

Miscommunication in Maritime Contexts: Findings from Phase 1 and 2

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Objectives

- Phase 1: Comprehensive review exploring the causes and the contributing factors of miscommunication in maritime contexts, overview of teaching practices in MET programs worldwide, and recommendations for improvement.
- Phase 2: Exploratory analysis of multiple data sources identifying the linguistic, pragmatic, and socio-cultural factors that contribute to or cause miscommunication at sea.

Commercial Shipping Industry: Background

- Currently accounts for more than 90% of all global trade
- Over 66% of all international ships have mixed nationality and multi-linguistic crews
- The common language spoken onboard vessels is unlikely to be the native language of the majority of crew.

Commercial Shipping Industry: Maritime English

- Maritime English (ME): English in ship-to-ship, ship-to-shore, and onboard communication
- Standard Marine Communication Phrases (SMCP): prescriptive phraseology with reduced syntax and vocabulary for common and routine interactions



Phase 1

Language and Miscommunication

- ‘Human element’
 - critical feature of all aspects of ship operation.
 - found to be the cause of over 90% of incidents involving collisions and groundings.
- Poor ME proficiency, lack of standardization in language, mismatches in expectations, and lack of a clear format for communication contribute to these failures.

Language and Miscommunication

- Communication failures cited as one of the major factors in all incidents at sea.
- Many communicative difficulties are a result of cultural and pragmatic differences as well as linguistic failures.
- Lack of intercultural competence

Maritime English Training

- Genre-based approach to courses developed in 2010 by IMO
 - Focus often on grammatical items or structure rather than real-world use
 - Lack of speaking or interactional practice
 - Teachers and students identified a mismatch between training and real-world use

Native English Speakers and Miscommunication

- Focus from maritime industry has been on English L2 learners
- Research demonstrates Native Speakers (NS) contribute to miscommunication
 - Failure to use standardized language
 - Lack of training in using SMCP or interacting with NNS
 - Use of 'plain' English
 - Rapid rate of speech

Speech Acts and Miscommunication

- Speech acts: functional utterances that present information as well as perform an action
- Possible mismatches between underlying intent and understanding
 - Differences in urgency or importance (order vs. suggestion vs. information)
- Politeness and ambiguity further influence how a speaker communicates and what an interlocutor may hear

Socio-Cultural Influence and Miscommunication

- Cultural beliefs are likely to influence
 - Politeness
 - Face-saving strategies
 - Hierarchical beliefs and practices
- Cultural beliefs often lead to or further complicate miscommunication
- Differences in cultural backgrounds may also impact community/cohesion onboard

Phase 1: Summary

- Proficiency and communicative competence for L2 mariners needs improvement
- Need for updated and revised materials to facilitate learners' linguistic, communicative, and pragmatic skills
- Need for improved MET training by drawing on applied linguistics research
- Socio-cultural differences and misunderstandings play an important role
- Native English speakers would benefit from training and awareness raising regarding miscommunication



Phase 2

Background and Objective

- Previous research has identified miscommunication as a leading cause of accidents, but no systematic review of accident reports for underlying factors
- Phase 2:
 - Identify the linguistic, pragmatic, and socio-cultural factors that are the source of miscommunication in maritime contexts
 - Systematic analysis of NTSB reports to provide more holistic perspective of sources of communication failures
 - Triangulate and validate findings with interviews with domain experts

Methodology: NTSB Reports

- Reports obtained from NTSB using keywords (e.g. *miscommunication, communication, bridge resource management, language, misunderstanding*)
- All reports manually reviewed for inclusion
- Miscommunication or language was identified as a contributing or causal factor
- Final sample: 60 reports from 1995-2022

Methodology: NTSB Reports

- Thematic analysis
- Coding
 - Context of miscommunication (e.g. ship-to-ship, etc.)
 - Environment of miscommunication (e.g. bridge, VHF)
 - Pilots/tugs
 - Source of miscommunication (e.g. linguistic, pragmatic, failure to clarify/confirm)
 - Participant characteristics

Methodology: NTSB Reports

- Secondary coding
 - Politeness/indirectness
 - Proficiency
 - Power differentials
 - Mismatches in speech acts
 - Cultural mismatches/misunderstandings

Methodology: Interviews

- Semi-structured interviews
 - Convenience and snowball sampling
 - Active and retired pilots
 - Active and retired captains/masters
- All interviews were recorded and transcribed
- Thematically analyzed to triangulate and validate NTSB findings

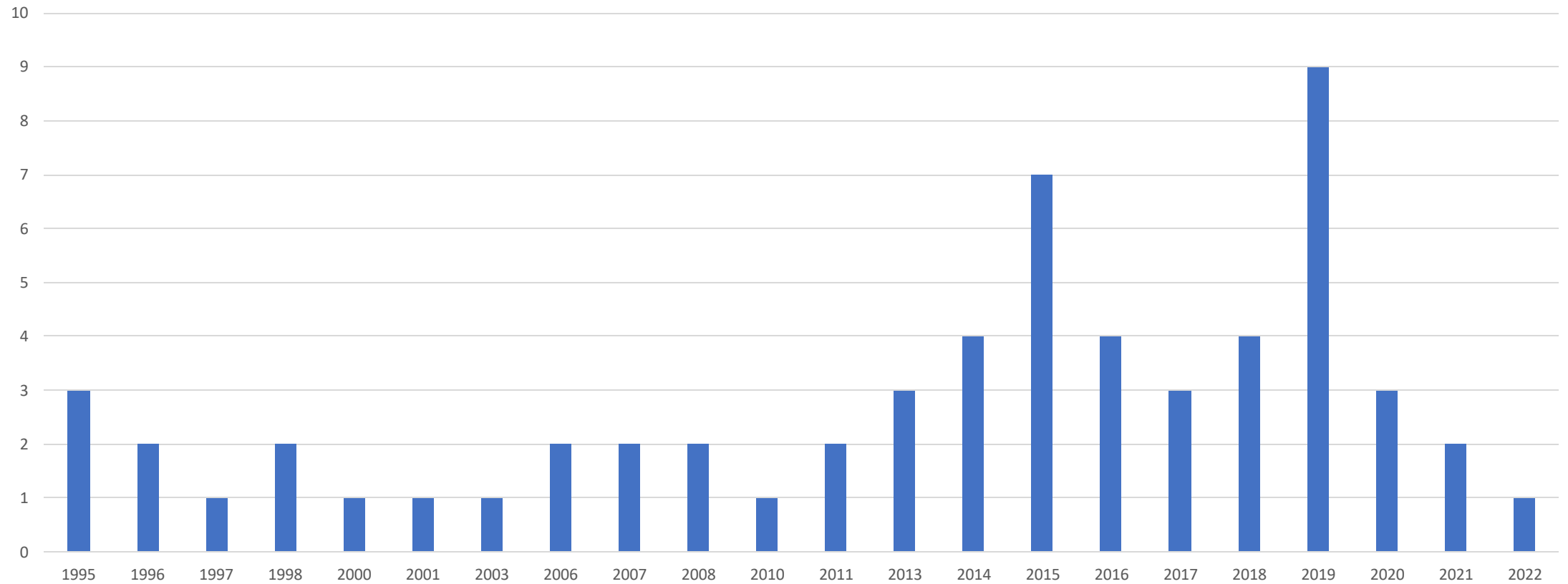
Participants

Participant information for semi-structured interviews

	Years of experience
Senior Pilot 1 (SP1)	35
Senior Pilot 2 (SP2)	22
Junior Pilot (JP)	8
Retired Master (RM)	40
Active Captain (AC)	25

Miscommunication Caused Accidents over Time

Accidents per Year



Findings: Context and Environment

- 58% of miscommunication was on-board
- 42% of miscommunication was ship-to-ship
- 75% of miscommunication related to bridge resource management
- 13% involved the master/pilot exchange
- 8% related to VHF radio communication

Findings: Context and Environment

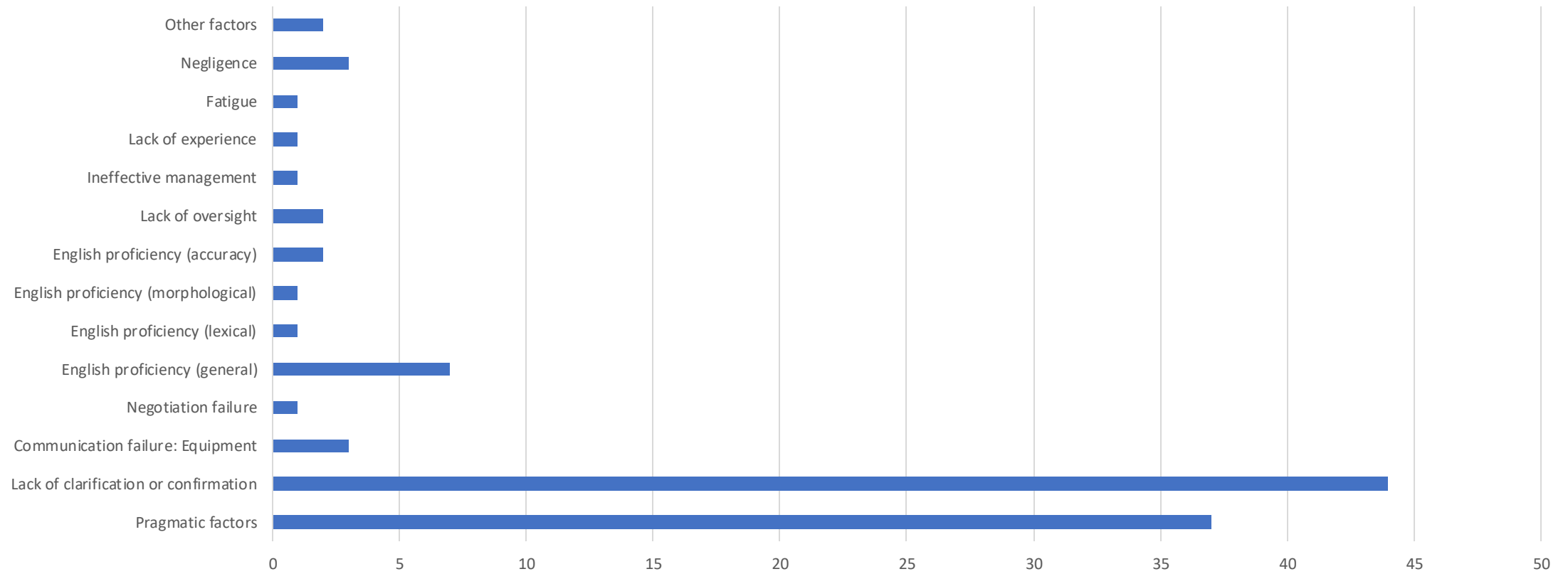
- Pilots were involved in 65% of miscommunication caused accidents
- Masters were involved in 55% of miscommunication caused accidents
- Tugboats were involved in 18% of miscommunication caused accidents

Findings: Sources of Miscommunication

- 73% of accidents due to communication failures related to lack of clarification or confirmation
- 62% of accidents caused by pragmatic factors
- 18% of accidents related to English proficiency

Sources of Miscommunication

Sources of Miscommunication



Failure to Communicate

- Primary source of miscommunication
 - Instances in which pilots or masters failed to discuss or share their plans or intentions with each other, the bridge team, or other vessels
 - Instances in which an interlocutor failed to share plans or intended actions, such as making passing arrangements, and pilots, masters, and/or crew failed to seek clarification or confirmation regarding the other party's plans and intentions
 - Instances where languages other than English were used and no translation/clarification was sought

Example: St. Louis Express & Hammersmith Bridge

- Collision of containerships in Western Scheldt River
- Belgian pilot failed to share plans, English speaking crew and master didn't seek clarification
- Master reported that usually pilots translated "important" information
- Second mate noticed Hammersmith Bridge, assumed others were aware
- Bosun on watch noted approaching vessel, assumed the bridge "knew"

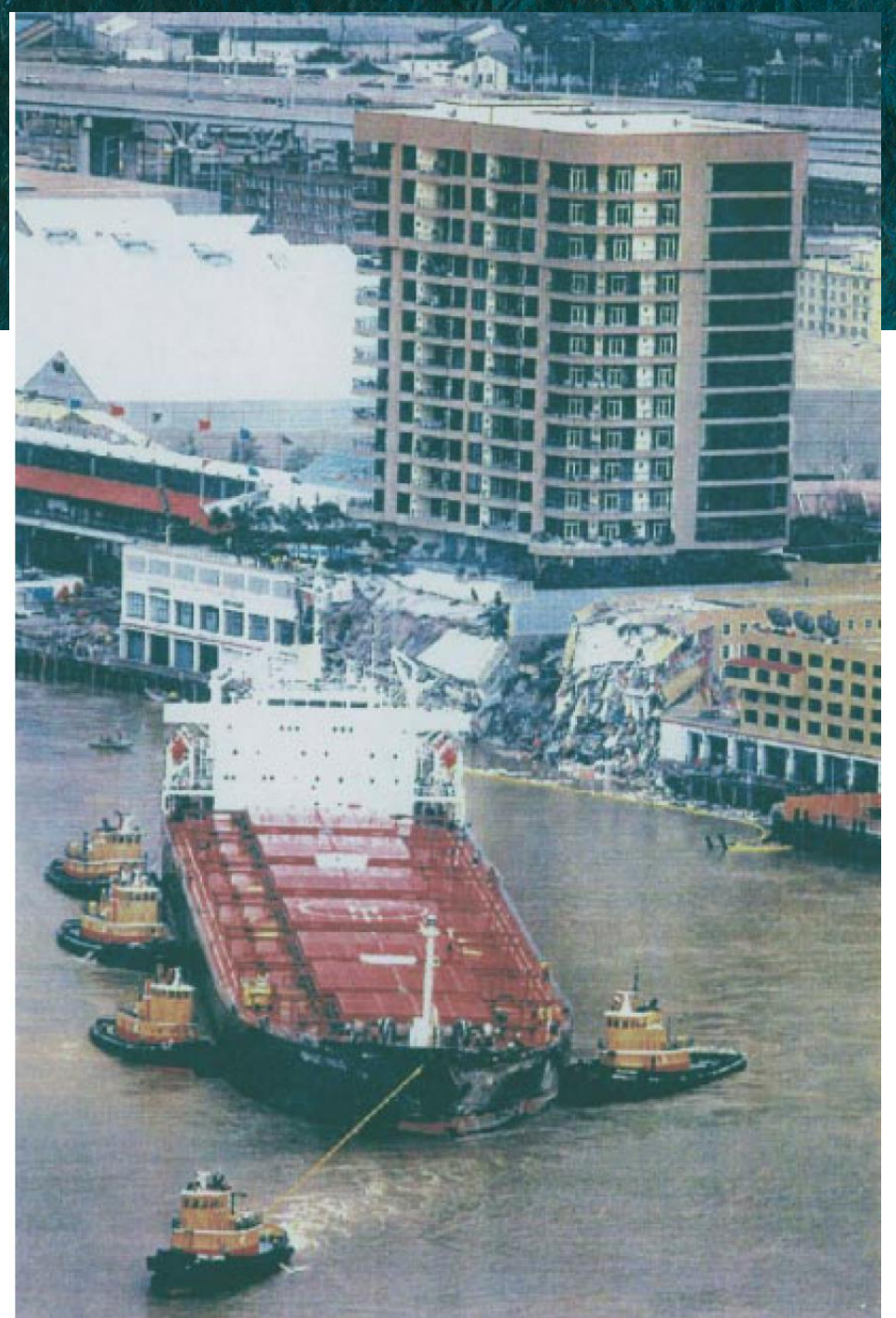
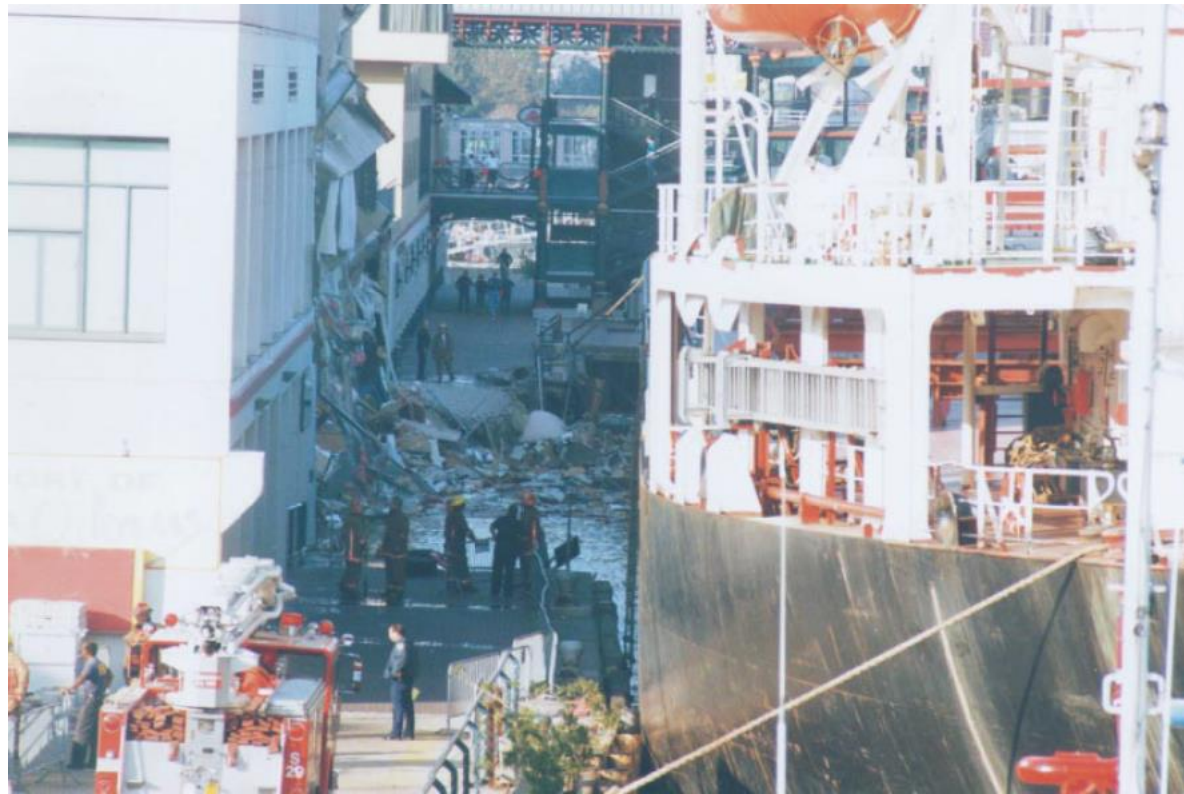
Language Proficiency and Communicative Competence

- Crew reverting to native language during stressful situations
 - Excludes pilot/other crew from critical information
- Example: Bright Field
- Allided with the New Orleans River Walk
- Engine failure

M/V Bright Field

- Pilot not alerted of danger by crew
 - Linguistic and pragmatic failures
- Crew communications in Chinese (pilot thus unaware of how problems were being addressed)
- Pilot ask master and second mate if there was a problem, but got no response. He said that he did not ask a second time “because they didn’t answer me the first time.”

Bright Field

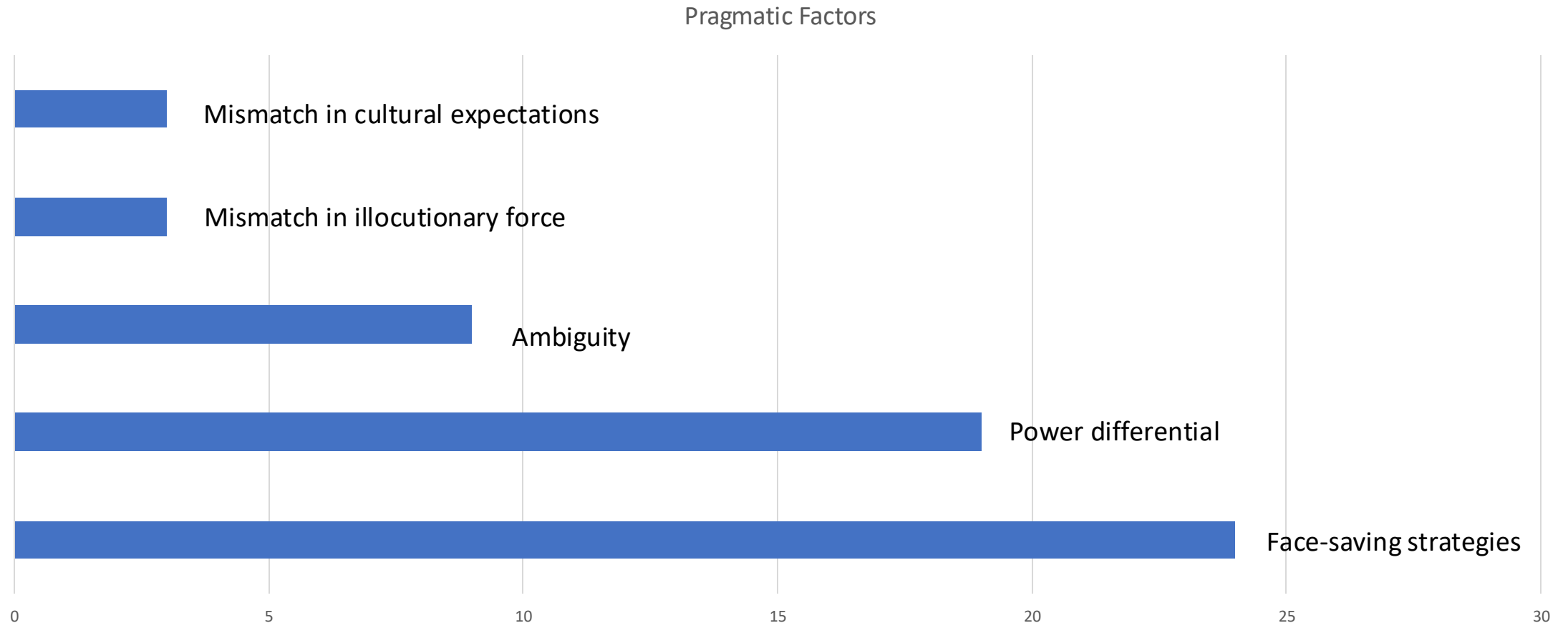


Language Proficiency and Communicative Competence

- Interview data corroborate that proficiency and the use of languages other than English are problematic
- All interviewees working with L2 crew commented on the need for gestures or pictures to support communication
- Senior Pilot 2:
 - “And then I would, I always had a piece of paper, a notebook, I pull it out and make the symbol of an anchor, and, you know, draw the vessel, and, you know, point to the anchor, starboard anchor, and I write the number, you know, three shackles or one shackle, we're going to this dock that side, too. And so communication was always one of the things I established really early on, because I started with problems with that.”

Findings: Pragmatic Factors

- Second most common causal or contributing source of miscommunication



Pragmatics: Power Differentials

- 32% of miscommunication due to power differentials
 - Higher ranked mariners disregarding input
 - Lower ranked mariners following instructions without clarification/concern
 - Lower ranked mariners avoid contradictions or imposing on higher ranked
 - Common amongst Native English speakers
- Example: El Faro
 - Multiple hedged, polite suggestions from crew to captain

Pragmatics: Power Differentials

- Multiple interviewees highlighted the importance of
 - cultivating relationships with crew or pilots and masters
 - creating an environment where lower-ranked officers or crew would feel comfortable raising concerns or contradicting higher ranked officers or the pilot.
- Retired Master:

“And I think that communication really does start at the top. And if the captain is not encouraging his younger officers to speak up, they're very, very likely not to say something when they see something, just assuming that you're the captain, and you know what you're doing.”

Pragmatics: Face-saving and Politeness

- 37% of accidents caused by face-saving strategies and politeness
- Contributes to ambiguity and misunderstandings
- Example: American Liberty
 - “Whatever you can give me cap”
 - “That's just a nice way of putting it. I think a lot of pilots say it that way, and it's the way I was trained. I heard lot of them -- it's just being just a nice way of putting it to them, like bring it up to slow when you can, Cap. You know, just a preference.”

Pragmatics: Face-saving and Politeness

- Used to protect speakers from demonstrating lack of knowledge
- Also influenced by cultural beliefs
 - Power and distance contribute to a speaker's choice of strategies
 - May be more common with speakers from certain backgrounds (e.g. Chinese, Japan, Korean)
- Senior Pilot 1:

“when you may be speaking to a master and he starts answering your question with ‘no problems, no problem’. Well, he says that two or three times you know that you've got a big problem.”
- Senior Pilot 2:

“...they don't want they don't want the pilot to think their vessel isn't adequate for the job. And so, you know, they want everybody to think the best of that.”

Conclusions: Phase 1 and 2

- Miscommunication remains a leading source of accidents
- Numerous linguistic and pragmatic sources of miscommunication
 - Power, politeness, proficiency, etc.
- Language proficiency remains an issue, although complicated by other factors
- Need for improved MET materials drawing on tasks and real-world use
- Native English speakers also contribute to miscommunication

Recommendations

- Raise awareness of where communication failures are likely to occur (pilot/master exchange, BRM, etc.)
- Raise awareness of role of politeness/indirectness (for both NNS and NS)
- Raise awareness of cultural beliefs and their impact on communication (NS)
- Possible training for native English speakers for standardized language/plain English
- Improve MET to support L2 proficiency and linguistic/communicative competence
- Highlight the importance of fostering cohesion onboard to support communication

Next Steps: Phase 3

- Build on Phases 1 and 2 by
 - extending to wider range of participants and stakeholders
 - continuing interviews with diverse native and non-native speaking mariners
 - design and administer survey to obtain target tasks for future professional development and MET

Thank you
for your
time and
attention

Questions?

