Various bias in annoyance's measurement...

« Composite expression of discomfort that can crystallize on a component of the physical environment » Moser 2009, p131

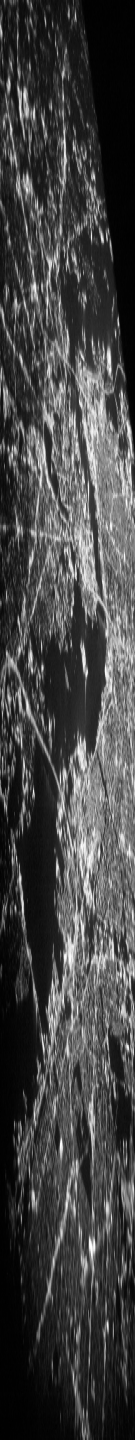
« Embarrassment is never a faithful reflection of the exposure to the annoyance in question » Moser 2009, p.116

Noise accounts for **only 30%** of the reported discomfort of populations while the remaining 70% can be related to other factors (Benisti et Bouillon, 2016)

Weak correlation between annoyance expressed and sound intensity (Levy-Leboyer et Moser, 1987)

Noise effect persists after exposition (Sherrod & al., 1977)

We all listen differently according to the time of the day (Ledentu, 2006)



Situational factors

Necessity or **relevance of the source** (Moser, 1992, Rozec & Ritter, 2003)

Residential satisfaction (Levy-Leboyer 1987, Moch & Leobon, 1993, ANSES, 2013)

Sound characteristics

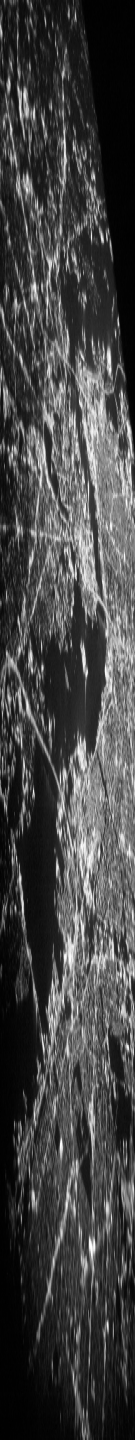
as incontrollable, unpredictable and loud intensity (Marquis-Favre, Premat, Aubrée, 2005, Moser 2009, Kryter, 1970, Glass & Singer, 1972)

Human sound are better evaluated than mechanical sound (Dubois, Guastavino, Raimbault, 2006)

Presence of vegetation (Li & al., 2010, Yasmashita et al., in Marquis-Favre, Premat, Aubrée, 2005)

Urban versus rural environment (Robin & al, 2009, Klæboe, 2011)

Accessibility to information (Field, 1993)



Individual factors

Residential history (Ledentu, 2006, Lecourt 2008, Levy-Leboyer, 1976)

Fear about airplane crash (Marquis-Favre, Premat, Aubrée 2005)

Expectations toward lifeplace (Aubrée, 1991)

Mood, stress, well-being, extraversion, social orientation or control capacity
(Vastfjall, Larsson & Kleiner, 2000)

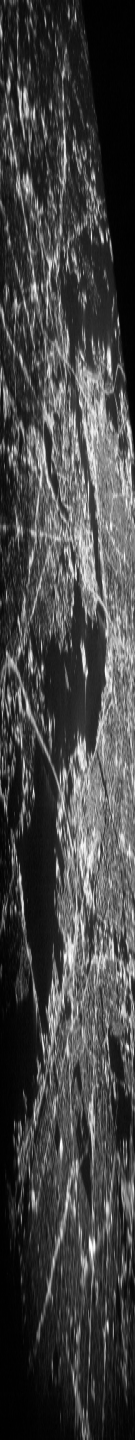
Noise sensitivity (Ciarrochi & Forgas, 2000)

Believe impact on health (ANSES, 2013)

Perceived control (Moser, 2009)

Place attachment, affective relation to the place

And what about : environmental belief ? Social norms ? Social representation of annoyance ? New lifestyle ?



Social or cultural factors

Education level (Yu, Kang, 2010, Miedema, Vos, 1999)

Social behavior (Cohen & Scapacan, 1984, Page, 1977, Korte & al., 1975)

Trust and recognition (Fields, 1993)

Voice (Fields, 1993)

Compensation (Fields, 1993)

Political discourse (Kroesen & Bröer, 2009)

Culture (Schäfer, 1979; Fischer, 1997)

« This incessant repetition of events, due to the increase in air traffic, probably explains why the discomfort around airports does not decrease, while the noise level produced on the ground has decreased in the last 20 years » CORAC 2014, p.15

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